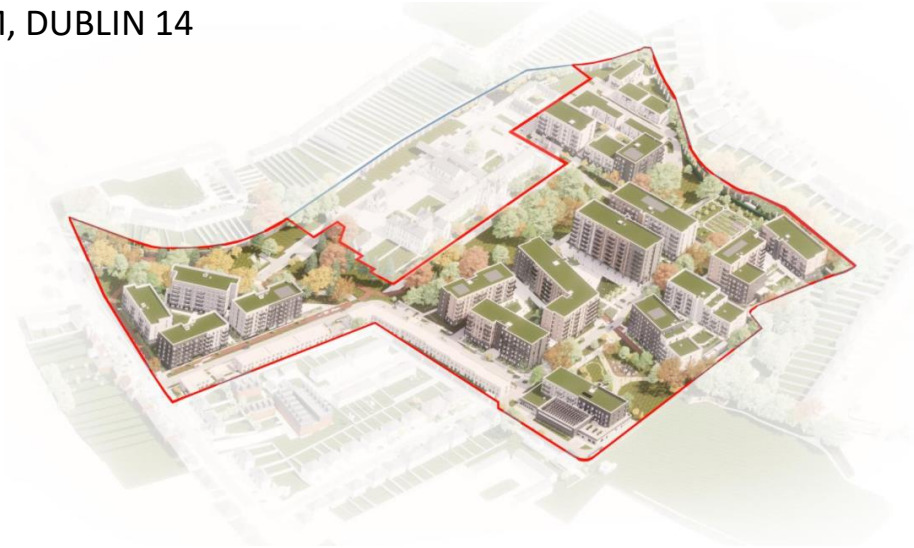
ENVIRONMENTAL IMPACT ASSESSMENT REPORT

VOLUME 2 – MAIN REPORT

PART 10 PLANNING APPLICATION AT FORMER CENTRAL MENTAL HOSPITAL, DUNDRUM, DUBLIN 14



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1.0 INTRODUCTION

1.1 Introduction

This Environmental Impact Assessment Report (EIAR) relates to a Part 10 Planning Application by Dún Laoghaire Rathdown County Council (DLRCC) with the Land Development Agency[1] acting as agent for the redevelopment of lands at the Former Central Mental Hospital, Dundrum, Dublin 14.

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 subject site measures c. 9.7 ha is bound by a 4 – 5 m perimeter wall and is accessed via an entrance off Dundrum Road. The site is further bound by residential properties and gardens at Mulvey Park to the north, at Friarsland Road to the east, at Larchfield Road to the south and south east and at Annaville Grove, Annaville Park and Annaville Terrace to the west.

The proposed development comprises 934 no. residential units, including 926 no. apartments (consisting of 342 no. one bedroom units; 98 no. two bedroom (3 person) units; 352 no. two bedroom (4 person) units; and 134 no. three bedroom units) arranged in 9 blocks (Blocks 02-10) ranging between 2 and 8 storeys in height (with a lower ground floor to Block 02 and Block 10), together with private (balconies and private terraces) and communal amenity open space provision (including courtyards) and ancillary residential facilities; 6 no. three bedroom duplex apartments located at Block 02, together with private balconies and terraces and 2 no. 5 bedroom Assisted Living Units and private rear gardens located at Block 02.

The proposal also includes 4,380 sqm of non-residential uses including a childcare facility (716 sqm), management suite (123 sq m), a medical centre (288 sq m), restaurant (266 sqm), 3 no. retail units (1,160 sqm), change of use of the Gate Lodge to a cafe (78 sqm) and a community facility (1,749 sq m). The new community centre facility includes a multi-purpose hall changing rooms and meetings rooms.

The application site is part of a wider land holding which is subject to a Masterplan in respect of the site wide development of the lands. Whilst this planning application and EIAR relates to the application lands specifically, any future planning application arising from the site wide Masterplan has been considered from a cumulative impact assessment perspective. A further planning application will be submitted in the future on the remaining masterplan lands. The details of this application are set out in Section 3.7.3 of this EIAR.

[1] Ashford House, 18-23 Tara Street, Dublin 2, D02 VX67

1.2 The Applicant

The Applicant for the proposed development is Dún Laoghaire-Rathdown County Council (DLRCC) in partnership with the Land Development Agency (LDA). The legal owner of the lands is the Office of Public Works (OPW) who also control the wider Masterplan lands. This is illustrated on the Site Location Plan (Dwg. No. DCD-02-02-SW_00-DR-A1018 Rev. P1-S-1) prepared by Reddy Architecture + Urbanism (Reddy A+U).

1.3 The Proposed Project

The 'Proposed Project' for the purposes of this EIAR is outlined in full in Chapter 5 of this EIAR. The future planning application, in respect of the change of use of the Main Hospital Building and other development, that will also be submitted in respect of the same site wide Masterplan will be dealt with as part of the cumulative impact assessment.

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.

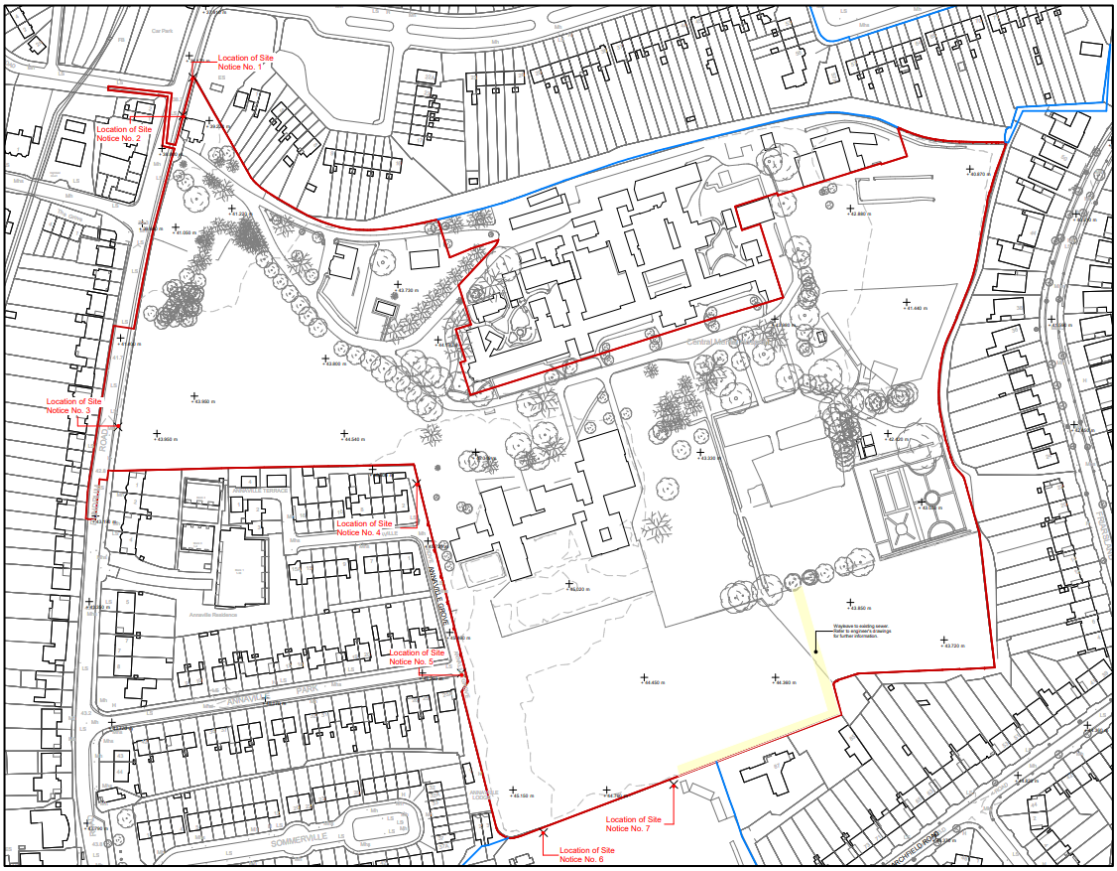


Figure 1.1: Extract from Reddy A+U's Site Location Plan, Dwg. No. DCD-02-SW-ZZZ-DR-RAU-AR-1000, Rev P3 S-1

In terms of an overview of the proposed development, the development will consist of the construction of a residential scheme of 934 no. dwellings on an overall site of c. 9.7 ha.

The development will consist of the demolition of existing structures associated with the existing use (3,677 sq m), including:

- Single storey former swimming pool / sports hall and admissions unit (2,750 sq m);
- Two storey redbrick building (305 sq m);
- Single storey ancillary and temporary structures including portacabins (618sq m);
- Removal of existing internal sub-divisions/ fencing, including removal of security fence at Dundrum Road entrance;
- Demolition of section of porch and glazed screens at Gate Lodge building (4 sq m);
- Removal of walls adjacent to Main Hospital Building;
- Alterations and removal of section of wall to Walled Garden.

The development will also consist of alterations and partial demolition of the perimeter wall, including:

- Alterations and removal of section of perimeter wall adjacent to Rosemount Green (south);
- Formation of a new opening in perimeter wall at Annaville Grove to provide a pedestrian and cyclist access;
- Alterations and removal of sections of wall adjacent to Dundrum Road (including removal of existing gates and entrance canopy), including reduction in height of section, widening of existing vehicular access, and provision of a new vehicle, cyclist and pedestrian access;
- Alterations and removal of section of perimeter wall adjacent to Mulvey Park to provide a pedestrian and cyclist access.

The development with a total gross floor area of c. 94,058 sq m (c. 93,980 sq m excluding retained existing buildings), will consist of 934 no. residential units comprising:

- 926 no. apartments (consisting of 342 no. one bedroom units; 98 no. two bedroom (3 person) units; 352 no. two bedroom (4 person) units; and 134 no. three bedroom units) arranged in 9 blocks (Blocks 02-10) ranging between 2 and 8 storeys in height (with a lower ground floor to Blocks 02 and Block 10 and Basements in Blocks 03 and 04), together with private balconies and private terraces and communal amenity open space provision (including courtyards) and ancillary residential facilities, including an 130 sq m internal residential amenity area at the Ground Floor Level of Block 3;
- 6 no. three bedroom duplex apartments located at Block 02, together with private balconies and terraces.
- 2 no. 5 bedroom assisted living units and private rear gardens located at Block 02.

The development will also consist of 4,380 sq m of non-residential uses, comprising:

- Change of use and renovation of existing single storey Gate Lodge building (former reception/staff area) to provide a café unit (78 sq m);
- 1 no. restaurant unit (266 sq m) located at ground floor level at Block 03;
- 3 no. retail units (1,160 sq m) located at ground floor level at Blocks 03 and 07;
- 1 no. medical unit (288 sq m) located at ground floor level at Block 02;
- A new childcare facility (716 sq m) and associated outdoor play area located at lower ground and ground floor level at Block 10;
- A management suite (123 sq m) located at ground floor level at Block 10; and
- A new community centre facility, including a multi-purpose hall, changing rooms, meeting rooms, storage and associated facilities (1,749 sq m) located at ground and first floor level at Block 06.

Vehicular access to the site will be from a new signalised access off Dundrum Road to the south of the existing access and the existing access of Dundrum Road will be retained for emergency vehicle, pedestrian and cyclist access only. The development will also consist of the provision of public open space and related play areas; hard and soft landscaping including internal roads, cycle and pedestrian routes, active travel routes for cyclists and pedestrians, pathways and boundary treatments, street furniture, wetland features, part-basement, car parking (524 no. spaces in total, including car sharing and accessible spaces); motorcycle parking; electric vehicle charging points; bicycle parking (long and short stay spaces including stands); ESB substations, piped infrastructural services and connections (including connection into existing surface water sewer in St. Columbanus Road); ducting; plant (including external plant for Air Source Heat Pumps and associated internal heating plantrooms); waste management provision; SuDS measures (including green roofs, blue roofs, bio-retention areas); attenuation tanks; sustainability measures (including solar panels); signage; public lighting; any making good works to perimeter wall and all site development and excavation works above and below ground.

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: • Collection of baseline information; • Analysis of the proposed project; • Assessment of impacts; • Developing mitigation measures; and • Setting out requirements for monitoring.	Current Stage
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	Provides an introduction and background to the proposed project
Chapter 4	Consideration of Alternatives
Chapter 5	Description of proposed project
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
Chapter 12	Climate
Chapter 13	Noise and Vibration
Chapter 14	Landscape (Townscape) and Visual
Chapter 15	Microclimate – Wind
Chapter 16	Cultural Heritage and Archaeology
Chapter 17	Architectural Heritage
Chapter 18	Material Assets – Roads and Traffic
Chapter 19	Material Assets - Waste
Chapter 20	Material Assets – Built Services
Chapter 21	Risk Management
Chapter 22	Interactions
Chapter 23	Cumulative Impacts
Chapter 24	Mitigation and Monitoring
Volume 3: Photomontages	
Photomontages	Photomontages (in conjunction with TVIA – chapter 14)

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 of 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
Julie Costello / Ciara Lester	EIAR Project Manager, Co-ordinator and Planner	Tom Phillips + Associates	**Julie Costello BA(Hons) MRUP** • Associate Planner • Corporate Member of the Irish Planning Institute (IPI) • Over 17 years' experience in Planning and EIA **Ciara Lester BA(Hons) MPlan** • Executive Planner • Chartered Member of the Royal Town Planning Institute (RTPI) • 4 years' experience in Planning and EIA
Sarah Tierney	Population and Human Health	AWN	**Sarah Tierney, BA in Environmental Science** • Graduate member of the Institute of Environmental Management and Assessment (GradIEMA) • Member of the Environmental Sciences Association of Ireland • Experience in EIA and EPA IE licence applications and compliance for pharmaceutical, ICT and residential developments
Bryan Deegan	Biodiversity Assessment	Altemar	**M.Sc. Environmental Science;** **BSc (Hons.) in Applied Marine Biology** **National Diploma in Applied Aquatic Science;** **National Certificate in Science**

			• (MCIEEM) Member of Chartered Institute of Ecology and Environmental Management • Over 29 years' experience as an Environmental Team Leader working on Irish aquatic and terrestrial development projects.
John Considine / Christina Fox	Lands, Soils and Geology	BMCE	**John Considine, BE, MIStructE, MIEI, CEng, FConsEIM** • Chartered Civil/Structural Engineer and a Fellow of the Association of Consulting Engineers of Ireland • 35 years experience of civil and structural engineering experience in the UK and Ireland • 10 years' experience in the preparation of EIAR documents **Christina Fox BEng (Hons) MSc CEng MIEI** • Chartered Engineer with Engineers Ireland • Practicing as a consulting engineer for over eleven years
Ana Keeley/ Teri Hayes	Hydrology	AWN	**Ana Keeley BSc** • 2 years experience in environmental consultancy and engineering geology • Member of International Association of Hydrogeologists • Worked on a range of projects involving hydrological/ hydrogeological risk assessments, site investigations and groundwater, surface water and soil monitoring on various operational developments. **Teri Hayes BSc MSc PGeol EurGeol** • Director of EIA and Water (EIA) • Former President of the Irish Group of the Association of Hydrogeologists (IAH) • qualified as a competent person as recognised by the EPA in relation to contaminated land assessment • 25 years experience in water resource management and impact assessment

Aisling Cashell / Dr Jovanna Arndt	Air Quality and Climate	AWN	**Aisling Cashell BA MAI** • Air Quality and Climate Consultant • BA and MAI in Civil, Structural and Environmental Engineering from Trinity College Dublin • Member of the Institute of Engineers Ireland • 1 year specialising in air quality and climate impact assessments for residential, commercial and industrial developments throughout Ireland **Dr Jovanna Arndt BSc PhD** • Senior Air Quality and Climate Consultant • BSc. in Environmental Science and a Ph.D. in Atmospheric Chemistry from University College Cork • Associate Member of both the Institute of Air Quality Management and the Institute of Environmental Sciences • 7 years specialising in air quality and climate impact assessments for residential, commercial, industrial, renewable energy and transportation developments
Abe Scheele	Noise and Vibration	AWN	**Abe Scheele** • City and Guilds Level 1 and 2 in Sound Engineering and City and Guilds Music Technology • Diploma in Acoustics and Noise Control from the Institute of Acoustics (IOA) • 8 years experience in environmental, building and architectural acoustics
Richard Barker	Landscape (Townscape) and Visual	Macroworks	**Richard barker MLA, PG Dip (Forestry), BA (Environmental)** • Principal Landscape Architect • Corporate member ILI • 20 years experience in LVIA
Faith Bailey	Cultural Heritage and Archaeology	IAC	**Faith Bailey MA, BA (Hons), MIAI, MCIfA**

			• Associate Director of IAC and Senior Archaeologist and Cultural Heritage Consultant • 20 years experience • Responsible for multiple EIAR's nationwide
Alastair Coey/Erl Johnston	Architectural Heritage	Coey Architects	**Erl Johnston** • RIBA Chartered Architect: 12460911 • Member of the RIAI (Ref 23023) • Registered with Architects Registration Board (Ref 095938C) • Over 10 years experience working on Protected Structures in Ireland and Listed Buildings in the UK **Alastair Coey BSC(Hons) and Dip Arch, Architecture, MUBC - Master of Urban and Building Conservation** • Member of the Royal Institute of British Architects: 4727683 • Registered with the Architects Registration Board: 046256J • Member of the Royal Institute of the Architects of Ireland: 98087 • Grade One Conservation Architect • Member of the Institute of Historic Buildings Conservation: 0828 • 30+ years experience as a specialist Conservation Architect
Dr Chris Harley	Microclimate	GIA	**Dr Chris Harley PhD MEng** • Director (Wind Analysis Department • MEng in Aerospace Engineering, PhD in Aerodynamics • 10 years experience in delivering wind microclimate assessments
Christy O'Sullivan	Traffic and Transport	ILTP	**Christy O'Sullivan** • a Chartered Engineer (CEng) • a Fellow of the Institution of Highways and Transportation (FIEI). • Over 30 years' experience in Traffic and Transportation. **Ben Waite – BA (Hons.) in Geography and an MSc. (Hons) in Geographic Information Science.** • Senior Transport Analyst;

			• Over 12 year's experience in traffic and transport design, analysis and planning.
Chonaill Bradley	Material Assets – Waste	AWN	**Chonaill Bradley BScEnv AssocMCIWM** • Principal Environmental Consultant • Associate Member of the Chartered Institute of Waste Management • Over 9 years' experience in EIA, Environmental reporting and Waste Management
John Considine / Christina Fox/ Richard O'Farrell	Material Assets – Built Services	BMCE/EDC	**John Considine, BE, MIStructE, MIEI, CEng, FConsEIM** • Chartered Civil/Structural Engineer and a Fellow of the Association of Consulting Engineers of Ireland • 35 years experience of civil and structural engineering experience in the UK and Ireland • 10 years' experience in the preparation of EIAR documents **Christina Fox BEng (Hons) MSc CEng MIEI** • Chartered Engineer with Engineers Ireland • Practicing as a consulting engineer for over eleven years **Richard O'Farrell BEng, MCIBSE** • Managing Director of Engineering Design Consultants Limited • Over 25 years' experience in the construction industry in Ireland and the UK
Matthew Michie	Risk Management	AWN	**Matthew Michie MChem, MSc (Physical Chemistry** • Senior Environmental Consultant • 5 years' experience in environmental consulting and EIARs for commercial, residential, industrial, pharmaceutical and data centre developments

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 Department of Housing, Planning, Community and Local Government has brought forward the *Planning and Development Regulations 2001-2018* to provide for the transposition of the Directive into the Irish planning code. To this effect, the *European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018* transposed the 2014 Directive into Irish law.

The Department has also issued the updated the '*Guidelines 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 EIARs* (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 unacceptable, design or other measures can be taken to avoid or reduce these effects to acceptable levels. 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; and
- Provides a description of any mitigation measures required to reduce or eliminate such potential effects.

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 2014 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:

- DHLGH (2018) *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment;*
- DHLGH (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 (2022) *Guidelines on the Information to be Contained in EIARs*;
- 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 Environmen*t;
- *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 EIA Screening

Screening is Stage 1 in the process, whereby a decision is made of 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 Directive 2011/92/EU, as amended by Directive 2014/52/EU.

The 2014 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 2014 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 2000-2020* and the *Planning and Development Regulations 2001-2020*. Specifically projects requiring mandatory EIA are listed in Part 1 and Part 2 of Schedule 5 of the *Planning and Development Regulations 2001-2020*.

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 development including 934 no. residential units and c. 4,380 sq m of other (non-residential) uses. The Project exceeds this threshold and therefore an EIA is 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 proposed development relates to a site of c.9.7 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, however it is noted that the overall Former Central Mental Lands (to which the Masterplan relates) are 11.39ha in area. Regardless, an EIAR is already triggered in respect of 10(b)(i).

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 site buildings and structures to be demolished have a total gross floor area of 3,736 sq m and range between 1-2 storeys in height. 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 will be prepared to address those aspects identified in Article 5 and Annex IV of the EIA Directive and Schedule 6 of the Regulations. The EIAR will also be 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 is 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	Chapter 10 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. Major accident hazards in respect of the provisions of the Major Accidents Directive. 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 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 throughout the design process of this scheme.

2.4 EIA Consultation

Consultation with key stakeholders, including ongoing engagement between the Land Development Agency (LDA) and Dún Laoghaire Rathdown County Council (DLRCC) in line with their partnership, has taken place throughout the design process of this scheme.

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 accordance with the Planning and Development Act, 2000 (as amended), Dún Laoghaire-Rathdown County Council (DLRCC), in partnership with The Land Development Agency (LDA), is seeking approval from An Bord Pleanála in respect of an Application made under Section 175 of the *Planning and Development Act, 2000 (as amended)* and Section 177AE of the *Planning and Development Act, 2000 (as amended)*.

Prior to submitting this planning application, the Land Development Agency engaged with DLRCC on a number of occasions to ensure that the proposed development reflects the needs identified by DLRCC and seeking to be addressed by DLRCC in this Application. This is set out in detail under Section 6 of this report.

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.

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.

The relevant National Policy Objectives (NPOs) which seek to implement policies surrounding housing delivery and compact growth are set out below (note: this is not an exhaustive list):

- ***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.*
- ***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.*

On 10th July 2024, the Draft Revision of the NPF was published for public consultation which will conclude in September 2024. The Draft Revision of the NPF focuses on the need to update the Framework to appropriately reflect changes to Government policy that have taken place since its initial publication in 2018, such as climate transition, regional development, demographics, digitalisation and investment and prioritisation.

The Draft Revision retains the original NPF focus on a more balanced distribution of growth across all of Ireland's regions.

Having taken into account the 2022 Census figures and the increased projected population, the Draft Revision also identifies a need for approximately 50,000 additional households per annum to 2040, an increase from the 30,000 per annum figure stated in the original NPF.

The Draft Revision of the NPF introduces 17 No. new NPO's to the NPF. NPO21 of the Draft Revision of the NPF which replaces NPO12 of the NPF, states:

> *"The Government will support the LDA, in association with Local Authorities, to fulfil its statutory mandate to deliver a significant number of homes on State lands in major mixed tenure developments, with a particular focus on brownfield and infill urban sites in the five main cities and regional centres as a priority."*

The proposed development inherently complies with the overarching themes of the NPF by proposing a compact well-designed sustainable form of residential development on an underutilised suburban site located in close proximity to a range of social and commercial facilities and public transport services. The development accords with the NPF's aims to consolidate Dublin through the development of underutilised, brownfield sites.

The scale and locational characteristics of the subject site therefore provides an opportunity for a sustainable, higher residential development and the delivery of a significant contribution to meeting housing need.

The proposed development also complies with the Draft Revision of the NPF, by providing for additional housing in Dublin via a partnership development between DLRCC and the LDA, which will provide for a significant number of homes on state owned lands in a mixed tenure development at an infill urban site in Dublin.

3.2.2 Sustainable and Compact Settlement Guidelines for Planning Authorities (2024)

The *Sustainable Residential Development and Compact Settlements Guidelines for Planning Authorities, 2024* set national planning policy and guidance in relation to the planning and development of urban and rural settlements, with a focus on sustainable residential development and the creation of compact settlements. These Guidelines replace the *Sustainable Residential Developments in Urban Areas Guidelines for Planning Authorities, 2009.*

The proposed development has had regard to the Sustainable and Compact Settlements Guidelines for Planning Authorities. There is a renewed focus in the Guidelines on the regeneration and consolidation of existing settlements and on the interaction between residential density, housing standards and quality design and placemaking to support sustainable and compact growth.

The Guidelines include 5 Specific Planning Policy Requirements which the proposal complies with.

The proposed development complies with the Compact Settlement Guidelines. The net residential density is 146 units/ha (based on the methodology provided in Appendix B of the Guidelines), which is towards the middle of the range (50-250 dph net) indicated for urban neighbourhoods of Dublin (see the enclosed *Planning Report* for calculations). The site is less than 500m of the high capacity public transport node at Windy Arbour Luas and within 1km node at Dundrum Luas/Bus interchange (via the new opening to Rosemount Green to the south) and is located within a strategic and sustainable development location.

The windows of the proposed apartments all have a separation distance from windows of existing neighbouring buildings of more than 16m in accordance with SPPR1 (see Section 3.7 of the *Architectural Design Report,* which shows that the separation distances are 63m to the north; between 23m and 106m to the east; between 27m and 70m to the south; and between 21m and 38m to the east).

The scheme has been designed to ensure that the vast majority of the proposed units benefit from separation distances between proposed habitable rooms that accord with SPPR1, which states:

"When considering a planning application for residential development, a separation distance of at least 16 metres between opposing windows serving habitable rooms 16 at the rear or side of houses, duplex units and apartment units, above ground floor level shall be maintained. Separation distances below 16 metres may be considered acceptable in circumstances where there are no opposing windows serving habitable rooms and where suitable privacy measures have been designed into the scheme to prevent undue overlooking of habitable rooms and private amenity spaces."

Section 3.7 of the enclosed *Architectural Design Report* identifies separation distances between units, a limited number of which are less than 16m. For example, between certain sections of Block 2 (4, 6, 7 and 9m); at the northern end of Block 4 (12-14m); between the northern end of Block 6 and southern edge of Block 8 (14m); between certain sections of Block 7 (8-14m); and

between certain sections of Block 10 (9-13m). However, in these cases, where there are windows serving habitable rooms, these are not directly opposing each other but are staggered or at oblique angles, which provides suitable levels of privacy and prevents undue overlooking of habitable rooms and amenity spaces, as required by SPPR1.

As per SPPR3, and on the basis of the high quality pedestrian and cyclist facilities, provision of local services and the site's location in proximity to existing services and facilities, car parking is reduced, with an average ratio of 0.5 space/unit for residential car parking (or 466 no. spaces, including visitor parking and car share spaces). Car parking for non-residential uses is also proposed (58 no. spaces). This is assessed in the enclosed Transport and Traffic Assessment prepared by ILTP.

High quality cycle parking is provided across the site in compliance with SPPR 4. The cycle parking quantum for residential units exceeds the *Apartment Guidelines 2023* requirement of 1 space per bedroom, and 0.5 spaces per apartment for visitors (by providing 1,850 no. resident spaces and 488 no. visitor spaces). In terms of quality, the cycle parking meets the requirements of the *DLRCC Standards for Cycle Parking and associated Cycling Facilities for New Developments*. Please refer to the enclosed *Architectural Design Report* for further information.

3.2.3 Housing for All – A New Housing Plan for Ireland (2021)

Housing for All is an action plan for housing up to 2030. The Plan is based around four key pathways:

- Supporting home ownership and increasing affordability;
- Eradicating homelessness, increasing social housing delivery and supporting social inclusion;
- Increasing new housing supply; and
- Addressing vacancy and efficient use of existing stock

The Plan sets a target of delivering over 300,000 homes by 2030 including 90,000 social homes and 36,000 affordable purchase homes.

The proposed development will provide 934 no. homes comprising: 181 no. social housing units (which includes 2 no. Assisted Living/Community Homes Units); 52 no. Right Size for Sale units; 122 no. Affordable for Sale units; and 579 no. Cost Rental units. This fully aligns with and supports the government's aim to achieve a more sustainable housing system as set out in the Housing for All Plan.

3.2.4 Sustainable Urban Housing: Design Standard for New Apartments: Guidelines for Planning Authorities (2023)

The *New Apartments Guidelines 2023* is an update to the guidelines issued in 2022. The document sets out a guidance and a number of SPPRs relating to the quality of proposed new apartments.

In the first instance, the Guidelines identify the types of locations that may be suitable for apartment development. The subject site falls into the '*central and/or accessible urban locations*' which comprises sites that:

- *''Sites within walking distance (i.e. up to 15 minutes or 1,000-1,500m), of principal city centres, or significant employment locations, that may include hospitals and third-level institutions;*

- *Sites within reasonable walking distance (i.e. up to 10 minutes or 800-1,000m) to/from high capacity urban public transport stops (such as DART or Luas); and*

- *Sites within easy walking distance (i.e. up to 5 minutes or 400-500m) to/from high frequency (i.e. min 10 minute peak hour frequency) urban bus services.''*

The locational characteristics of the application site broadly align with the '*Central and/or Urban Accessible Location'* criteria. The defining locational characteristics of the subject site include its proximity to Dundrum Town Centre (c. 1,600m), a significant employment location, and high-capacity urban public transport stops, including high-frequency urban bus service and the Luas line. The delivery of higher density apartment development at the application site is therefore considered to be appropriate.

As existing, the application site is located approximately 1,600 m from Dundrum Town Centre, a significant employment location. Dundrum Business Park, a large employment location, is also approximately 210 metres to the north of the site. There are also a number of schools in close proximity, namely, Our Lady's National School (c. 300m), Jesus and Mary College, Our Lady's Grove (c. 700m, based on improved permeability via Rosemount Green) and Our Lady's Grove Primary School (c. 700m, based on improved permeability via Rosemount Green) and Goatstown Educate Together Secondary School (c. 450m, based on improved permeability via Rosemount Green), and Goatstown Educate Together National School (at the former Notre Dame school site, c.1km to the south, which is proposed to be relocated permanently to the same site as the Goatstown ETSS) which jointly would employ a notable number of people within the County.

With the proposed development in place, which includes a number of new pedestrian and cyclist access points, the distance to Dundrum Town Centre will reduce to c. 1,000 metres.

The application site is located approximately 450 metres from Windy Arbour Luas Stop which provides direct access into both Dublin city centre and Dundrum Town Centre.

It is also less than a 10-minute walk from Dublin Bus Routes on Dundrum Road with services into Dublin city centre.

Further to this, the site is less than a 15 minute walk from Dublin Bus Routes on Goatstown Road which provides services into Sandyford Business District (a significant employment location) at 20 minute intervals.

Notably, the 142 and S4 Dublin Bus Routes provides services into UCD from Bird Avenue which is within a 10 minute walk of the site.

As part of the BusConnects programme, it is proposed to further enhance the number of bus services in the area, particularly at the Dundrum Luas Interchange c. 1km to the south.

The Guidelines also provide apartment design standards in the form of SPPRs relating to the following, which informed the County Development Plan:

- Housing mix;
- Minimum floor areas;
- Dual aspect ratios;
- Floor-to-ceiling heights; and
- Apartment to stair/lift ratios.

The Guidelines also provide standards in respect of:

- Internal space standards, including storage spaces;
- Amenity spaces including balconies and patios; and
- Room dimensions.

We confirm that the proposed development complies in full with the SPPR's and the various numerical standards contained within the Apartment Guidelines. Refer to the *Housing Quality Assessment* (HQA) for full details surrounding compliance in this regard.

3.2.5 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.

The *Urban Design Manual* presents 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.

The development has had regard to the Urban Design Manual in relation to the criteria set out in the document/ This is set out in full detail in the enclosed *Statement of Consistency including Dundrum LAP Statement of Consistency*.

3.2.6 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.

The *Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities (2023)* note that 1-bed or studio type units should not generally be considered to contribute to a requirement for childcare provision, and subject to location this may also apply in part or whole, to units with two or more bedrooms.

In this case, a residential development of 934 No. units is proposed; 492 No. of those units are two bed/4 person units or three bed units (i.e., this number excludes the one beds; two bed/3 person units, and 5-bed community homes). The proposed development includes a childcare facility 716 sq m, facilitating 132 no. childcare places.

The enclosed *Social Infrastructure Audit*, which has regard to the capacity within the existing local childcare network, notes that the potential childcare uptake of the proposal is likely to be only 132 no. places, which is provided for in the proposed childcare facility. Refer to Section 4 of the *Social Infrastructure Audit* for further details, which also identifies capacity in the surrounding childcare facilities.

We therefore confirm that the scale of the proposed childcare facility is adequate for the proposed development, having regard to the findings of the *Social Infrastructure Audit.*

3.2.7 Part V of the Planning and Development Act 2000: Guidelines (2017)

This Guidance document advocates consideration of Part V issues at the earliest point possible. The subject proposal is entirely consistent with the 2017 *Guidelines*, which states:

> *"The acquisition of units on the site of the development is the recommended option in order to advance the aim of achieving a social mix in new developments. This option should be pursued by the local authority from its earliest engagement with the developer, with a view to acquiring houses which meet its social housing requirements for that area/site."* (Source: Part V of the *Planning and Development Act 2000: Guidelines (2017)*, p. 10.)

The proposed development is a Part 10 Application as DLRCC is the Applicant in partnership with the LDA. The entire scheme is an affordable and social housing development.

Of the 934 no. units proposed, some 181 no. units (or 19%) are intended as Social Housing units (179 no.) and Community Homes (2 no.).

The remaining units will comprise Right Size for Sale units (52 no.); Affordable for Sale (122 No.); and Cost Rental units (579 no.) to be managed by the LDA.

The proposed social units (social housing and community homes), and related schedule are identified in the Application documentation. Whilst, Part V does not apply to local authority own development, this provision exceeds the requirements of Part V of *the Planning and Development Act 2000* (as amended).

3.2.8 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. The subject proposal is fully consistent with this recommended approach, and achieves a sense of place and residential amenity whilst also facilitating efficient and secure internal movement.

ILTP Consulting prepared the enclosed *DMURS Compatibility Statement* which confirms that the proposed development is consistent with the principles and guidance of DMURS.

3.2.9 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* (2009). These Guidelines introduce the principle of a risk-based sequential approach to managing flood risk.

Barrett Mahony Consulting Engineers have prepared the enclosed *Site Specific Flood Risk Assessment* (SSFRA), in accordance with the requirements of the Guidelines. This Assessment concludes the developed site is shown not to be at a significant risk from flooding and to not create a significant risk to adjoining areas or downstream. Therefore, the development is deemed acceptable from a flood risk assessment perspective. Please refer to the enclosed Assessment for further information

3.2.10 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, as implemented in Irish law by Part XAB of the Planning and Development Act 2000 (as amended).

Altemar Ltd. has undertaken an *Appropriate Assessment Screening* and *Natura Impact Statement* (NIS) for the proposed development. It outlines the information required for the competent authority to screen for appropriate assessment and to determine whether or not the proposed development, either alone or in combination with other plans or projects, in view of best scientific knowledge and in view of the sites' conservation objectives, will adversely affect the integrity of the European site.

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

Drawing upon the conclusions of the NIS, it is highlighted that following the implementation of the mitigation measures outlined, no significant impacts are likely on Natura 2000 sites, alone or in combination with other plans and projects based on the implementation of mitigation measures.

3.2.11 Climate Action Plan (2024)

The Climate Action Plan 2024 (CAP24) is the third annual update to Ireland's Climate Action Plan 2019. This Plan sets out how Ireland can accelerate the actions that are required to respond to the climate crisis, putting climate solutions at the centre of Ireland's social and economic development. The Plan provides a roadmap for taking decisive action to halve Ireland's emissions by 2030 and reach net zero by no later than 2050, as committed to in the Climate Action and Low Carbon Development (Amendment) Act 2021.

Climate, sustainable development and energy efficiency considerations have been a key consideration of the proposed development throughout the design process, from inception. An *Energy & Sustainability Report* has been developed for the project, prepared by EDC and is enclosed with the planning application accordingly. The proposed development will comply with residential Building Regulations: Technical Guidance Document L 2022- Conservation of Fuel and Energy- Dwellings. (Part L 2022 (Dwellings)), and provides a carefully considered energy strategy. Please refer to the enclosed EDC *Energy & Sustainability Report* for further information.

3.2.12 Urban Development and Building Heights: Guidelines for Planning Authorities (2018)

The *Urban Development and Building Heights: Guidelines for Planning Authorities* were published on foot of the *National Planning Framework*. The aim of the *Guidelines* is to ensure that height policies do not undermine national policy objectives to provide more compact forms of development and the consolidation and strengthening of existing built-up areas.

Section 3.0 of the Height Guidelines contains Policy SPPR 3 which states:

> *"It is a specific planning policy requirement that where;*
>
> *(A) 1. An applicant for planning permission sets out how a development proposal complies with the criteria above; and*
> *2. the assessment of the planning authority concurs, taking account of the wider strategic and national policy parameters set out in the National Planning Framework and these guidelines;*
>
> *then the planning authority may approve such development, even where specific objectives of the relevant development plan or local area plan may indicate otherwise…"*

The criteria referred to by Policy SPPR 3 is contained in Section 3.2 of the Building Height Guidelines. It sets out a number of criteria which, in line with SPPR 3, should be satisfied in terms of proposals for greater height. Compliance with SPPR 3 is set out in full in the *Statement of*

Consistency including Dundrum LAP Statement of Consistency enclosed with this planning application.

3.2.13 Department of the Arts, Heritage and the Gaeltacht 'Architectural Heritage Protection Guidelines for Planning Authorities' (2011)

All development proposals potentially impacting on Protected Structures and places designated as Architectural Conservation Areas and candidate Architectural Conservation Areas shall have regard to the Department of the Arts, Heritage and the Gaeltacht 'Architectural Heritage Protection Guidelines for Planning Authorities' (2011).

We note *that Chapter 17 'Architectural Heritage'* of the *Environmental Impact Assessment Report* has been prepared in accordance with these Guidelines. The enclosed *Historic Landscape Statement of Significance and Impact Assessment* prepared by Alastair Coey Architects also addresses the proposed development in the context of these Guidelines. Refer to the *Historic Landscape Statement of Significance and Impact Assessment* and Chapter 17 for full details.

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, including:

> *"Compact sustainable growth and accelerated housing delivery – To promote **sustainable consolidated growth** of the Metropolitan Area, including **brownfield and infill** development, to achieve a **target of 50% of all new homes within or contiguous to the built-up area of Dublin City and suburbs**, and at least 30% in other settlements.."* [Our emphasis.]

And

> "*Co-ordination and active land management – To **enhance co-ordination across local authorities and relevant agencies** to **promote more active urban development** and land management policies that **help develop underutilised, brownfield, vacant and public lands***".

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

> *"RPO 5.5: **Future residential development supporting the right housing and tenure mix within the Dublin Metropolitan Area** shall follow a clear sequential approach, **with a***

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

In our opinion, the proposed development is in full accordance with the objectives of the RSES realising the potential of brownfield lands in the consolidation of Dublin and its suburbs. The proposed development will provide a housing and tenure mix that will help to balance the existing pattern of predominantly private conventional family housing in the area.

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 *Plan* (contained within Chapter 2), sets out the medium-to-longer term quantitatively based strategy for the spatial development of the *Dún Laoghaire-Rathdown area.* In this regard, the *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 (SPPR's) 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 2.1 below, provides a housing target of 18,515 units for Dún Laoghaire-Rathdown for the period of 2022-2028.

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

	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

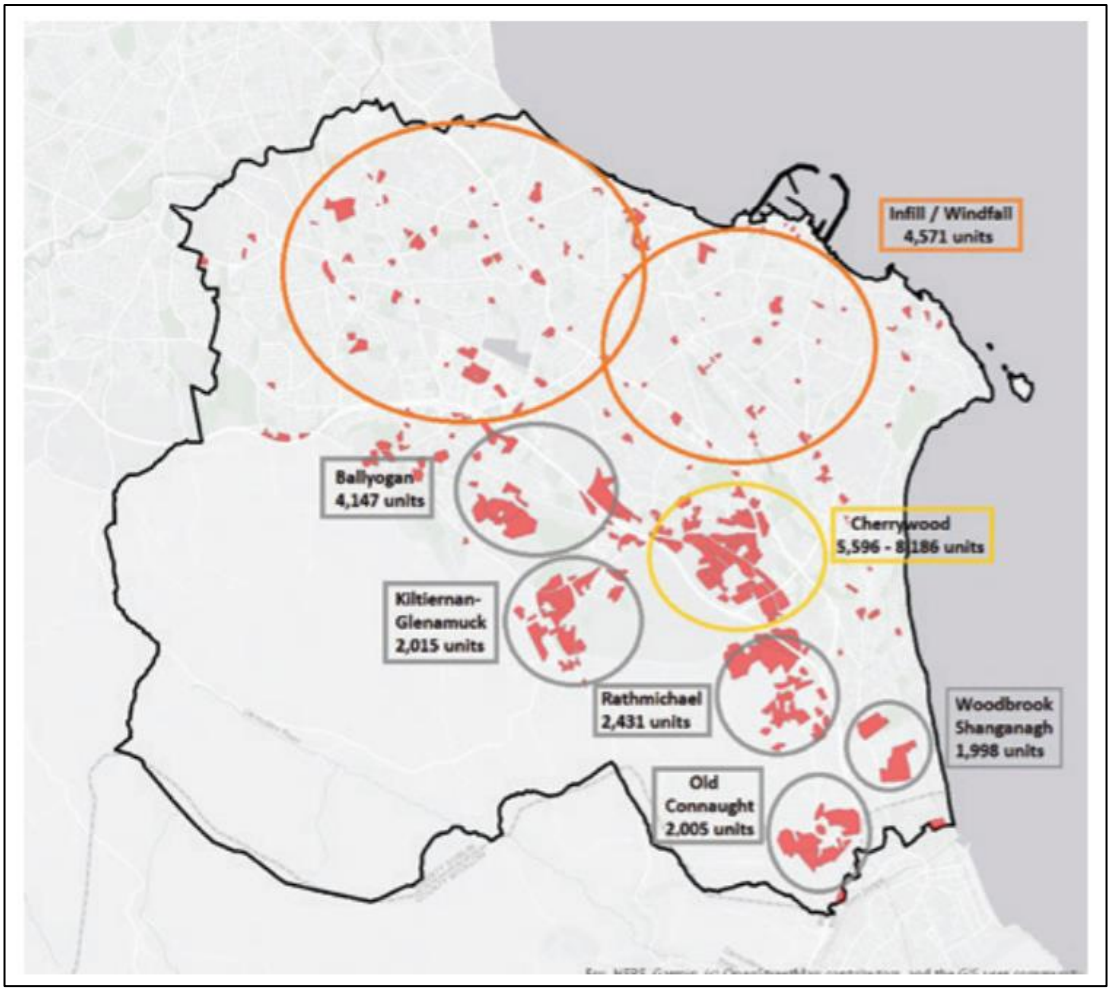


Figure 3.2: Residential Development Capacity Audit – Aggregate Data. (Source: *Dún Laoghaire Rathdown County Development Plan 2022-2028*)

The proposed development, that will provide 934 no. residential units, accords in full with the stated objective in relation to contributing to the County's projected housing needs. The proposed development will make a significant contribution in this regard.

3.4.2 Zoning Objective

In the County Development Plan, the application site is zoned Objective A – *'To provide residential development and improve residential amenity while protecting the existing residential amenities'*, as shown in Figure 3.3 below.

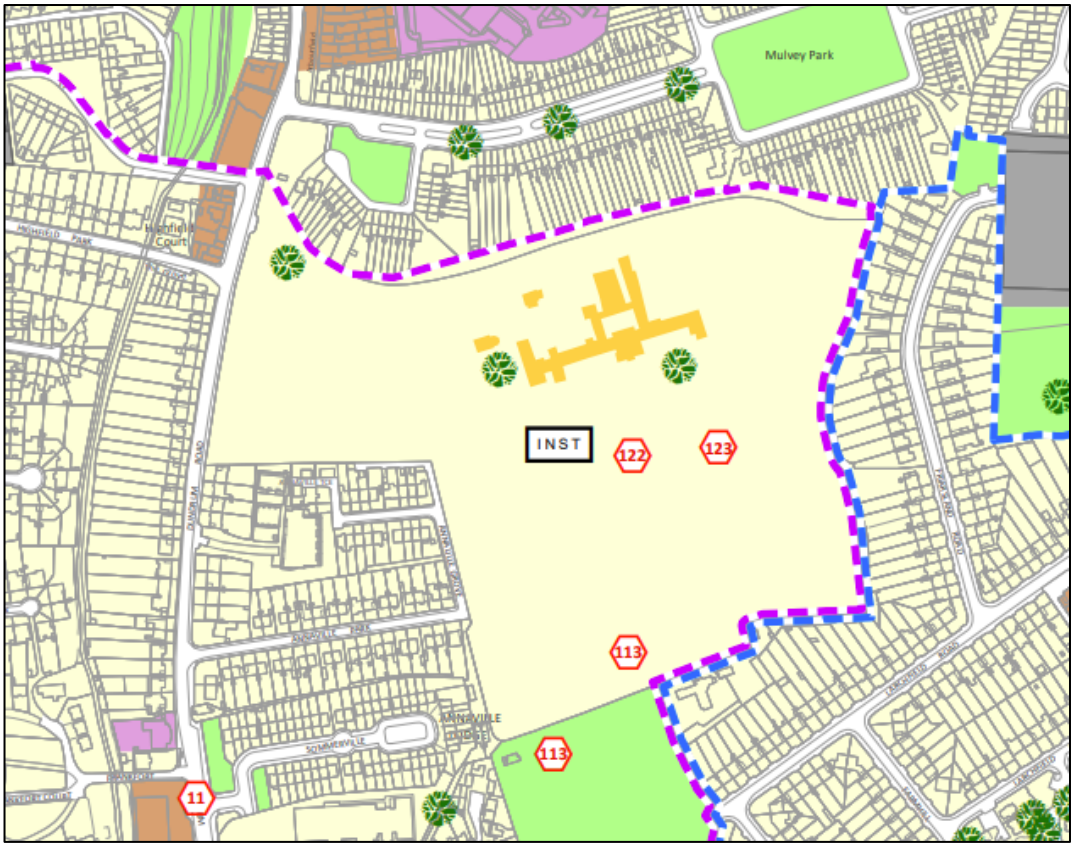


Figure 3.3: Extract from Map No. 1 of the Plan, illustrating the zoning objective and policy designations associated with the application site, incorporating the proposed material alterations.

The site is located in Zoning Objective A. Table 13.1.2 of the Plan, the contents of which are set out in Table 3.1 below outlines *'Residential'* as being *'Permitted in Principle',* as is *Assisted Living Accommodation.*

Table 3.1: Uses permitted in principle and open for consideration for lands zoned objective 'A'. (Source *Dún Laoghaire-Rathdown County Development Plan 2022-2028, as amended*), with proposed uses in bold.

ZONING OBJECTIVE 'A'
'To provide residential development and improve residential amenity while protecting the existing residential amenities'
Permitted in Principle
Assisted Living Accommodation, Community Facility, Childcare Service, *Doctor/Dentist etc., Education,* ***Health Centre/ Healthcare Facility, Open Space,*** *Public Services,* ***Residential****, Residential Institution, Travellers Accommodation.*
Open For Consideration
Allotments, Aparthotel, Bring Banks/Bring Centres, Carpark, Caravan/Camping Park-Holiday, Caravan Park-Residential, Cemetery, Cultural Use, Embassy, Enterprise Centre, Funeral Home, Garden Centre/Plant Nursery, Guest House, Home Based Economic Activities, Hotel/Motel, Household Fuel Depot, Industry-Light, Part Off-License, Office Based Industry, ***Offices less than 200sq.m****., Offices in excess of 200 sq.m, Service Station, Place of Public Worship, Public House, Residential – Build to Rent,* ***Restaurant****, Service Garage,* ***Shop***

***Neighbourhood**, Student Accommodation, Sports Facility, Tea Room/Café, Veterinary Surgery*
a: Where the use will not have adverse effects on the 'A' zoning objective, 'to provide residential development and/or protect and improve residential amenity'.
b: Only as an ancillary component of and directly connected to the primary use and/or ancillary to public transport and/or active travel modes.
c: less than 200sq.m.
d: Only applies to A zoned lands subject to Specific Local Objective 122

The non-residential uses proposed as part of the development include: Community *('Community Facility'),* Childcare facility *('Childcare Service'*), Medical *('Health Centre/Healthcare Facility*) these uses are Permitted in Principle under the zoning objective.

They also include Retail *('Shop Neighbourhood'),* Restaurant (*'Restaurant'*) (including the proposed café in the Gate Lodge), Management Suite (Office less that 200 sq m), each of these uses are *'Open for Consideration'* under the zoning objective.

We note that the *Community Facility; Childcare Service; and Health Centre/ Healthcare Facility* uses are subject to caveat (a) "*Where the use will not have adverse effects on the 'A' zoning objective, 'to provide residential development and improve and improve residential amenity while protecting existing residential amenities'".* The proposed Management Suite will be less than 200 sq m and thus complies with the 'Office less than 200 sq m' provision.

We confirm that these facilities are of an appropriate scale for the subject site, having regard to the predominant residential nature of the development, and will serve the local population and can be easily accessed by foot or bike, appropriate car and cycle parking is provided for these uses, mitigation any potential traffic and transportation related impacts.

The purple dashed line, which encompasses the application site, refers to a '*Boundary of lands for which a Local Area Plan will be prepared'.* This represents the *Dundrum Local Area Plan (LAP*). Compliance with the LAP is further addressed in Section 5.3 of this Report.

The application site is also subject to the INST objective, a number of *Specific Local Objectives* (SLOs) and tree symbols.

This mixed use development, inclusive of 934 no. residential units and 4,380 sq m of the above listed non-residential uses accord with land use zoning Objective A.

3.4.3 INST Objective

The site is subject to an INST objective.

Section 4.3.1.4 contains *Policy PHP21: Development on Institutional Lands* which states the following:

"It is the Policy Objective to retain the open character and/or recreational amenity of land parcels that are in institutional use (such as religious residential or other such uses) and are proposed for redevelopment."

The Plan goes on to state that:

''Where no demand for an alternative institutional use is evident or foreseen, the Council may permit alternative uses subject to the zoning objectives of the area being adhered to and the open character and recreational value of the lands being retained. Where institutional lands – identified by an 'INST' objective on Development Plan Maps – are proposed to be developed:

- *A minimum of 25% of the entire INST land parcel, as determined by the Planning Authority, will be required to be retained as accessible public open space. In determining the area to which the "INST" objective applies the planning authority shall have regard to the existing and historical land use and associations between land uses, and the extent to which any lands contribute to the open character and setting of the core institutional function.*
- *This provision must be sufficient to maintain the open character of the site with development proposals structured around existing features and layout, particularly by reference to retention of trees, boundary walls and other features as considered necessary by the Council (refer also to Section 12.3.7.10).*
- *The provision must be sufficient to maintain and/or improve the recreational value of the site particularly with regard to adding to the sustainable neighbourhood infrastructure of the area.*
- *Any proposal for development other than that directly related to an existing social infrastructure and/or institutional uses, will require the preparation and submission of a masterplan.*
- *Average net densities should be in the region of 35 - 50 units p/ha. In certain instances, higher densities may be permitted where it can be demonstrated that they can contribute towards the objective of retaining the open character and/or recreational amenities of the lands.''*

3.4.4 Specific Local Objectives

There are three Specific Local Objectives (SLOs) which are pertinent to development on the lands of the Former Central Mental Hospital. These are SLO no. 113, SLO no. 122, and SLO No. 123.

SLO No. 113

Specific Local Objective (SLO) No. 113 is relevant at the southern part of Former Central Mental Hospital lands. This designation also applies to the lands at the northern periphery of Rosemount Green, to the south of the subject site. The SLO is set out below;

"Any integration of / or connectivity between the Central Mental Hospital lands with the adjoining residential area should include the development of enhanced sporting facilities/ infrastructure for existing and future residents."

In line with the above, the proposed development introduces enhanced permeability and connectivity with adjoining lands, including the existing open space at Rosemount Green. Through the removal of key sections of the existing boundary wall, the proposal integrates the proposed public open space provision with Rosemount Green to the south. As well as enhancing the public open space provision for existing and future residents, the Masterplan provides a new community facility, inclusive of a multi-purpose hall and changing rooms.

The proposed development accords with this policy requirement and we consider that the redevelopment of this site provides a significant opportunity to deliver new community facilities and infrastructure for both existing and future residents.

SLO No. 122

SLO No. 122 provides flexibility for the subject site in respect of the quantum of office floorspace permissible under the zoning objective A. The SLO is set out below:

> *"To allow offices in excess of 200 sq. metres in the former Central Mental Hospital buildings which are included on the Record of Protected Structures. Any application for offices in excess of 200 sq. metres shall (i) relate only to the former Mental Hospital Buildings with any extension to the building in office use to be only small ancillary structures, (ii) shall include a report that demonstrates that other suitable uses that are permitted in principle or open for consideration have been explored and that the reasons for discounting same relate to the proper planning and sustainable development of the area."*

The proposed Part 10 Application does not propose office floorspace over 200 sq m, the only offices proposed through this Part 10 Application are the ancillary offices associated with the community facility, commercial, childcare and café uses, and the dedicated 123 sq m management suite. As these office do not exceed 200 sq m and are not located in the Protected Structures, which are outside the application boundary, we confirm that the SLO is not applicable in this instance.

SLO No. 123

The site also has a designation of SLO No. 123 which sets out the following:

> *"To ensure that, as Strategic Regeneration Sites, residential provision on the Central Mental Hospital Site and the Old Shopping Centre site will provide for a balanced mix of housing tenure, including affordable homes, and an acceptable mix of larger flexible units, and lifetime adaptable homes to ensure balanced, sustainable communities in Dundrum."*

The proposed development provides a range of residential unit types, including one bedroom, two bedroom, three bedroom apartments, and 2 No. five bedroom assisted living units, which will cater to a range of households. A balanced mix of tenures are proposed including social housing, right size for sale units, cost rental units, affordable for sale and the assisted living units, to meet

the needs and requirements of all sectors of the community. The detail relating to the unit mix including: social housing units, affordable for sale and assisted living units is enclosed with the Application.

Tree Symbols

Three trees and woodland designations are included on the Land Use Zoning Map pertaining to the subject site with the relevant policy objective being OSR7: Trees, Woodland and Forestry:

> *'' It is a Policy Objective to implement the objectives and policies of the Tree Policy and the forthcoming Tree Strategy for the County, to ensure that the tree cover in the County is managed, and developed to optimise the environmental, climatic and educational benefits, which derive from an 'urban forest', and include a holistic 'urban forestry' approach.''*

The existing landscape at the subject site is characterised by a significant number of large mature trees. The proposed development derives from a landscape-led masterplanning exercise, which was informed by consultation with the DLRCC Parks Department, as well as the requirements of the Dundrum LAP. This determined the sensitive and compatible arrangement of built form within an existing mature landscape. As a result, the proposed development maintains the open character of the lands, together with the incorporation of the distinct, mature and characterful landscape features such as the walled garden and mature trees.

The planning application submission is supported by a detailed *Arboricultural Assessment* which notes that the loss of the tree vegetation has been mitigated against as much as possible with the retention of a lot of the more prominent trees on these grounds and in particular the main groups of trees around the front of the existing historic buildings and on the entrance avenue which will help screen and blend the proposed development into its surrounds.

New tree planting is also proposed as part of the landscaping which will complement the development and its incorporation into the surrounding area. It will also help to provide good quality and sustainable long-term tree cover and as it establishes and grows in size, it will be continuously mitigating any negative impacts created with the loss of the existing tree vegetation to facilitate the proposed development.

We therefore conclude that the proposed development complies with the Development Plan in this regard.

3.4.5 Residential Policy

Residential Density

Section 4.3.1.1 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."*

The proposed development, including 9 No. blocks ranging between 2 and 8 storeys, complies with national guidelines pertaining to residential density and compact growth as demonstrated at Section 4.3 of this Report.

Throughout this planning application submission, we demonstrate that the proposed development provides for an appropriate residential density and has been designed to provide a good levels of residential amenity of future residents of the scheme, in addition to preserving the existing residential amenity of adjoining residents. The proposal is therefore considered to comply with the above policy.

Overall Housing Mix

Section 4.3.2.3 contains Policy Objective PHP27: Housing Mix which states the following:

"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 Interim Housing Need Demand Assessment (HNDA) and any future Regional HNDA."

In accordance with the Development Plan, a variety of dwelling unit types and sizes are proposed as part of the scheme, which will be suitable for a variety of household types. The proposed scheme will contribute to the wider tenure mix in the local area.

Social Housing

Section 4.3.2.6 contains Policy Objective PHP31: Provision of Social Housing which states the following:

"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."

The proposed development will be an 100% affordable and social housing scheme. 19% of the units (181 No. units) will be social units, these comprise of 179 No. Social Homes (19.2% of the total), 2 No. Assisted Living units (0.2% of the total).

The remaining 753 No. units are comprised of 52 No. Right Size for Sale units (5.6%), 122 no. Affordable for Sale units (13%) and 579 no. Cost Rental units (62%) which will be delivered as affordable housing under the *Land Development Agency Act 2021.*

Thus, the proposed development complies with the requirement to provide social units, whilst providing a balanced community.

3.5 Local level - Dundrum Local Area Plan 2023

3.5.1 Core Strategy and Character Area

The site is located within the Dundrum Local Area Plan (DLAP) boundary. The Local Area Plan sets out the policies and objectives to guide development in Dundrum and came into effect on 21st March 2023.

Chapter 2 sets out the overall strategy for the built form in the within the local plan boundary. Section 2.3.2 identifies Character Areas relating to the site. The Former Central Mental Hospital (CMH) has been divided into two sub-character areas:

> *'' a. The main hospital buildings complex (which also includes the nearby Chapel and former agricultural buildings),*
>
> *b. The demesne, consisting of the open space character lands forming the majority of the site, together with the perimeter wall, gate lodge, walled garden, former agricultural buildings and other modern structures and landscape features within the grounds (see Chapter 8 for further details).''*

The site has also been identified as one of four Key Development Areas (KDAs) for the Dundrum Area.

3.5.2 Urban Design and Placemaking Vision for the Dundrum LAP area

Section 2.5.1 of the LAP sets out the main urban design principles for Dundrum as follows:

- *''Strengthening the urban fabric of the area by providing new developments which enhance the public realm and improve the streetscape.*
- *Reinforcing local identity and sense of place by respecting the heritage of the area while providing for new adaptable modern structures.*
- *Providing a coherent and permeable urban structure.*
- *Ensuring pedestrian and cycle permeability and connectivity.*
- *Addressing physical severance.*

- *Encouraging a fine urban grain in the major town centre and in other locations as appropriate. Providing for inclusive design, universal access and movement for all.*
- *Promoting an efficient use of land by way of compact growth.*
- *Improving sustainability by enhancing SuDS and the ecosystem services of the area''*

The proposed development adheres to these urban design principles:

- The imposing boundary wall is altered to provide additional entrances and linkages, with a section to the south at Rosemount Green removed, and sections along Dundrum Road reduced in height;
- the site layout respects the heritage buildings and by opening up the site, the older buildings and associated retained landscape will be incorporated into the wider urban fabric, reinforcing a sense of place and local identity;
- improved permeability and connectivity informed the site layout, significant enhancements to pedestrian and cycle permeability are provided along with connectivity to adjoining lands;
- physical severance is minimised by providing new linkages to the north, south and west;
- Inclusive design, universal access and movement for all informed the layout of the scheme;
- Appropriate residential density and compact growth are delivered;
- The scheme includes SuDS measures, including wetland areas.

Section 2.5.2 sets out four policies relating to urban design in the Dundrum area. These are as follows:

''Policy DLAP1 – Urban Design:
It is Policy to promote a high standard of urban design in Dundrum in accordance with the relevant policies set out in the County Development Plan, Section 28 Guidelines and other relevant guidance documents including: The 'Urban Design Manual' (2009), and the Design Manual for Urban Roads and Streets (2019). Development shall be carried out in a design led manner that prioritises place making and accords with the Urban Design and Placemaking Vision for the Dundrum LAP area as set out in section 2.5.1.''

''Policy DLAP2 – Urban Design Dundrum:
It is Policy that development shall contribute positively to the distinct character of Dundrum by successfully marrying the new architecture with the historic structures in terms of blocks and plots that are legible, permeable and appropriate in land use, scale, building height, street width, urban grain and street frontage.

''Policy DLAP3 – Services:
It is Policy that attention shall be paid at an early stage to the location of all building services, particularly where they interface with the public realm (including ESB substations). All building services shall be carefully designed to be visually acceptable and located to avoid an over concentration on any particular street or frontage. Proposals for significant development shall clearly demonstrate how provision of such services is to be addressed.''

''Policy DLAP4 – Roof Services:

It is Policy that services on roofs, including lift and stair over runs, ventilation and smoke shafts, photovoltaic cells and other plant and services will be so designed and sited so as not to be visually prominent. In this regard:

- *Structures housing services shall be set back from the building edge.*
- *Natural ventilation of buildings will be promoted.*
- *Roof structures shall be appropriately screened.*
- *Materials of structures and screening shall be of a high quality and light in colour.*
- *All structures on roofs shall be limited in number and size and avoided where possible.*
- *Any roof structures shall not conflict with the requirements for green and blue roofs set out in the DLR County Development Plan.*
- *Proposals for significant development shall clearly demonstrate how provision of such services is to be addressed.''*

The proposed development and the associated Masterplan were informed by good urban design principles and the DLAP Policies. The enclosed Masterplan and Architectural Design Report address the design and urban design of the proposed development in detail.

- The proposed development adheres to the Urban Guidance noted in Policy DLAP1, as discussed in the section directly above. A DMURS Compatibility Statement prepared by ILTP is enclosed, and the Urban Design Manual informed the proposed development (see the enclosed Architectural Design Report and Section 4.4 of this Report).
- The proposed development will have a distinct character marrying new architecture with the historic buildings on site, the overall site layout was informed by the LAP and detailed Master planning it is considered consistent with DLAP2.
- Service buildings are appropriately designed and located in order to minimise impact on the public realm in accordance with DLAP3.
- Roof Services are minimised and are not visually prominent, with plant largely provided at ground level/lower ground level, or within buildings and consistent with DLAP4.

3.5.2 Former Central Mental Hospital Key Development Area (CMH KDA)

The site is designated as a Key Development Area (KDA). Section 2.8.5.2 sets out the following vision for the site:

''To provide a new permeable predominantly residential neighbourhood which provides for the redevelopment of the existing land parcel, making suitable use of the protected structures on site, retaining the open character and landscape features of the lands while providing amenities for the new and existing population and suitably integrating with the adjoining residential area, neighbourhood centre and Rosemount Green.''

The vision goes on to note that the permission has been granted on the site and that the ''*Planning Authority were broadly satisfied with much of the design approach put forward in the Land Development Agency non statutory Masterplan….''*

''Notwithstanding, background work on the Plan examined how this Masterplan layout could be optimised so as to provide for the best amenity for future residents while still being mindful of the impact on the existing surrounding community. Some tweaking of height in perimeter block layouts, such as increasing the height of centrally located blocks which run north south and lowering southern perimeter blocks that run east west could result in more daylight and sunlight internally in apartments and also in the central communal amenity spaces. Taller blocks could be located further away from the protected structures.

The former Central Mental Hospital building and outbuildings are unlikely to be suitable for traditional residential accommodation of a modern standard due to their internal layout, cellular plans, inadequate window sizes and conservation constraints. For this reason, another use may be possible on this site, in particular the main building, e.g. office, hotel, community or educational use. It may be possible to look at the addition of residential typologies to the rear of the main building subject to high quality design and a conservation appraisal of the site in the round.''

The DLAP sets out specific objectives for and design principles for the site including a diagram outlining the indicative form for the CMH site.

Fig. 3.4: Indicative urban form for the CMH site as defined in the DLAP

The design of the proposed development has been informed by the previous planning application as well as the DLAP. Heights have been reduced at the periphery of the site to the northeast and southwest in particular, with higher buildings located in the centrally located blocks running north south, which are well set back from the main Protected Structure with mature trees retained in the intervening open space.

An updated Masterplan is enclosed with this Application, which details the future use of the former Central Mental Hospital building and associated structures as an enterprise centre and community use, detailed proposals for which will be brought forward via a separate future Planning Application in due course.

3.6 Planning History of the Site

The only planning history on the site is a previously permitted Strategic Housing Development (SHD) (ABP ref. no. 313176-22) granted in May 2023. This scheme confirms the acceptability in principle of the site's re-development for higher density residential purposes.

In summary, a 10-year permission was granted for 852 no. residential units (permission originally sought for 977 no. units) with a restaurant, retail units, medical units, creche and community centre. At the time of writing, this permission is currently under judicial review (JR).

3.7 Development Projects

3.7.1 Committed (Permitted/ Under Construction)

The below projects have been granted planning permission by Dún Laoghaire-Rathdown County Council (DLRCC) or An Bord Pleanála (ABP). This comprises development within 2km of a 'major' scale and nature. 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. 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 projects identified as having potential for cumulative impact are within a 1km radius of site. This is set out in further detail in Chapter 23 Cumulative Impacts.

Table 3.2: Surrounding development permitted projects identified as relevant to the assessment of the proposed project.

Reg. Ref.	Location	Development Description	Decision date	Distance from the site
ABP30943021	2.12 ha at Our Lady's Grove, Goatstown Road, Dublin 14	698 no. student bedspace accommodation and associated site works.	03/06/2021	0.26 km

ABP31128721	c.0.9ha at No. 97A Highfield Park (D14P710), and No. 1 Frankfort Castle (D14 HY03), No. 2 Frankfort Castle (D14DE72) and Frankfort Lodge (D14C9P2), Old Frankfort, Dublin 14	115 no. apartments, creche and associated site works.	20/12/2021	0.39 km
ABP31182621	Lands at Knockrabo, Mount Anville Road,, Goatstown, Dublin 14	227 no. apartments and associated site works.	08/03/2022	1.14 km
ABP31013821	Mount Saint Mary's and Saint Joseph's, Dundrum Road, Dundrum, Dublin 14	Demolition of existing buildings on site and part of the granite wall along Dundrum Road, excluding Small Hall, construction of 231 no. apartments, childcare facility and associated site works.	25/08/2021	0.95 km
ABP30768320	Green Acres Convent, Drumahill House and the Long Acre, Upper Kilmacud Road, Dundrum, Dublin 14	Provision of 54 no. additional apartments on previously permitted development of 253 no. apartments under ABP-304469-19, increase in childcare facility and associated site works.	10/11/2020	1.44 km
ABP30446919	Greenacres, Longacre and Drumahill House, Upper Kilmacud Road, Dundrum, Dublin 14	253 no. apartments and associated works.	26/08/2019	1.44 km
ABP248265 D16A/0818	Green Acres Convent, Kilmacud Road Upper, Dublin 14.	Demolition of the former Green Acres Convent and the construction of 120 no. apartments in 2 blocks ranging in height from 2 to 5 storeys with all associated site works.	11/09/2017	1.45 km
D20A/0328	University College Dublin, Belfield, Dublin 4	Extension of car park to provide 239 no. spaces	08/12/2020	1.09 km
TA0001	University College Dublin, Belfield, Dublin 4.	10 year permission for 512 student accommodation units (3006 no. bed spaces) including student facility centre, car parking and all associated site works.	09/01/2018	1.09 km
ABP315883	'Dunelm', Rydalmount, Milltown Road, Dublin 6	Demolition of structures, construction of Build to Rent apartments comprising of 63 apartments in 2 blocks with all associated site works	18/01/2024	1.23 km

ABP305261	Building 5, Dundrum Town Centre, Sandyford Road, Dundrum, Dublin 16	107 no. apartments, cafe and associated site works.	02/12/2019	1.3 km
ABP300024	Lands at the former Paper Mills site, bounded by the River Dodder to the East, Clonskeagh Road to the West, Clonskeagh Bridge to the South West, Dublin 6	Increase in apartment units from 96 to 116 with increase in block heights from 3 to 4 storeys with 30 additional parking spaces & additional bicycle spaces & associated site works.	04/07/2018	1.63 km
ABP311439	Site measuring 0.29ha, Bounded by Kilmacud Road Upper to the north, Drummartin Link Road to the west, and Hazelbrook Apartments to the east and south, Dublin 14	Demolition of existing disused agricultural shed structure and the construction of a residential block 3 to 6 storeys consisting of 52 dwelling units	27/04/2022	1.75 km
ABP313048	9/14 and 11C, Milltown Road, Milltown, Dublin 6. The application site consists of the former Murphy and Gunn site (currently Autovision) and the former Saint Joseph's Junior Education Centre site.	Construction of 97 Build to Rent apartments	26/07/2023	1.78 km
ABP312539	Cunningham House, Trinity Hall, Dartry, Dublin 6.	Demolition of existing building, construction of 358 no. student bedspace accommodation, 4 no. staff apartments and associated site works.	04/07/2022	1.8 km
ABP312170	Marmalade Lane, Wyckham Avenue, Dundrum, Dublin 16.	531 no. Build to Rent apartments, creche and associated site works.	08/04/2022	1.91 km
ABP309931	24,26 28, Fosters Avenue, Mount Merrion, Blackrock, Co Dublin	Demolition of existing buildings on site and construction of 72 no. apartments, communal open space areas, parking spaces, vehicular, pedestrian and servicing access from Foster's Avenue, ESB substation and switch room, and all associated site works	28/08/2023	1.98 km
ABP31969724	Mount Anville Lands, Lower Kilmacud Road, Dublin 14, D14KX80	Demolition of existing building and construction of 114 residential units	15/04/2024	1.81km

3.7.2 Planned

The below projects are planned projects that are at various stages of the planning process. They key distinction from the projects listed above is that they do not have planning permission at the time of writing. This comprises development within 2km of a 'major' scale and nature. 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. 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 projects identified as having potential for cumulative impact are within a 1km radius of site. This is set out in further detail in Chapter 23 Cumulative Impacts.

The below list includes the surrounding planning applications that were live on 30 July 2024. This date was considered to be the appropriate cut-off date to enable to completion of the EIAR and submission of planning application. It is noted however that the status of these applications may change before a decision is made on the subject planning application. For example, following the cut-off date but prior to the lodgement of the subject planning application, the planning application at Sommerville House (An Bord Pleanála Ref. No. 312935-22) was refused planning permission. This planning application has been taken into account in the cumulative assessment of the proposal as per Table 3.3. This is also set out in the enclosed *Planning Report* accompanying this planning application and in Chapter 23 Cumulative Assessment of this EIAR.

Table 3.3: Surrounding development planned projects identified as relevant to the assessment of the proposed project.

Reg. Ref.	Location	Development Description	Registered Date	Distance from the site
ABP31293522	0.79 ha at Sommerville House, Dundrum Road, Dublin 14	Demolition of all structures, construction of 111 no. apartments and associated site works	07/03/2022	0.21 km
ABP31323522	0.34 hectares comprising the car sales premises currently known as Vector Motors (formerly known as Victor Motors), Goatstown Road, Dublin 14, D14FD23	Demolition of existing building on site, construction of 221 no. student bedspaces and associated site works.	06/04/2022	0.53 km
ABP31322022	site 3.5335ha incorporating the old Dundrum Shopping Centre known as Main Dundrum Street Village Centre (D14K3T7)	Demolition of all existing buildings on site, construction of 881 no. apartments, creche and associated site works.	05/04/2022	0.79 km

ABP316470	Site of approx. 0.24 ha on lands at Frankfort Centre, Dundrum Road, Dublin 1	The construction of 64 no. apartment units in the form of a 5-6 storey apartment blocks, the provision of a ground floor retail/cafe unit, and Public Realm upgrades to Dundrum Road and all other associated site works above and below ground associated with the proposed development. An NIS has been submitted with the application.	25/4/2023	0.37 km

3.7.3 Details of Future Planning Application at the Subject Lands

This section provides further detail in relation to the future planning application on the masterplan lands which will be prepared once the proposed Part 10 application has been decided. This proposal relates to the Former Central Mental Hospital lands and reflects the second component of the delivery of the site-wide Masterplan.

The proposed development strategy in respect of the delivery of the site-wide Masterplan is covered in depth in the enclosed *Planning Report*, prepared by Tom Phillips + Associates

For context and for the purposes of cumulative assessment, an overview of the future planning application is set out below, including an extract from the draft Site Plan for the future application showing the red line boundary and site layout.

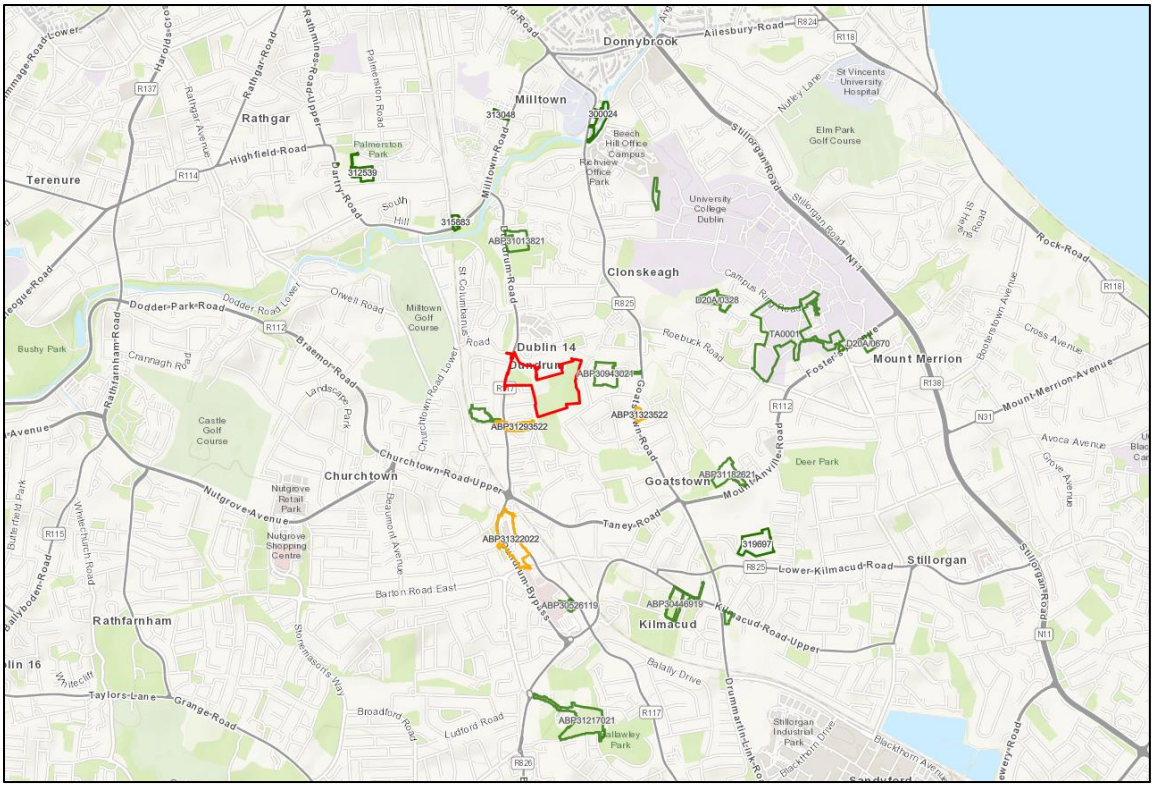


Figure 3.5: Map illustrating location of committed and planned development considered for the cumulative assessment.

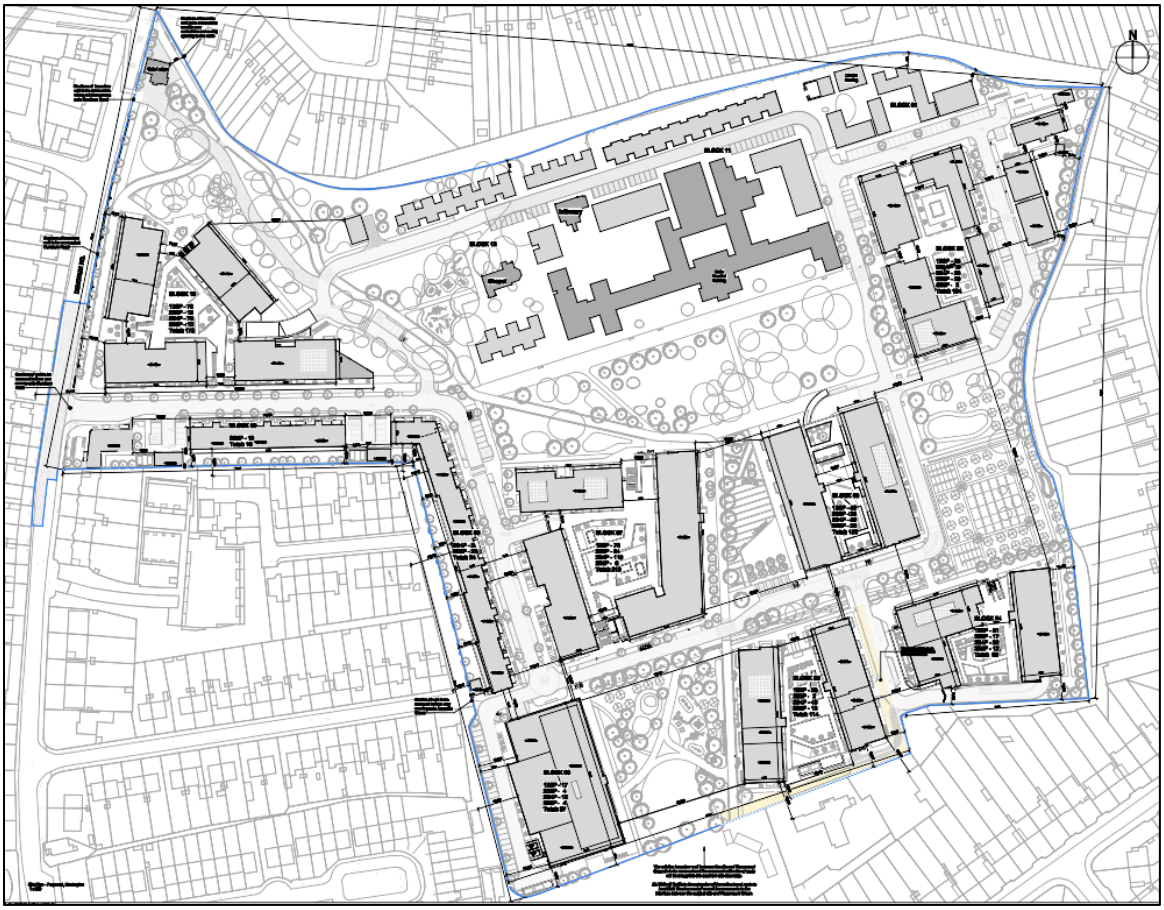


Figure 3.6: Extract from the Proposed Masterplan Site Plan prepared by Reddy A+U Drawing No. DCD-02-SW-ZZZ-DR-RAU-AR-1050 P3S-1

At the time of writing, it is envisaged that the future planning application will comprise 68 no. residential units and 5,453 sq m of non-residential floorspace:

- 2778.68 sq m of demolition, including:
  - Outbuildings and ancillary structures to rear of Main Hospital Building;
  - Eastern wing of Main Hospital Building (later addition to building);
  - Chimney structure;
  - Structures adjacent to farm buildings.

- Change of use and adaptation of the following existing buildings:
  - Main Hospital (5,153 sq m) – Enterprise Centre
  - Chapel (107 sq m) – Community Use
  - Infirmary (158 sq m) – Community/ Enterprise Use
  - Coach House (35 sq m) – Storage
  - Farm Buildings (246 sq m) – Residential
  - Workshops (151 sq m) – Residential

- New residential buildings:
  - Block 01 (1,111 sq m (incl. farm buildings) – 12 no. residential units

- Block 11 (3,228.9 sq m) – 36 no. residential units
- Block 12 (2,133 sq m) (incl. workshops) – 20 no. residential units

- 62 no. car parking spaces.

4.0 CONSIDERATION OF ALTERNATIVES

4.1 Introduction

The consideration of alternatives is necessary to evaluate the likely environmental consequences of a range of development strategies for the site within the constraints imposed by environmental and planning conditions.

4.2 Legislative Context

Article 5 (1) of the EIA Directive 2011/92/EU (as amended) 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 the 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 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 is 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

A 'do-nothing scenario' 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 (Zoning Objective A, SLO No. 113, SLO No. 122 and SLO No. 123) and Core Strategy contained within the *Dún Laoghaire-Rathdown County Development Plan 2022-2028*.

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 former Central Mental Hospital buildings and grounds on the basis that they are now disused following the scheduled move of the facility to Portrane.

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.

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.

4.3.2 Alternative Locations

The Former Central Mental Hospital lands are state owned and deemed no longer required for institutional use. The planning policy provisions at all tiers support the redevelopment of the subject lands, as fully set out in the *Statement of Consistency including Dundrum LAP Statement of Consistency* accompanying this planning application, having regard to the 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. Furthermore, we note the identification of the site as a Strategic Regeneration Site in the *Dún Laoghaire Rathdown County Development Plan 2022-2028.* The *Dundrum Local Area Plan (LAP) 2023* has also identified the site as a Key Development Area with the current proposal aligning with the indicative urban form for the site as set out in the LAP.

As well as this, the principle and general built form and layout were considered acceptable by An Bord Pleanála under the previously permitted Strategic Housing Development (SHD) (ABP ref. no. 313176-22) granted in May 2023. This scheme confirms the acceptability in principle of the site's re-development for higher density residential purposes.

As such, from a planning perspective, the site is considered appropriate for a development of the proposed nature and will deliver housing on state lands, in line with an identified national priority.

In addition to the above planning considerations, the subject site was considered to be a suitable location for the proposed development taking into account the following environmental considerations:

- 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 in close proximity to a Major Town Centre (Dundrum Town Centre) 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 existing social infrastructure, including open space, educational institutions, retail and leisure provision in the surrounding area has the potential to support the proposed population.

- 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

The proposal has evolved in line with the layout set out in the Dundrum LAP, this includes the block layout, height strategy, movement strategy principles relating to provision of green space. Since the approval of the Strategic Housing Development scheme (SHD) (ABP ref. no. 313176-22), alternative designs to further rationalise the design were considered as more information came to light about the site, the planning context evolved and as a result of the continued engagement with Dún Laoghaire-Rathdown County Council on the proposal. Therefore, while the design evolved prior to the submission of the SHD application, this proposal is based off the scheme that has already been consented by An Bord Pleanála and this section does not detail the design exercises and master-planning that took place prior to arriving at the SHD proposal which are all fully detailed in the EIAR relating to the SHD.

4.3.3.1 Alternative Design 1 - Strategic Housing Development (SHD) Proposed Scheme (ABP ref. no. 313176-22)

A Strategic Housing Development (SHD) was submitted to An Bord Pleanála in 2022. In summary, the proposed development comprised of 977 no. new homes, 3,889 sq m of non-residential floorspace and approximately 3.05 ha of public open space. The development also

included the partial demolition of the perimeter wall and creation of new vehicular, cyclist and pedestrian access points as well as the demolition of the existing structures on site (3,497sqm). Table 4.1 below provides the key development statistics.

Table 4.1: Development Statistics for SHD ABP ref. no. 313176-22

Development Statistic	Proposed Development
Site Area	9.6 ha
No. of Residential Units	977 (957 no. apartments and 20 no. houses)
Non-Residential Floorspace	3,889 sqm
Gross Residential Density	102 units per hectare
Net Residential Density	150 units per hectare
Height	2 – 6 storeys (with part-basement)
Car Parking	547 no. spaces (489 no. residential spaces and 58 no. non-residential and visitor)

The proposal was arranged in 10 blocks (including the Gatelodge) with 3.05 ha of public open space. This version of the proposal was arrived at following an extensive master-planning exercise and engagement with the Planning Authority. Full details of the evolution of this version of the proposal are available in the EIAR relating to the SHD (ABP ref. no. 313176-22).

Figure 4.1: Proposed Site Plan for SHD ABP ref. no. 313176-22

While a 10-year permission was granted in May 2023 by An Bord Pleanála (Ref. ABP-313176-22), this permission was notable in respect of several conditions attached to the decision, principally Condition No. 4. This condition necessitated the amendment of significant elements of the internal design of the development as initially proposed resulting in less residential units in being provided '*to ensure an appropriate mix of units generally in*

accordance with the Housing Need and Demand Assessment in Appendix 2 and Policy Objective PHP 27 of the Dun Laoghaire-Rathdown County Development Plan 2022-2028 and in the interest of residential amenity including improved access to daylight and to prevent undue overlooking'.

Ultimately this permission fundamentally altered the proposed design of the site including a reduction in the number of residential units permitted to 852 no. residential units. Therefore, Alternative Design 1 as proposed was discounted by An Bord Pleanála and resulted in Alternative Design 1A.

4.3.3.2 Alternative Design 1A – Strategic Housing Development (SHD) Approved Scheme (ABP ref. no. 313176-22)

The approved SHD scheme resulted in a condition that significantly reduced the number of residential units permitted. A comparison of the key development statistics arising from the proposed and permitted scheme are set out in Table 4.2

Table 4.2: Comparison of development statistics for SHD ABP ref. no. 313176-22

Development Statistic	Proposed Development	Approved Development
Site Area	9.6 ha	9.6 ha
No. of Residential Units	977 units	852* units
Non-Residential Floorspace	3,889 sqm	3,889 sqm
Gross Residential Density	102 units per hectare	88 units per hectare
Net Residential Density	150 units per hectare	130 units per hectare
Height	2 – 6 storeys (with part-basement)	2 – 6 storeys (with part-basement)
Car Parking	547 no. spaces (489 no. residential spaces (0.5 spaces per units) and 58 no. non-residential and visitor)	547 no. spaces (489 no. residential spaces (0.58 spaces per units) and 58 no. non-residential and visitor)

**ABP Condition No. 4 in respect of the permitted SHD stated that with the proposed design amendments in place, the revised scheme would comprise 852 no. units. Following a design exercise which implemented the terms of the condition in plan form, the revised scheme was found to actually comprise of 848 units.*

Whilst the basis for the attachment of this condition by the Board is acknowledged, this resulted in a permitted development that was significantly smaller in unit terms than what was initially proposed and gave rise, likely inadvertently, to a somewhat inefficient form of development arising from a multitude of internal design changes.

It was therefore considered that in order to facilitate the most appropriate and efficient form of development on the lands and to better meet the objectives of the applicant (Dún Laoghaire Rathdown in partnership with the Land Development Agency) in that more social and affordable housing could be provided on the site than what was consented, a more comprehensive re-design of the scheme was required and Alternative Design 1A has been discounted.

4.3.3.3 Alternative Design 2 – Large-scale Residential Development (LRD) s247 scheme

A re-design of the scheme was initially progressed as a Large-scale Residential Development (LRD). The re-design was submitted to the Planning Authority for a s247 pre-planning consultation which was held in February 2024.

As well as the need to redesign to better provide for social and affordable housing, the planning policy context had evolved since the granting of the SHD. An updated Development Plan was adopted, the Dundrum LAP was adopted in 2023 and new national guidance was introduced including the *Sustainable Residential Development Compact Settlement Guidelines 2024* and the *Design Standards for New Apartments 2023.* Three buildings within the wider masterplan lands were also designated as protected structures – Asylum (RPS No. 2072); Catholic Chapel (RPS No. 2071) and the Hospital Building (RPS No. 2073).

This re-design broadly followed the form and layout of the SHD application, in line with the Dundrum LAP, and comprised of 934 no. units consisting of 20% 3+ bedroom units, 51% 2-bedroom units and 29% 1-bedroom units. The following highlights the main changes that were made to the layout and built form of the site:

- Buildings Heights were reduced to two-storeys along the site perimeter for blocks 2, 8 and 9.
- Blocks 8 and 9 were rearranged into a terraced layout, and the omitted block as part of the ABP decision has been excluded.
- 2 no. 5-bed Assisted Living Units were proposed for St John of God residents
- The non-residential floorspace increased to facilitate a slightly larger creche to accommodate for the extra number of units
- The central blocks 3 and 7 were increased in height by one and two additional storeys respectively which follows the recommendations of the Dundrum LAP. This is achieved with apartment buildings ranging from 2 to 8 storeys in height arranged in suitable locations around the site, with 8 storey blocks located in line with the *Dundrum Local Area Plan 2023* which states that:
  "Heights shall be sensitive to adjoining areas and shall generally range from 3 to 7 storey. Elements in excess of 7 storeys may be provided at the 'Designated location of Height'"
- The arrangement of blocks 3 and 7 were altered to improve views through these blocks to and from the protected structures, increasing the permeability of the scheme.
- The local road access to basement/undercroft carparks serving blocks 4 and 5 were combined and positioned between these blocks for a more efficient road network, and improving the public open space west of block 5.
- General revisions to block 6 which consolidated the community uses and enhanced the residential access from the open space east of block 6.

Table 4.3: Comparison of development statistics

Development Statistic	Proposed SHD Development	Approved SHD Development	Proposed s247 Scheme
Site Area	9.6 ha	9.6 ha	9.6 ha
No. of Residential Units	977 units	852 units	934 units
Non-Residential Floorspace	3,889 sqm	3,889 sqm	3,992 sqm
Gross Residential Density	102 units per hectare	88 units per hectare	98 units per hectare

Net Residential Density	150 units per hectare	130 units per hectare	143 units per hectare
Height	2 – 6 storeys (with part-basement)	2 – 6 storeys (with part-basement)	2 – 8 storeys (with part-basement)
Car Parking	547 no. spaces (489 no. residential spaces (0.5 spaces per units) and 58 no. non-residential and visitor)	547 no. spaces (489 no. residential spaces (0.58 spaces per units) and 58 no. non-residential and visitor)	TBC – ratio of c. 0.50

Figure 4.2: Proposed LRD site plan

While this scheme is consistent with the requirements set out in the Dundrum LAP, DLRCC made recommendations to further strengthen the proposal, summarised as follows:

Car Parking Ratio and approach to Bike Parking numbers:

- DLRCC noted the introduction of the Sustainable Residential Development and Compact Settlement Guidelines (SRDCS), and the guidance around SPPR3 Car Parking. The Scheme should align with the SRDCS Guidelines and the DLRCC policy in relation to parking.

Environmental Enforcement:

- Concern around phasing, duration of phasing and construction impacts. Further details to be added to the Phasing Plan to address concerns.

Part V Provision:

- Details on Part V provision needs to be clearly stated.

Conservation Planning:

- Block 2 western block protruding beyond the line of the Main Hospital Building and this would encroach on the curtilage of the Hospital as a protected structure.
- Block 3 concern about the impact of the two linear blocks on the Main Hospital. A preference for the previous 6 storey 'wrap around' block was noted.
- The LAP indicates two locations for height increase which doesn't extend along the full length of the Blocks, but the LAP has a slight contradiction with the text description of where height should be and the map shown with two red dots.
- CGIs should be submitted to understand the potential impact of views from the hospital in more detail. These should be prepared to show impact both from the protected structure and also to it.

Lighting & EV:

- The less lighting the better. Where lighting is used, it should be low level across the entire project.
- DLRCC noted that in relation to EVs, due to policy changes in relation to design, location and quantum, it was recommended to liaise with DLRCC continually to ensure the design reflect the most up to date requirements.

Hospital & Adaptive Re-Use:

- DLRCC made it clear that the strategy for the Adaptive Re-Use of the Protected structures should be integrated into the LRD Scheme

Unit Mix:

- The scheme mix was discussed in the round with further review to be undertaken by the LDA.

General Planning Issues:

- The Previous schemes were very strong on the ground floor uses, and this should continue. Masterplan will need to be updated to reflect the urban design issues.

In order to take on board this feedback and ensure consistency with planning policies, the scheme evolved and progressed to Alternative Design 3.

4.3.3.4 Alternative Design 3 – Engagement with DLR May 2024

Following continued engagement with DLRCC and given the shared aims of the Council and the LDA to increase the provision of social and affordable housing, a decision was made to jointly submit a Part 10 planning application directly to An Bord Pleanála.

In May 2024, a further iteration of the scheme was submitted to DLRCC setting out the changes to the design and layout following the feedback received in February 2024. These changes can be summarised as follows:

- The first change involves Block 2, where a gable end of one of the buildings was positioned beyond the front elevation of the Main Hospital building which stands opposite. The alignment between the two structures has been corrected and

improves the organisation of the masterplan, and the clarity of the routes around Block 2.

- The increased heights to Blocks 3 and 7 were maintained as per the s247 submission and the case around consistency with the LAP and development plan was reaffirmed
- The buildings associated with the heating strategy for the development were revised generally whereby standalone energy centres were replaced with centralised plant rooms and air source heat pump enclosures serving each block at lower ground and ground floor levels.
- The proposed development has been composed to reflect the masterplan ideals and that of the original SHD to maintain and enhance the existing green spaces, maximising the publicly accessible open space, while providing retail uses, amenity space and a community centre at Block 6. The second entrance to the site has been maintained as the main vehicle and delivery route for Retail Units and the Creche, while the existing entrance will be for pedestrian and cycle access only, as well as emergency vehicles

In terms of the evolution of the masterplan, the extent of protected structures within the Main Hospital building campus was altered in the *Development Plan 2022-2028,* and the resulting impact on the Masterplan with regard to street layouts, hospital adaptive re-use and design of Block 11 was assessed. During a site visit with DLRCC Conservation Officer and the LDA Design team, it was agreed that a proposal which would reconsider the extent of structures to be preserved is justified.

During a site visit (May 2024), and ongoing discussions with the DLRCC Conservation Officer and LDA design team Conservation Architect, the high quality and well-preserved nature of the c.1900 extension to the laundry was noted. This building is not within the outline of the Protected Structure but its contribution to the overall significance of the site is high and the conservation architect recommends its retention.

In discussion with the DLRCC Conservation Officer these aspects of site phasing were broadly accepted as a basis for reducing the northern extent of the laundry, removing the 1890's extension, but retaining the c.1900 eastern extension. It was however stressed by the Conservation Officer that Section 57 paragraph 10(b) of the *Planning and Development Act* states that "A planning authority, or the Board on appeal, shall not grant permission for the demolition of a protected structure or proposed protected structure, save in exceptional circumstances." As the extent of structure designated for protection was defined before a full investigation of the building had been possible, and the now-known facts not available at that time, we believe a strong case exists for revisiting the extent of protection, and that such a revision will not significantly harm the significance of the building. The masterplan has evolved to take into account this assessment.

Figure 4.3: Ground Floor Site Plan May 2024

Following continued engagement between various departments within DLRCC and the LDA, the scheme evolved into Alternative Design 4.

4.3.3.5 Alternative Design 4 – The Proposed Project

The proposed project constitutes the final alternative, and preferred, option. The design has been progressed via an iterative process with design amendments arising from pre-planning engagement between the LDA and Dún Laoghaire Rathdown County Council. 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

In terms of the planning process followed, the Large-scale Residential Development (LRD) process was introduced on 17th December 2021 to replace the Strategic Housing Development (SHD) process. This process includes a Section 247 pre-planning meeting. This application was to originally follow the LRD process, as indicated by the s247 pre-planning in February 2024, however after continued engagement with DLRCC it was decided to jointly pursue a Part 10 Planning Application.

The decision to pursue a Part 10 Planning Application in respect of the proposed project is considered to represent the optimal solution in the context of the various project specific constraints and the remit of the LDA as a state agency and Dún Laoghaire Rathdown County Council. As a local authority, DLR have prepared a Housing Delivery Action Plan that sets out details of both social and affordable housing delivery for the period 2022-2026. The DLR

Housing Delivery Action Plan notes that the delivery of social and affordable housing will come through a number of sources including DLR and Approved Housing Bodies (AHBs) and the Land Development Agency (LDA) build, turnkey developments, Part V and Local Infrastructure Housing Activation Fund (LIHAF) housing delivery. Whilst the proposed development may not likely be delivered within the life of the 2022-2026 Housing Delivery Action Plan, the development will significantly benefit both social and affordable housing numbers in the next iteration of the Plan, by delivering 934 no. units. Both the LDA and DLRCC share the aim to provide as much affordable housing as possible and the Part 10 process is therefore considered entirely appropriate for the proposed project.

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 proposed project as set out below. In summary, the proposed development will deliver 934 no. residential units arranged in 9 no. blocks (Blocks 02-10) ranging between 2 and 8 storeys in height (including Lower Ground Floors at Block 02 and 10) over Basement Levels at Blocks 03 and 04. The proposal will also contain the following non-residential uses:

- Change of use and renovation of existing single storey Gate Lodge building (former reception/staff area) to provide a café unit (78 sq m);
- 1 no restaurant unit (266 sq m) located at ground floor level at Block 03;
- 3 no. retail units (1,160 sq m) located at ground floor level at Blocks 03 and 07;
- 1 no. medical unit (288 sq m) located at ground floor level at Block 02;
- A new childcare facility (716 sq m) and associated outdoor play area located at lower ground and ground floor level at Block 10;
- A management suite (123 sq m) located at ground floor level at Block 10; and
- A new community centre facility, including a multi-purpose hall, changing rooms, meeting rooms, storage and associated facilities (1,749 sq m) located at ground and first floor level at Block 06

In terms of car parking, 524 no. spaces (466 no. residential spaces, (including 57 no. visitor spaces and 12 no. Car Club spaces) (0.5 spaces per unit), and 58 no. non-residential) with 79 no. Motorbike Spaces (57 no. residential spaces and 22 no. spaces) will be provided. The proposed development will also provide a total of 2,532 no. bicycle spaces. Some 2,338 no. residential bicycle parking spaces (1,850 no. long stay and 488 no. short stay/ visitor), and 144 no. commercial bicycle parking spaces (60 no. long stay and 84 no. short stay).

5.2 Background to the Site

5.2.1 Site History

The site remains in its form and layout as when it was the former Central Mental Hospital. All existing structures on the site were built prior to the establishment of the planning system or built under special powers associated with the use of the site.

Prior to any development on the site, the grounds were used as farmland.

The original 'Central Criminal Lunatic Asylum' building was completed in 1850, with further building works in 1863. The enclosed environs of the asylum featured multiple airing courts, lean-

to shelters and privies, being divided between male and female quarters by a single wall. Adjacent facilities to the main building included an infirmary, kitchen and laundry. A central yard was located inside the entrance, enclosed by the surrounding buildings.

The gate lodge (gate house) was built in 1853, echoing the style of the main hospital building. The protestant chapel was completed in 1866. An unspecified portion of the boundary wall was rebuilt in 1868.

Prior to 1871, a gazebo was erected, referred to as the 'bandstand', and was later relocated within the site, but has since been removed from the site. It was also in the years prior to 1871 that the final and current configuration of the boundary wall was established, now including a portion of land to the south of the site which had previously been farmland.

A Roman Catholic chapel was built in 1901, which caused a change to the entrance drive. A group of buildings were established to the west half of the now former kitchen garden after World War II, alongside other smaller structures located elsewhere on the site. The east half of the former kitchen garden was later redeveloped into a car park.

While most historic buildings remain in situ, losses include the mortuary and a small building to the south.

Many new additions to the site and its facilities were completed throughout the late 20th century, including a large HSE facility to the south of the main building in the late 1980s/ early 1990s.

As set out under Chapter 3 (section 3.6) of this report, there has been only one previous planning permission granted in respect of the site. A Strategic Housing Development (SHD) (ABP ref. no. 313176-22) permission was granted in May 2023. In summary, a 10-year permission was granted for 852 no. residential units (permission was originally sought for 977 no. units) with a restaurant, retail units, medical units, creche and community centre. However, this permission has not been implemented.

5.2.2 Current Site Use

The site had been used by the HSE as the former Central Mental Hospital for Ireland, until it was vacated in 2022, in a scheduled move to a new facility in Portrane. This move is written into law under the Central Mental Hospital (Relocation) Act 2020, with the current facility being described by the HSE as *"no longer fit to provide the best patient care experience".*

The site is now vacant although the grounds are currently in use as temporary accommodation erected by the Department of Children, Equality, Disability, Integration and Youth (DCEDIY) under exempted development provisions under a licenced agreement with the OPW (landowners).

5.2.3 Site Location and Surrounding Area

The site is located at the former Central Mental Hospital lands in Dundrum, Dublin 14. The entire site is 11.39 ha and is now vacant. The application lands are 9.7 ha.

The site is bound by a 4 – 5 m perimeter wall and is accessed via an entrance off Dundrum Road. The overall site comprises a number of existing buildings including the main Hospital building, the Chapel and a number of associated buildings and small temporary structures. The site also consists of a number of landscape features such as a walled garden, an orchard and mature trees.

In terms of statutory designations, the Hospital buildings and the Chapel appear on the National Inventory of Architectural Heritage (NIAH):

- Hospital (Reg. No. 60220001) – Rated as 'National' importance;
- Chapel (Reg. No. 60220002) – Rated as 'Regional' importance;
- Hospital (Reg. No. 60220003) – Rated as 'Regional' importance

Furthermore, the *Dún Laoghaire Rathdown County Development Plan 2022-2028*, listed a number of structures at the site as 'Protected Structures'. The 'Asylum', 'Catholic Chapel' and 'Hospital Building' are included in the Record of Protected Structures:

- Asylum (RPS No. 2072);
- Catholic Chapel (RPS No. 2071); and
- Hospital Building (RPS No. 2073)

None of the aforementioned buildings are located within the red line boundary of this planning application.

In terms of the existing context of the surrounding area, Dundrum Road and the Luas Green Line is located to the west of the site, each providing a strong north-south connection. The site is bound by residential properties and gardens at Mulvey Park to the north, at Friarsland Road to the east, at Larchfield Road to the south and south east and at Annaville Grove, Annaville Park and Annaville Terrace to the west. The surrounding residential properties are generally one or two storeys in scale with a four-storey apartment block located close to the site boundary near Annaville Grove. In addition to the residential properties referred to above, part of the sites southernmost boundary abuts Rosemount Green, a DLRCC public open space and football pitch.

The site is well served by existing public transport infrastructure; the nearest Luas Green line stop is located approximately 450m west of the site at Windy Arbour. Dublin Bus network infrastructure includes stops at Dundrum Road (R117), Bird Avenue, Goatstown Road (R825), Churchtown Road and Taney Road (both R112).

The wider environs of the site are predominantly characterised by low scale residential. However, there are a number of commercial uses within close proximity.

This includes Dundrum Town Centre (and Shopping Centre), approx. 1.6 km to the south of the site entrance. From the site, Dundrum Town Centre is reachable in 20 minutes by foot, 6 minutes by bike and 7 minutes by bus.

Dundrum Business Park is located approximately 200m to the north of the site which comprises a number of office blocks and associated car parking.

Dublin City Centre is located approximately 7.2 km from the application site and accessible by both Luas (27 minutes) and bus (22 minutes).

There are a number of schools in close proximity, namely, Our Lady's National School (c. 300m) Jesus and Mary College (c. 700m, based on improved permeability via Rosemount Green), Our Lady's Grove and Our Lady's Grove Primary School (c. 700m, based on improved permeability via Rosemount Green)). University College Dublin (UCD) is located within c. 1 km (as the crow flies) to the northeast of the application site all which jointly would employ a notable number of people within the County.

In terms of retail provision, as noted above, the proposed development site is located c. 1km north of Dundrum Town Centre, which is identified as a 'Level 2 – Major Town Centre' within the Retail Hierarchy for the Greater Dublin Area (GDA) set out in the *Dún Laoghaire-Rathdown County Development Plan 2022-2028.*

5.2.4 Site Specific Flood Risk Assessment (SSFRA)

The 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 site is shown not to be at a significant risk from flooding and to not create a significant risk of flooding to adjoining areas or downstream.

1. River Slang: The site lies outside the predicted 0.1% AEP (1 in 1000-year) extent of flooding on this river.

2. Surface Water Drainage:

    a) The system is designed for a 100yr storm + 20% climate change without flooding.
    b) The surface water drainage from the site to the surface water sewer network will discharge at rates no greater than the existing greenfield runoff rates thereby not increasing the risk of flooding to adjoining areas or downstream from the site.
    c) Overland flow routes in the event of a significant & unlikely blockage of the surface water drainage system have been considered. Overland flows are contained within the site in a controlled manner without risk to the residential buildings on site.

3. Standard mitigation measures will apply on site. House and apartment floor levels are set 150mm above the surrounding ground level to minimise flood risk. All basements on site will be waterproofed. The top of basement car park entrance ramps will be set 100mm above the surrounding ground levels to avoid backflow of surface water down the ramps.

Therefore, the proposed development is deemed acceptable and appropriate from a flood risk assessment perspective.

5.2.5 Existing Site Access

The site is currently accessed via the vehicular entrance off Dundrum 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 proposed project will deliver 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 Chapter 3 (Planning and Development Context) and further in the supporting planning documentation.

Furthermore, the Applicant (Dún-Laoghaire Rathdown County Council in partnership with the LDA) is making a significant positive contribution towards enabling an affordable housing sector in Ireland. As part of this, the LDA is working towards providing new homes and making them available to individuals and families through the schemes provided by the enactment of the *Affordable Housing Act 2021 (as amended).* Further detail surrounding the function of the LDA is contained within Section 14 of the *Land Development Agency Act 2021.*

The vision is to transform the former Central Mental Hospital site in Dundrum into a leading example of sustainable living which delivers a mix of tenures where people of all ages can live, whilst retaining and celebrating the site's historic assets and providing an outstanding destination for leisure with distinctive and diverse public spaces. Further to this, the proposed development focuses on realising compact growth which promotes modal shift towards healthy, active and sustainable mobility.

5.4 Overview of Construction Phase and Construction Works

For full construction related details, refer to the *Construction Environmental Management Plan* (CEMP) prepared by Barrett Mahony Consulting Engineers. A summary is provided below.

5.4.1 Construction Phase

The following sets out the construction phases for the development proposed as part of this application as set out in Figure 5.1. This is separate to the phasing of masterplan for which there will be an additional planning application in the future on the remaining part of the masterplan lands. The proposed development will be constructed and handed over in two phased building clusters as illustrated in Figure 5.1. The phasing of the site will be subject to market conditions and commercial considerations at the time of construction. Phase 1 includes the roads and primary infrastructure/services for the full scheme including works to the new Dundrum Road junction. Block commencements and completions within each phase will be based on a programme to be agreed with the contractor. Construction of the phases is expected to overlap and run concurrently. Subject to a final planning grant, the expected start date is currently envisaged to be mid-2025 with an envisaged 5 to 6 year construction period. Completion of the

first residential units is anticipated in mid-2027. It should be noted that these dates estimates only.

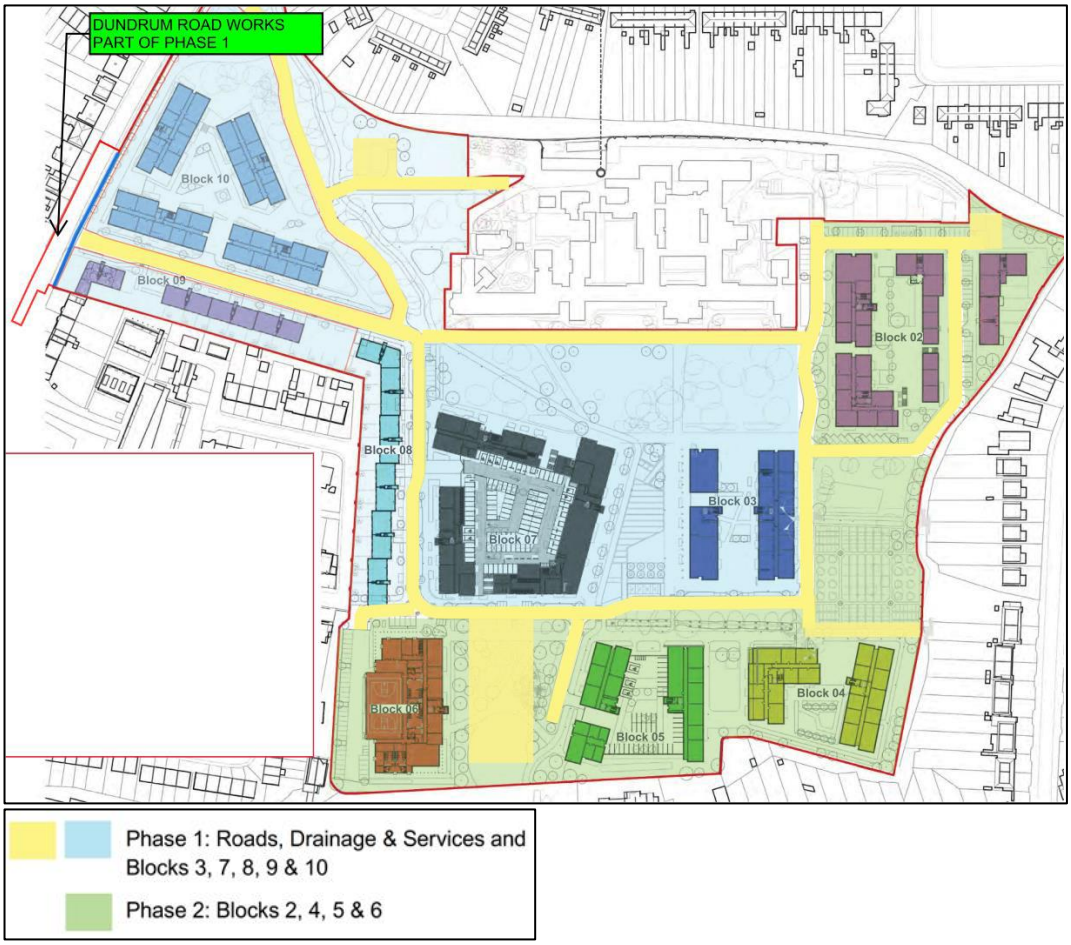


Figure 5.1: Plan of the Development showing outline phasing

5.4.2 Proposed Construction Works and Methods

The proposed development within this planning application will be divided into two phases as set out in the preceding section. Works in each phase will consist of the following:

Enabling Works:

- Secure site and set up contractor welfare facilities and site accommodation.
- Locate and terminate existing live services.
- Install tree protection and remove trees that are earmarked to be felled.
- Asbestos surveys to be carried out to existing buildings.
- Removal of structures listed for demolition.
- Excavate and remove material to the required formation. This will require a site strip and removal from the site of material or temporary stock piling.
- Maintain the existing entrance and incorporate new haul roads and hardstanding as required.

- Make good and install any finished boundary treatments that can be installed at this stage.

Main Construction Works:

- Foundations: Excavate foundations down to boulder clay for the houses and duplexes.
- Bored piled foundations will be required for the apartment blocks.
- Basement/half-basement: In-situ reinforced concrete (RC) walls and slabs. External waterproofing membrane.
- Retail, creche and community spaces: In-situ RC frame with beam and slab floors. Glazing and cladding. These spaces are generally incorporated into the new apartment buildings. The community hall will be constructed in structural steel.
- Residential Apartments: RC frame with flat slab floors, typically supported off RC blade columns. In-situ RC stair/lift cores. Precast concrete or brick cladding typically with glazing.
- Glazing & cladding to all buildings.
- Architectural finishes, non-loadbearing walls, ceilings, sanitary ware, ironmongery etc. associated with the construction of all proposed buildings.
- Mechanical and electrical services and lift installations.
- External landscaping and green roof finishes.
- Buried drainage, water supply and other buried services associated with the proposed development.

5.4.3 Construction Working Hours

Unless required otherwise by An Bord Pleanála, it is proposed that standard construction working hours should apply, i.e.:

- 7am to 7pm Monday to Friday
- 8am to 2pm on Saturdays.

If there is any occasion where work is required to be carried out outside normal daytime working hours, DLRCC, local residents and businesses in the area which are likely to be affected by the proposed works will be notified in advance.

5.4.4 Site Access and Egress

It is proposed that construction traffic access to the site will be primarily via the existing access road off Dundrum Road with the new road into the site also to be used as set out in Figure 5.2. The new road entrance from the site onto the Dundrum Road is circa 150m south from the existing entrance which may also be used during construction as set out in Figure 5.2.

Controlled access points to the site, in the form of gates or doors/turnstiles, will be kept locked any time that these areas are not monitored (e.g. outside working hours). During working hours, a gateman will control traffic movements and deliveries at any active site access to ensure safe access and egress to and from the site onto the public roads. All personnel working on site must

have a valid Safe Pass card and be inducted by the Main Contractor with regard to site specific information.

5.4.5 Air Quality – Dust and Dirt

A dust minimisation plan will be prepared for the construction phase of the project. The Contactor will put in place a regime for monitoring dust deposition rates in the vicinity of the site during the works using the Bergerhoff Method. The amount of dust deposited anywhere outside the proposed development, when averaged over a 30-day period, will not exceed the values below:

- 130mg/m2 per day when measured according to the BS method which takes account of insoluble components only or,
- 350mg/m2 per day when measured according to TA Luft, which includes both soluble and insoluble matter. (EPA compliance monitoring is based on the TA Luft method).

The following dust mitigation measures will also apply:

- Dust generating activities will cease if limits are exceeded until appropriate mitigation measures are put in place by the contractor.
- Spraying: During dry periods, dust emissions from heavily trafficked locations (on and off site) will be controlled by spraying surfaces with water. Stockpiles of excavated material, demolition rubble, sand etc shall be covered with tarpaulins or if this is impracticable will be sprayed with water from a bowser.
- A road sweeper will be used to keep hard surfaced roads inside the site and in the vicinity, clean.
- Rubble chutes and receptor skips will be used during construction activities.
- Construction vehicle speeds will be restricted to less than 15 kph to avoid raising dust. The overloading of tipper trucks exiting the site shall not be permitted and such trucks shall be covered. Skips containing dust generating material will also be covered.
- Vehicles & construction plant/equipment will be regularly serviced to ensure that exhaust emissions are within permissible limits. Idling of vehicles will be avoided.
- For concrete cutting or stone cutting operations, dust emissions controls will be in place. Dust netting on scaffolds and along boundaries willbe installed as necessary to avoid escaping dust emissions from the site falling on third party lands and existing residential areas

5.4.6 Noise and Vibration

Some impact of noise is likely to occur as a result of the construction activity. Construction work is of a temporary nature and the resulting noise levels are usually acceptable, subject to typical management and time control procedures which are common to most urban based development projects.

The noise limits to be applied for the duration of the construction works are those specified below.

- Daytime (07:00 to 19:00 hrs) – 55dB Laeq, 15 m ins.
- Evening (19:00 to 23.00 hrs) – 50dB Laeq, 15 mins

- Night-time (23:00 to 07:00 hrs) – 45Db Laeq, 15 mins

To control nuisance to local residents and potential damage to other nearby structures, vibrations from construction related activities are to be controlled. Vibration Limits to be agreed by the planning authority via condition. The following vibration limits are proposed:

- 8mm/s at frequencies of less than 10Hz
- 12.5mm/s at frequencies of 10Hz to 50Hz
- 20mm/s at frequencies of more than 50Hz

Refer to the *Construction Environmental Management Plan* (CEMP) prepared by Barrett Mahony Consulting Engineers for a full set of mitigations relating to noise and vibration.

5.4.7 Construction Traffic Management

The works associated with the proposed 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, construction workers, and the delivery of new materials (concrete trucks etc).

Figure 5.2 shows the proposed construction traffic routes from the site to the main road network (the M50 motorway).

Deliveries will be scheduled outside of peak traffic hours to avoid disturbance to pedestrian and vehicular traffic in the vicinity of the site. The vehicular site security barrier in both phases of the development will be located back from the site entrance to that phase to allow construction traffic to build up inside of the site in the event of a high concentration of deliveries at once, for example, during a concrete pour. In Phase 1 the existing Dundrum Road entrance will be the primary construction access to that phase and vehicle site security barrier will be set back along the existing access road back from the Dundrum Road by 50metres minimum to allow for queuing of traffic inside the site. No construction or delivery vehicle will be left outside of the site while waiting to gain access to the site. There is no available space on Dundrum Road or roads within the vicinity of the development for construction traffic to queue.

Unloading bays will be provided for deliveries to the site within the hoarded perimeter of the site for each phase. The unloading bays will need to be accessible by tower crane and fork lifts. Appropriately demarcated storage zones will be used to separate and segregate materials. All deliveries to site will be scheduled to ensure their timely arrival and to avoid the need for storing large quantities of materials on site. No offsite storage of materials will be required.

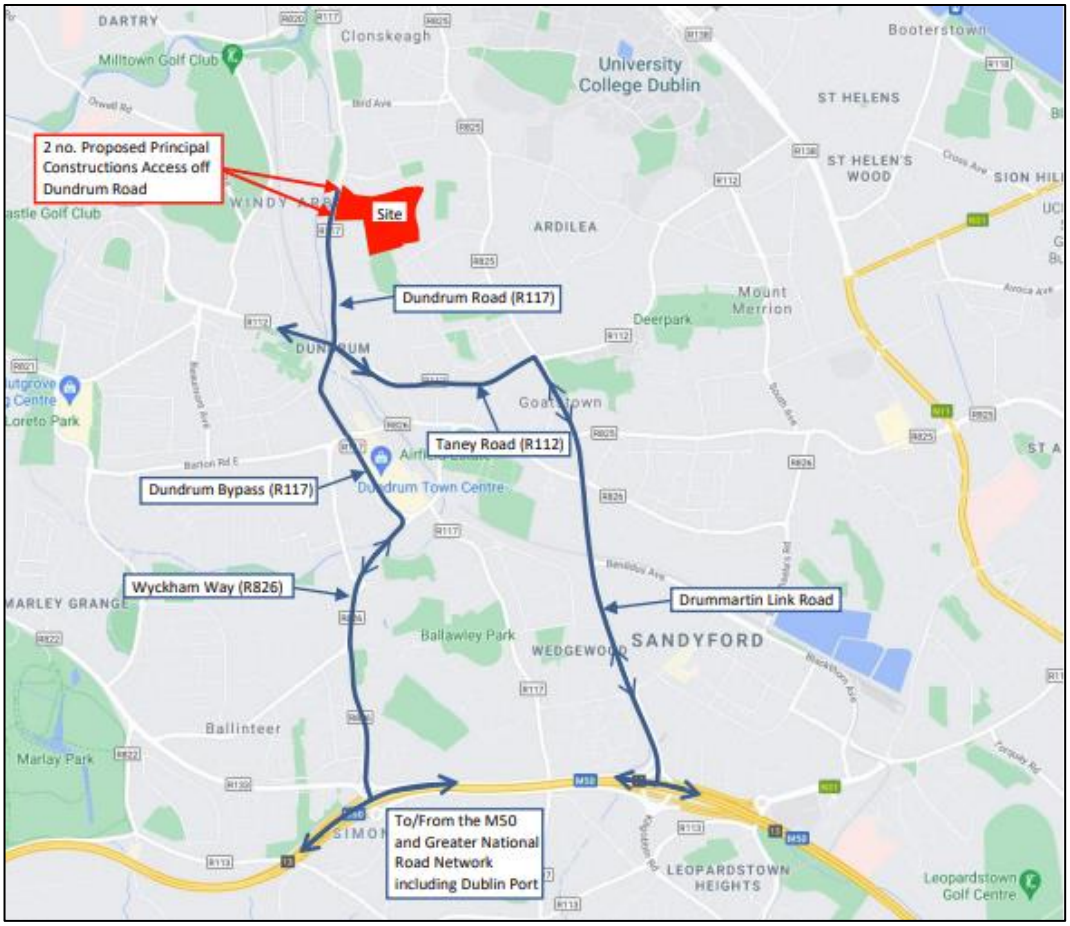


Figure 5.2: Construction Traffic Access Routes

5.4.8 Health and Safety

The site will be made secure during construction 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.
- Separate pedestrian access from construction access at the main site entrance off the Dundrum Road and provide a safe walkway for pedestrians along the main access road into the site.
- Ensure restricted access to the works is maintained.

5.4.9 Construction Waste

Construction waste arising from the proposed development will be handled in line with the *Resource and Waste Management Plan* prepared by AWN and enclosed as Appendix 19.1 of this EIAR.

This plan will provide information necessary to ensure that the management of construction and demolition waste at the site is undertaken in accordance with all current legal and industry standards including the *Waste Management Act 1996* as amended and associated Regulations, *Environmental Protection Agency Act 1992* as amended, *Litter Pollution Act 1997* as amended and the National Waste Management Plan for a Circular Economy (NWMPCE) (2024).

In particular, this plan aims to ensure maximum recycling, reuse and recovery of waste with diversion from landfill, wherever possible. It also provides appropriate measures in relation to the collection and transport of waste from the site to prevent issues associated with litter or more serious environmental pollution (e.g. contamination of soil and/or water).

5.5 Description of the Operational Phase of the Proposed Project

In summary, the proposed development comprises 934 no. new homes, 4,380 sq m of non-residential floorspace and approximately 2.9 ha of public open space. The table below provides the key proposed development statistics.

Table 5.1: Proposed Scheme Key Development Statistics

Development Statistic	Part 10 Application
Site Area	9.7 ha (includes 0.1 ha outside of the former CMH site)
No. of Residential Units	934 no. units
Total Gross Floor Area	c. 94,058 sq m (c. 93,980 sq m excluding retained existing buildings)
Non-Residential Floorspace	4,380 sq m
Demolition of Certain Existing Structures	3,677 sq m
Gross Residential Density	97 units p/h (based on 9.6 ha site, which excludes the 0.1 ha of public road outside the former CMH site which is included in the Application site)
Net Residential Density	146 units p/h (based on a net site area of 6.7 ha excluding the public open space and Gate Lodge, and a portion of the site for the other non-residential uses, as per the methodology in the Compact Settlement Guidelines 2024)
Plot Ratio	0.98 (based on a 9.6 ha area, i.e. excluding the 0.1 ha outside the main former CMH site)
Site Coverage	30% (based on a 9.6 ha area, i.e. excluding the 0.1 ha outside the main former CMH site)
Height	2 – 8 storeys (including Lower Ground Floors at Block 02 and 10) over Basement Levels at Blocks 03 and 04.)
Car Parking	524 no. spaces (466 no. residential spaces, (including 57 no. visitor spaces and 12 no. Car Share spaces) (0.5 spaces per unit), and 58 no. non-residential)
Motorbike Parking	79 no. Motorbike Spaces (57 no. residential spaces and 22 no. spaces).
Public Open Space	2.9 ha

5.5.1 Demolition

The proposed development will consist of the demolition of existing structures (3,736 sq m) including:

- Single storey former swimming pool / sports hall and admissions unit (2,750 sq m);
- Two storey redbrick building (305 sq m);
- Single storey ancillary and temporary structures including portacabins (677 sq m);
- Removal of existing internal sub-divisions/ fencing, including removal of security fence at Dundrum Road entrance;
- Demolition of section of porch and glazed screens at Gate Lodge building (4 sq m);
- Removal of walls adjacent to Main Hospital Building;
- Alterations and removal of section of wall to Walled Garden.

5.5.2 Overview of proposed development

The proposed development will deliver 934 no. residential units arranged in 9 no. blocks (Blocks 02-10) ranging between 2 and 8 storeys in height with part-basement. The proposal will also contain the following non-residential uses:

- Change of use and renovation of existing single storey Gate Lodge building (former reception/staff area) to provide a café unit (78 sq m);
  - 1 no restaurant unit (266 sq m) located at ground floor level at Block 03;
- 3 no. retail units (1,160 sq m) located at ground floor level at Blocks 03 and 07;
- 1 no. medical unit (288 sq m) located at ground floor level at Block 02;
- A new childcare facility (716 sq m) and associated outdoor play area located at lower ground and ground floor level at Block 10;
- A management suite (123 sq m) located at ground floor level at Block 10; and
  A new community centre facility, including a multi-purpose hall, changing rooms, meeting rooms, storage and associated facilities (1,749 sq m) located at ground and first floor level at Block 06

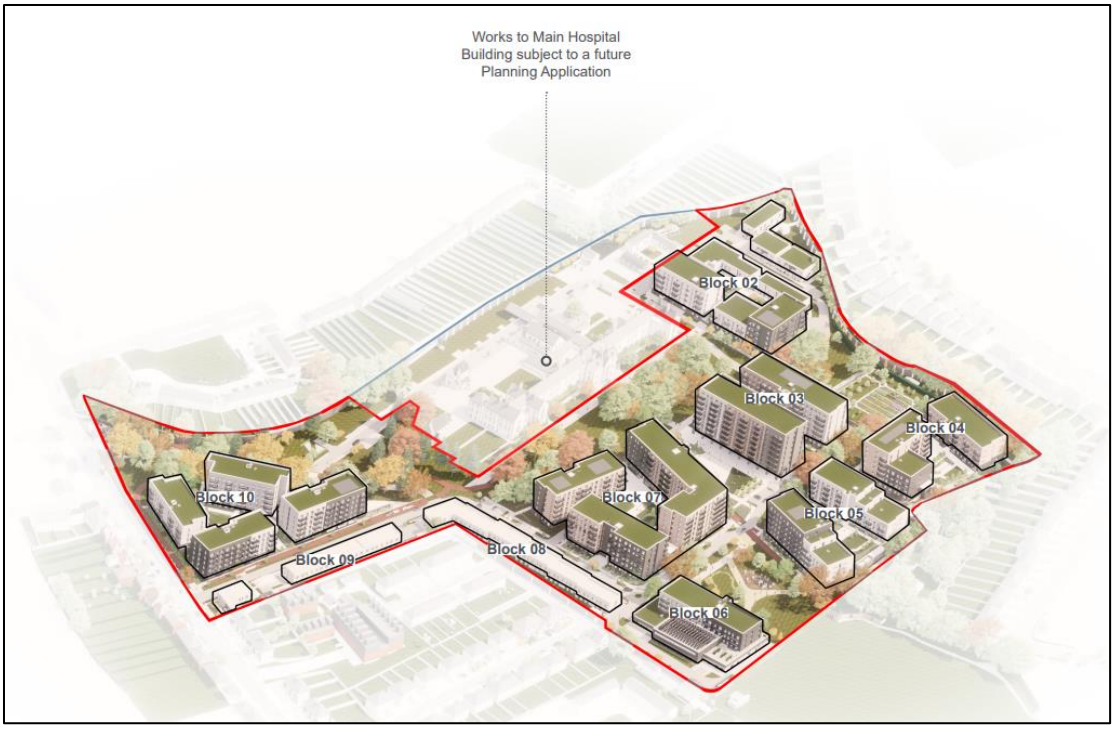


Figure 5.3: Extract from Reddy Architecture and Urbanism's *Architectural Design Report* showing the proposed site layout.

The proposed development will be arranged as follows:

Block 2

Block 02 consists of new build duplexes and apartments adjacent to the former Main Hospital Building. A medical centre is proposed at the north west of Block 02 accessible from ground level adjacent to the former Main Hospital Building.

Block 02 is broken into a number of elements which reflect the geometry of the adjacent buildings stepping up from 2-storeys at the boundary to 6-storeys closer to the centre of the site.

A homezone street is proposed between the apartments at Block 02 and the apartments/duplexes with on-street parking provided close to front doors integrated with the landscape design.

Residential amenity is provided in a communal landscaped courtyard above parking.

The building has a gross floor area of 11,245 sq m and comprises 104 no. residential units, including:

- 104 no. apartments, comprising:
  - 35 no. 1-bed units, 10 no. 2-bed 3 person units, 28 no. 2-bed 4 person units, 23 no. 3-bed units;
  - 6 no. duplex apartments (6 no. 3-bed units); and
  - 2 no. Assisted Living Units (2 no. 5-bed units).

The proposed medical centre (288 sq m) is located within Block 02.

Block 03

Block 03 consists of new build apartments adjacent to the walled garden and the new public plaza. Retail spaces and a restaurant are proposed at ground floor at the west side of Block 03 with a covered colonnade.

Residential amenity is provided partly in a communal landscaped courtyard, above car parking, with an internal residential amenity space (130 sq m) at ground floor overlooking the central plaza. The building heights at Block 03 are predominantly 6 and 8-storey comprising of two linear blocks to allow daylight into the courtyard. Plant areas are proposed at a lower ground level.

The building has a gross floor area of 15,662 sq m and comprises 156 no. residential units, including:

- 156 no. apartments (52 no. 1-bed units, 26 no. 2-bed 3 person units, 52 no. 2-bed 4 person units and 26 no. 3-bed units).

Proposed retail unit (274 sqm) and a restaurant unit (266 sqm) are located at the ground floor of Block 03.

Block 04

Block 04 consists of new build apartments located to the south of the Walled Garden. Residential amenity is provided in a communal landscaped courtyard above parking.

Block 04 steps from 4-storeys at the boundaries to existing neighbouring residences at Larchfield Road and Friarsland Road to a maximum height of 6-storeys at the north west corner, which relates to the massing at the adjacent section of Block 03. Clerestory windows are proposed to the south elevation of Block 04 to prevent overlooking from the proposed development

The building has a gross floor area of 8,957 sq m and comprises 92 no. apartments, including:

- 92 no. apartments (31 no. 1-bed units, 17 no. 2-bed 3 person units, 32 no. 2-bed 4 person units, and 12 no. 3-bed units).

Block 05

Block 05 consists of new build apartments adjacent to the proposed Public Park to the south of the site adjacent to Rosemount Green. Residential amenity is provided in a communal landscaped courtyard above car parking.

Block 05 steps in height from 4-storeys at the south, adjacent to existing residences at Larchfield Road, to 5- and 6-storeys at the north elevation. Placement of windows has been carefully considered to mitigate any potential impact to the privacy of neighbours at Larchfield Road.

The building has a gross floor area of 10,450 sq m and comprises 114 no. residential units, including:

- 114 no. apartments (56 no. 1-bed units, 2no. 2-bed 3 person units, 43 no. 2-bed 4 person units and 13 no. 3-bed units)

Block 06

Block 06 consists of new build apartments to the west of the proposed community park, in the southwestern corner of the site.

Extensive community facilities consisting of a multipurpose hall, community rooms and sports changing facilities are proposed at Ground and First Floor. Residential amenity is provided at second floor level with the provision of a landscaped roof garden to the south accessed from the residential cores. Surface car parking is provided for residents and visitors to the community facility.

Block 06 steps from one to two-storeys adjacent to the western site boundary to 4-storeys at the new communal park and is on-axis with the proposed street between Blocks 07 and 08. Balconies and window placement on the western facade have been designed to mitigate any potential impact to neighbouring properties at Annaville Grove.

The building has a gross floor area of 5,383 sq m and comprises 37 no. residential units, including:

- 37 no. apartments (17 no. 1-bed units, 4 no. 2-bed 3 person units, 12 no. 2-bed 4 persons and 4 no. 3-bed units).

The community facilities consist of a multipurpose hall, community rooms and sports changing facilities (1,749 sqm sq m).

Block 07

Block 07 is located in the central part of the site, it consists of new build apartments adjacent to the proposed plaza with retail spaces at the east at Ground Floor.

Residential amenity is provided in a communal landscaped courtyard above parking. Block 07 is primarily a six and seven-storey building with various set-backs and insets to break down the building's massing at primary locations. The building's footprint was designed to take account of the existing mature trees at the Central Parkland while also addressing the Public Plaza and the streets to the west and south. A break has been provided in the north east corner of the block, providing views through to the facade of the main hospital building from the residential amenity areas.

The building has a gross floor area of 20,960 sq m and comprises 218 no. residential units, including:

- 218 no. apartments (78 no. 1-bed units, 24 no. 2-bed 3 person units, 110 no. 2-bed 4 person units and 6 no. 3-bed units)

The building also comprises of retail floorspace 793 sq m sq m at ground floor level.

Block 08

Block 08 consists of new build apartments along the western boundary of the site adjacent to Annaville Grove.

Residential amenity is provided by communal landscape space to the rear between Block 08 and the boundary wall at Annaville Grove. Surface car parking provided.

The scale of Block 08 allows the development to 'step down' in height from the centre of the site to the site boundaries.

Block 08 has a gross residential area of 2,555 sq m and comprises 24 no. residential units, including:

- 24 no. apartments (2 no. 2 -bed 3 person units and 22 no. 2-bed 4 person units)

Block 09

Block 09 is located in the north western corner of the site adjacent to the boundary with Annaville Grove, it consists of 2-storey apartment Blocks provided close to the proposed new entrance at Dundrum Road, providing a transition in scale to adjoining developments to the south.

Residential amenity is provided by communal landscape space to the rear between Block 09 and the boundary wall at Annaville. Surface car parking is provided.

Block 09 has a gross residential area of 1,729 sq m and comprises 16 no. residential units, including:

- 16 no. apartments (16 no. 3-bed units)

Block 10

Block 10 consists of new build apartments adjacent to Dundrum Road, the existing tree-lined avenue and the proposed new access route into the site, at the western end of the site.

A childcare facility for the development is proposed at the eastern elevation with external play space proposed. Residential amenity is provided in a communal landscaped courtyard, with car parking below.

Block 10 is formed as a number of brick elements stepping in height from 5-storeys to 6-storeys with contrasting tones of materials provided creating visual interest in the facade. The existing ground levels allow for three no. apartments to be proposed towards the existing entrance at Dundrum Road, creating a 7-storey element one location.

Block 10 has a gross floor area of 17,038 sq m and comprises 173 no. residential units, including:

- 173 no. apartments (73 no. 1-bed units, 15 no. 2-bed 3 person units, 73 no. 2-bed 4 person and 12 no. 3-bed units)

The building also comprises a childcare facility (716 sq m) with external amenity space at ground floor level and a management suite (123 sq m).

5.5.3 Non-Residential Development

The proposed development will deliver a range of non-residential uses which will be integrated into the proposed residential blocks (mainly at ground floor level) and within the existing Gate Lodge.

The proposed non-residential uses include a childcare facility (716 sq m), a medical centre (288 sq m), a restaurant (266 sq m), a café (78 sq m), 3 no. retail units (1,160 sq m), a management suite (123 sq m) and a community facility (1,749 sq m). The new community centre facility includes a multi-purpose hall changing rooms, meetings rooms, storage and associated facilities. The community facility was designed in close coordination with DLRCC's Parks Department.

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

5.5.4 Landscape Strategy and Design

The landscape architecture proposal aims to create a diverse planting scheme that contributes to the overall biodiversity within the development and the wider area. Plant species have been selected with direct reference to the 'All-Ireland Pollinator Plan 2021-2025' and the approach aims to align with the specific policies and objectives as set out in the *Dún Laoghaire- Rathdown Development Plan 2022-2028*.

The overall planting approach is focused on creating a rich and biodiverse planting footprint in the context of a significant re-development of the site. The removal of existing hedgerows and grassland is offset by the addition of pollinator friendly wildflower meadows, tree planting and mixed native woodland along the Eco Corridor and in the community park to the south of the site. All retained tree and hedgerow protection measures will be in accordance with the mitigation recommendations prescribed in the ecologists and arborist report and in agreement with Dún Laoghaire Rathdown County Council.

A variety of open space and softworks currently exists on the site. These elements function as part of the overall green framework of the site, providing a hierarchy of space that is not only visual aesthetic but provides opportunities for rest and recreation.

Proposed Tree Planting Species

The general planting strategy throughout the scheme is for significant structure tree planting with 2 metre clear stems to provide a leafy canopy layer, softening the proposed buildings and a base layer of low shrub/ groundcover and hedge planting to create low level seasonal interest and colour softening the hard surfaced areas and car parking. Eye level between the two planting types is kept clear to maintain sight lines throughout the scheme.

Native and naturalised tree species will be planted within the public open space to increase opportunities for native wildlife. These will ultimately be large scale trees to designate a parkland character.

Street tree planting will consist of species with fastigiate or neat forms suitable to the scale of the streetscape and those which will thrive in a streetscape environment. Street tree planting is located to avoid impacts with street lighting. Street trees will be planted into a minimum of 7cu.m. topsoil, with the use of urban tree soils, root barriers to protect water utilities and topsoil loaded rootcells to increase rooting areas outside the main tree pit area as necessary.

Courtyard/Podium trees have been chosen for seasonal diversity and small form. They will be planted in raised beds in the podium developments. Private garden dwellings have a fruit tree planting in the gardens to enhance overall biodiversity and habitat creation on site.

Proposed Overall Planting Species

Native/adaptive climbers have been proposed through the scheme along the existing boundary wall. Species are chosen for robustness, seasonality, and biodiversity. Habitats will be formed along this boundary edge to the development public realm providing both visual and ecological rewards.

Low level shrub and groundcover planting will be in single species blocks taken from an overall palette of species throughout the scheme with flowers and fruits attractive to wildlife such as bees and butterflies. Species will be of maximum 1m height at maturity to maintain clear sight lines.

The principal objective of the landscape proposals is to provide a high quality public realm, which is accessible, safe and distinctive. Planting and landscape works will be carried out in accordance with BS4428. Trees will be advanced/semi-mature rootballed stock, in accordance with BS 8545.

Low level, low maintenance shrub planting will be used in planting beds containerised with a minimum size of 2 litre pots, Climbers will have 1 litre pots, all with a 75mm well composted fine bark mulch.

Hard Landscaping

The hardworks palette has been chosen to enhance the hard surfaces and network of plaza's, roads and paths which link and connect the proposed development. For the historic landscape/ amenity trails, a self bound gravel in buff colour is proposed. This surface will form the main surface on the central park, offering an opportunity for walking and recreation. Hard paving will be provided to accent areas/ focal points. Further to this, roadside pathways will consist of brushed concrete. These paths will run alongside the road network and offer routes for pedestrians and cyclists. Macadam surface will incorporate buff textured aggregate to compliment path surfaces. Blister paving will be provided at crossing to ensure legibility for the visually impaired.

Key Open Spaces

The proposal includes 2.9 ha of publicly accessible open space. The proposed landscape strategy proposes key open spaces as listed below and shown on Figure 5.3:

- Central Parkland
- Entrance Plaza
- Central Square
- Community Park
- Walled Garden
- Elm Park Eco-Corridor
- Podiums

Figure 5.3: Extract from Aecom's Landscape Architecture and Public Realm Design Report showing the key aspects of the landscape strategy.

Play Strategy

The proposed landscape strategy includes a number of play spaces, including formal and informal play spaces. There are two designated playgrounds, one to the north of the site adjacent to the cycle track and the other in the community park south of site, in addition to informal 'natural play' opportunities throughout the site. Local play opportunities occur in the semi-private podium spaces.

Environment Strategy

In terms of habitat creation, the differing SuDs components contribute to habitat creation throughout the development. For example, water bodies and ponds will be vital habitats for frogs, newts and a variety of insects including dragonflies. Further to this, the public open spaces through the development have native meadow planting as per the All Ireland National Pollinator Plan together with species rich grasslands that provide habitats and food for insects and bees. Other habitats that will be created through the proposed open space include:

- Open bonded brickwork within detailing of infrastructure buildings allowing for bat roosting;
- Bird and Mammalian nest boxes throughout the open public space;
- Log piles simulate fallen trees, and are valuable for mosses, lichens and fungi, as well as many insects through the wetlands and extensive greenroofs; and
- Crushed aggregate pathways along secondary pathways allows water to permeate naturally through the soil, without the need for drainage channels and associated infrastructure.

SuDs Components

The proposed SuDs strategy includes:

- Green roofs
- Permeable paving
- Bioretention systems
- Existing drains/ swales
- Raingardens
- Integrated wetlands
- Tree planting

Refer to the *Landscape Architecture and Public Realm Design Report* prepared by Aecom for full details in relation to landscaping proposals.

5.5.5 Public Open Space

The proposed development provides a significant quantum of high-quality open space which will be accessible to the public (2.9 ha). The proposed public open space provision equates to c. 30% of the total application site area. The space has been designed inclusively to serve the existing community as well as the residents of the proposed development. The removal of the southern

section of the existing perimeter wall will result in a continuation of public open space between the proposed development and the existing Rosemount Green.

The proposed public open space incorporates a number of landscape features, such as the walled garden, mature trees and courtyard and open green space that contribute to the setting of the Main Hospital Building.

5.5.6 New Vehicular, Cyclist and Pedestrian Connections

In order to integrate the proposed development into the surrounding area, ensure permeability and improved connectivity between the application site and surrounding streets and achieve a positive interface with the surrounding public realm, the proposed development includes the removal of a number of sections of existing perimeter wall. It is noteworthy that the boundary wall remains intact at the various boundaries with neighboring residential development. The proposed wall removal and resultant new connections are detailed below:

- A section of perimeter wall adjacent to Rosemount Green (south) will be removed to provide an interface with Rosemount Green. This will provide cyclist and pedestrian connection between the site and Rosemount Green.

- A new opening in the wall is proposed adjacent to Annaville Park, at the western boundary, to provide a cyclist and pedestrian connection.

- Partial wall removal is proposed adjacent to Dundrum Road, this will provide a second vehicular access onto Dundrum Road which will also facilitate cyclist and pedestrian access.

- To the north of the existing Dundrum Road entrance, further partial wall removal is proposed to enhance permeability and visibility.

5.5.7 Car Parking and Cycle Parking

The proposed development provides car parking for both the residential and non-residential components of the scheme comprising 466 no. residential parking spaces and 58 no. non-residential parking spaces. 79 no. motorcycle parking spaces are to be provided comprising 57 no. residential spaces and 22 no. non-residential spaces.

The proposed development will also provide a total of 2,532 no. bicycle spaces. Some 2,338 no. residential bicycle parking spaces (1,850 no. long stay and 488 no. short stay/ visitor), and 144 no. commercial bicycle parking spaces (60 no. long stay and 84 no. short stay).

5.5.8 Site Utilities

Foul Network Design

The proposed foul drainage network comprises of a series of 150mm, 225mm and 300mm diameter pipes, designed for a minimum velocity of 0.75m/s (self-cleansing) and maximum velocity of 3.0m/s. A pipe friction coefficient of 1.5mm has been assumed.

Each residential block is serviced by 225mm diameter (SN8 uPVC) branch connections in accordance with the Irish Water Code of Practice for Wastewater Infrastructure. It is noted the proposed foul outfall pipe is 300mm diameter pipe at 1:100 minimum fall which has a capacity of approximately 100 l/s and is deemed adequate for the peak foul flows anticipated.

Water Supply

The proposed development will be connected to the new Ø250mm public watermain in the Dundrum Road.

The proposed watermain system through the site will vary between 250mm diameter, 200 diameter, 150mm diameter and 100mm diameter.

Natural Gas

The site is served by a 250mm main entering Northwest. The pipe at 25mBar low-pressure gas network entering Northwest and extends to the former Central Mental Hospital. There is an existing pressure reducing station within the site and the existing gas lines feed the hospital and swimming pool building.

The proposed development will primarily require electrical driven heat pumps and air source heat pumps, so the gas load is anticipated to be limited to commercial facilities. The new gas load is forecasted to be in the order of 3MW and following discussions with BGE is not anticipated to be a concern. If the load proves challenging at a later date in design development, there is a larger 315mm gas pipe available. The gas infrastructure in generally good in this area.

Electricity

The existing site consists of 2 ESBN supplies fed from 2 separate substations located on Larchfield Road and opposite St. Columbanus Road. Connection 1 is rated at 10KV/20KV/400V/230V and consists of an overhead line terminating at the end of Larchfield Road South of the site.

Connection 1 is tapped from the overhead line and is installed underground and terminates South of the site.

Connection 2 extends from the substation opposite St. Columbanus Road and terminates within the Central Mental Hospital grounds North of the main building. Connection 2 is rated at 10KV/20KV/400V/230V.

The proposed development will require a new HV infrastructure that will feed multiple substations around the site. The substation requirement has been assessed and allowed for within the architectural layouts. The final design details to be clarified by the ESB post planning.

ESBN conducted a capacity study and released their findings in April 2021. To facilitate the development, ESBN confirmed that a new High Voltage supply is required. ESBN will install a 1Km new HV ring entering from the Southeast and connecting to the new substations via a HV ring circuit.

The new substation will require unobstructed 24/7 access for the ESB in line with their guidelines. A formalised application process to the ESB will be required post planning once the planning process is concluded.

Telecommunications

The former Central Mental Hospital is currently fed from the EIR network. The EIR network enters the site from the Dundrum Road.

Virgin Media is also currently available in the area with ample coverage around the site. A Virgin Media network extends around the perimeter wall adjacent to Dundrum Road.

The proposed development will consist of approximately 9 Comms rooms – to be finalised during detailed internal design. Each apartment block and commercial unit will have individual comms rooms to facilitate telecommunications. The proposed development will consist of separate underground networks connecting to all new residential blocks and commercial premises.

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.

Initially the intention was for the LDA to submit a Large-Scale Residential Development Application (LRD) for the lands, and initial consultation between DLRCC and the LDA was undertaken under the s247 process.

An agreement was reached to provide additional social housing on the site (19% rather than 10% per the previous intention) and consequently, DLRCC Housing Department and the LDA engaged on the basis of a partnership to deliver the development of the former CMH lands.

DLRCC, the LDA and the Design Team worked closely together to develop the Part 10 Application both in terms of the residential elements in addition to the detail design of the community facility, the public open spaces, biodiversity and heritage considerations.

6.2 Pre-planning s247 meeting

An initial consultation between DLRCC and the LDA was undertaken under the s247 process with the original intention being to submit a LRD application. A pre-application meeting was held with DLRCC on February 8th 2024 and provided the opportunity for DLRCC to provide feedback on the initial proposed amendments to the scheme following the SHD application (as set out in Chapter 4).

While this scheme is consistent with the requirements set out in the Dundrum LAP, DLRCC made recommendations to further strengthen the proposal, summarised as follows:

Car Parking Ratio and approach to Bike Parking numbers:

- DLRCC noted the introduction of the Sustainable Residential Development and Compact Settlement Guidelines (SRDCS), and the guidance around SPPR3 Car Parking. The Scheme should align with the SRDCS Guidelines and the DLRCC policy in relation to parking.

Environmental Enforcement:

- Concern around phasing, duration of phasing and construction impacts. Further details to be added to the Phasing Plan to address concerns.

Conservation Planning:

- Block 2 western block protruding beyond the line of the Main Hospital Building and this would encroach on the curtilage of the Hospital as a protected structure.
- Block 3 concern about the impact of the two linear blocks on the Main Hospital. A preference for the previous 6 storey 'wrap around' block was noted.
- The LAP indicates two locations for height increase which doesn't extend along the full length of the Blocks, but the LAP has a slight contradiction with the text description of where height should be and the map shown with two red dots.
- CGIs should be submitted to understand the potential impact of views from the hospital in more detail. These should be prepared to show impact both from the protected structure and also to it.

Lighting & EV:

- The less lighting the better. Where lighting is used, it should be low level across the entire project.
- DLRCC noted that in relation to EVs, due to policy changes in relation to design, location and quantum, it was recommended to liaise with DLRCC continually to ensure the design reflect the most up to date requirements.

Hospital & Adaptive Re-Use:

- DLRCC made it clear that the strategy for the Adaptive Re-Use of the Protected structures should be integrated into the LRD Scheme

Unit Mix:

- The scheme mix was discussed in the round with further review to be undertaken by the LDA.

General Planning Issues:

- The Previous schemes were very strong on the ground floor uses, and this should continue. Masterplan will need to be updated to reflect the urban design issues.

6.3 Part 10 engagement between DLRCC and the LDA

Significant pre-planning engagement has taken place with Dún Laoghaire Rathdown County Council (DLRCC) in coordinating this Planning Application. Meetings were held in respect of the Application as well as the revised Masterplan with the following Council departments:

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

- Public Lighting

Date	Meeting
28th February 2024	Design Team Meeting
15th March 2024	Site Walk with members of the DLR Planning team
28th March 2024	Design Team Meeting
22nd April 2024	Design Team Meeting
3rd May 2024	Meeting with DLR Parks and DLR Community & Cultural Development regarding proposed community uses
7th May 2024	Design Team Meeting
23rd May 2024	Meeting on site with DLR Conservation officer Julie Craig and DLR Executive Architect regarding the masterplan and revisions to Block 2
14th June 2024	Briefing Session with DLR Housing Department
21st June 2024	Meeting with DLR Planning Department with other departments including Parks and Landscaping, Conservation and Biodiversity
25th June 2024	Site walk with DLR Biodiversity officer and NPWS
22nd July 2024	Briefing Session for Landscape and Open Space and Biodiversity Officer

6.3.1 Other Consultation

Consultation with Uisce Eireann

Consultation was first undertaken with Uisce Eireann in the form of a pre-connection enquiry in March 2024 to ensure sufficient capacity in the system. The Confirmation of Feasibility letter from Uisce Eireann is appended to the *Infrastructure Report* prepared by BMCE.

Subsequently, a Statement of Design Acceptance was sought from Uisce Eireann by Barrett Mahony Consulting Engineers (BMCE) in respect of the scheme. The Uisce Éireann Design Acceptance letter, dated 31 July 2024, is appended to the *Infrastructure Report* prepared by BMCE.

Consultation the National Transport Authority (NTA)

Under the 2022 SHD Application pre-consultation engagement was undertaken with the NTA to ensure that the overall proposed development was consistent with the transport planning for the area.

In terms of roads and transportation, the current proposal is similar to the SHD Scheme permitted by ABP in 2022 and it was considered that no further engagement with the NTA was required. Engagement with the DLRCC Roads and Transportation Department was undertaken during the preparation of the Part 10 Application.

Consultation with NPWS

Consultation was undertaken with the NPWS in 2024 in particular to discuss the badger setts identified on site in Spring 2024, including meetings on site between representatives from NPWS, DLRCC (including the Biodiversity Officer), the LDA, the Project Ecologist and other members of the Design Team. The Badger Survey Assessment and Mitigation Measures (enclosed as Appendix 8.7 of the EIAR), was prepared by Dr Chris Smal an acknowledged badger and faunal expert in Ireland.

Public Consultation

In preparation for the previous SHD Application, the LDA launched an extensive Community and Stakeholder and Engagement process in September 2020 which included leaflet distribution, information gathering through surveys, virtual consultation rooms, a project website, webinars and email correspondence.

Interested members of the public also engaged with the previous SHD Application by making submissions in respect of that application.

Further public information sessions were held in September 2024 to update local residents on the revised proposals and the Application process.

6.4 Planning Application

This planning application is submitted directly to An Bord Pleanála for assessment; as part of this, further consultation will take place. This will comprise the public display of the application and all accompanying documents. Hard copies of the application documents are to be made available at the Office of An Bord Pleanála and at Dún Laoghaire-Rathdown County Council. A website containing all of the application documents is also available. Any submissions arising from the consultation process will be submitted directly to An Bord Pleanála and considered as part of the decision-making process.

The following authorities have also been notified in respect of this planning application:

- Minister for Tourism, Culture, Arts, Gaeltacht, Sport and Media
- Minister for Department of Housing, Local Government and Heritage
- Minister for the Department of Education
- An Taisce
- An Chomhairle Ealaíon
- Fáilte Ireland
- Inland Fisheries Ireland
- Córas Iompair Éireann
- The Heritage Council
- Transport Infrastructure Ireland
- National Transport Authority
- Uisce Éireann
- Dún Laoghaire Rathdown County Childcare Committee

7.0 POPULATION AND HUMAN HEALTH

7.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) has been prepared to assess the likely significant impacts on Population and Human Health in respect of the Proposed Development.

The EU (2017) *Guidance on the preparation of the Environmental Impact Assessment Report* outlines that human health is a very broad factor that is 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."*

Human health should be considered in the context of environmental pathways which may affect health such as air quality, noise, water and soil quality. All can contribute to negative effects on human health by facilitating the transport of contaminants or pollutants. 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 Guidelines (2022)[1], notes that the transposing legislation does not require assessment of land-use planning, demographic issues or detailed socioeconomic analysis (EPA, 2022).

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;
- Chapter 13 – Noise and Vibration;
- Chapter 14 – Landscape & Visual Impact Assessment; and
- Chapter 18 – Material Assets (Roads and Traffic).

[1] EPA (2022) *Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR)*

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 EIA Directive[2], an EIAR considers the results of such assessments without duplicating them.

This chapter was prepared by Sarah Tierney of AWN Consulting. Sarah Tierney is an Environmental Consultant with AWN Consulting and a graduate member of the Institute of Environmental Management and Assessment (GradIEMA). She has experience in EIA Reports, EIA screening and EPA IE licence applications and compliance reporting for a range of developments, such as pharmaceutical plants, ICT facilities and residential developments. She holds a BA in Environmental Science from Trinity College Dublin and is a member of the Environmental Sciences Association of Ireland.

7.2 Methodology

7.2.1 Relevant Legislation and Guidance

This chapter has been prepared in accordance with: -

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports. Environment Protection Agency (EPA, 2022)
- Health Impact Assessment Guidance. Institute of Public Health (IPH), (IPH, 2021).
- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report European Commission (EU, 2017)

This chapter follows these guidelines and will examine the health effects relevant to 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:

- 2016 Census carried out by the Central Statistics Office (CSO) 24 April 2016. Made available from https://www.cso.ie/en/
- 2022 Census results carried out by the Central Statistics Office (CSO) 03 April 2022. Made available from https://www.cso.ie/en/

[2] Directive 2014/52/EU

- Pobal HP Deprivation Index based on 2016 Census Data (CSO) Made available from https://www.pobal.ie/
- Pobal HP Deprivation Index based on 2022 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/

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 that only the Site itself. Generally, the closer to the works, the greater the potential for impacts. Based on our professional experience with similar developments, and the sensitivity of the surrounding source-pathway-receptor human baseline, the majority of the potential 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.

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 the wider area of 2.5 km from the Site location has been used 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 the Local Authority Area of Dún Laoghaire-Rathdown County Council (DLRCC), and in the electoral divisions (ED) of Clonskeagh-Windy Arbour (267059) and Churchtown-Woodlawn (267046). The area selected for the assessment of the impact on human health has been defined as the ED containing the Proposed Development site and those within 1 km of the Proposed Development site. The EDs which will be included alongside Clonskeagh-Windy Arbour and Churchtown-Woodlawn are Clonskeagh-Farranboley (267057), Clonskeagh-Milltown (267055), Clonskeagh-Belfield (267056), Clonskeagh-Roebuck (267058), Dundrum-Taney (267082), Dundrum-Kilmacud (267079), Dundrum-Sweetmount (267081) and Churchtown-Orwell (267045) which are also located within the DLRCC Local Authority Area.

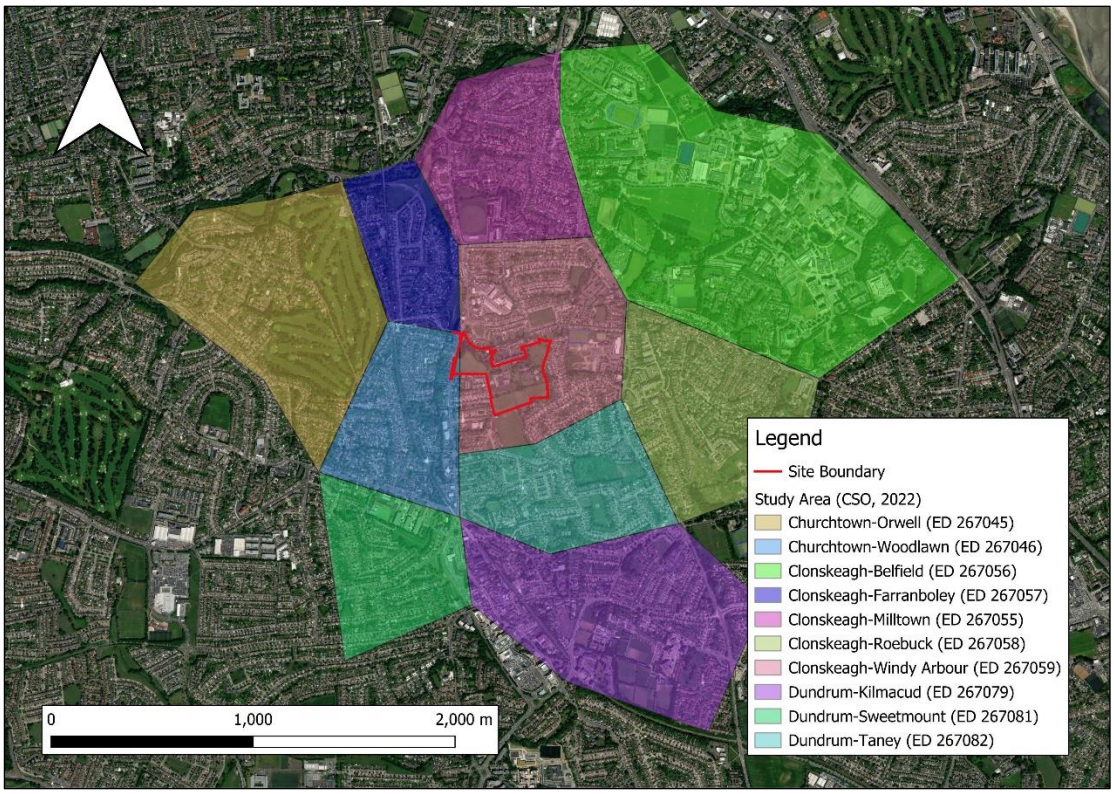


Figure 7.1 Location of the Proposed Development within the Study Area

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 7.2). 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.

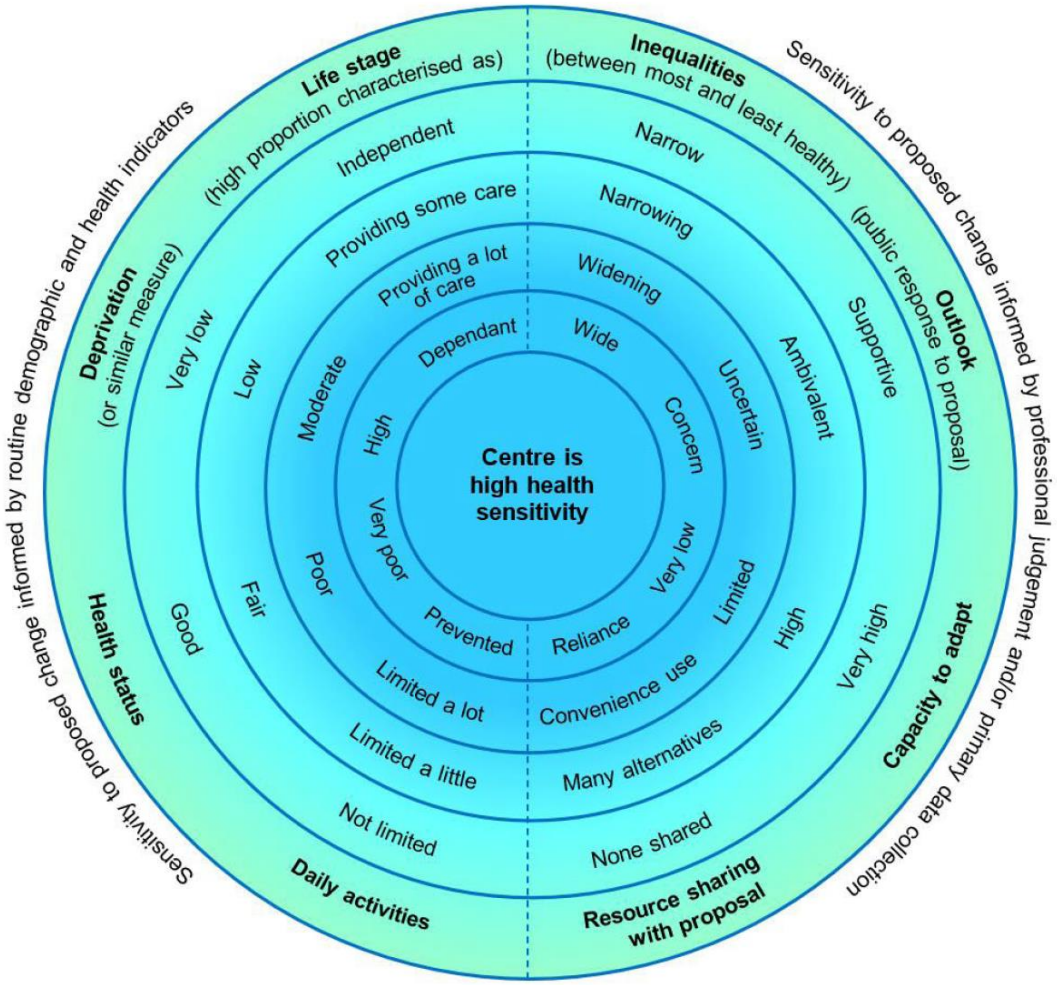


Figure 7.2 **Health Sensitivity: Conceptual Model (Source: Health Impact Assessment Guidance (IPH, 2021))**

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 7.3). 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.

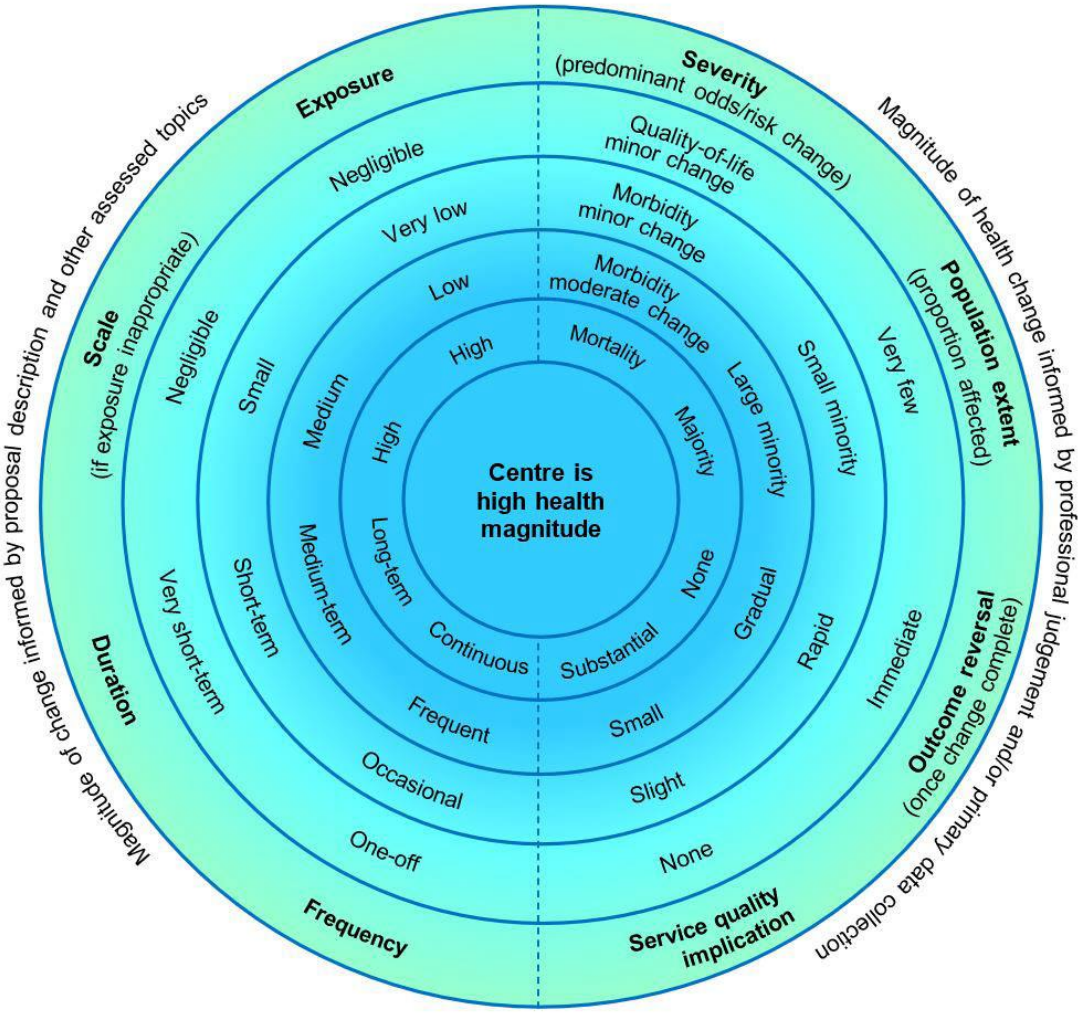


Figure 7.3 **Health Magnitude: Conceptual Model (Source: Health Impact Assessment Guidance (IPH, 2021))**

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 takes 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 as determined in Section 7.2.1 and Section 7.2.2 above. 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.

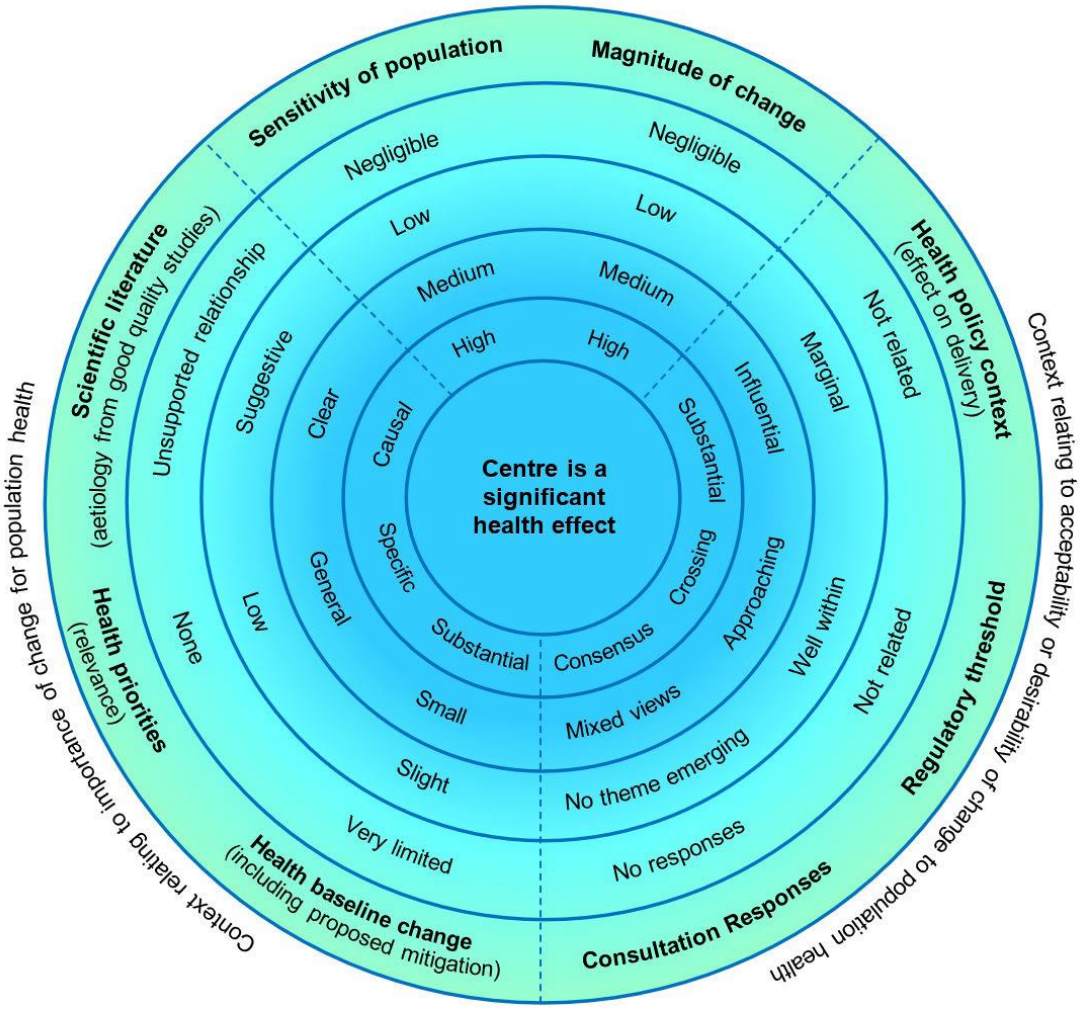


Figure 7.4 **Health Significance: Conceptual Model (Source: Health Impact Assessment Guidance (IPH, 2021))**

7.3 Baseline 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

The most recent census of population was carried out by the CSO on the 3 April 2022. The census compiles data for the whole state as well as smaller individual areas including counties, cities, towns, and electoral divisions. Taking into consideration the location of the Proposed Development, the census information on population, age profile, employment, and social class, has been analysed in relation to the development site.

Table 7.1 denotes the population change of the State and the electoral divisions which make up the study area for the census years 2016 and 2022. The Study Area has seen an increase in population across all of the EDs analysed. Over half of the ED populations grew at a rate higher than that of the state, including Clonskeagh-Windy Arbour where the Proposed Development will be located. The highest growth, 31.3%, was observed in Dundrum-Sweetmount.

Table 7.1 Population change at National and Electoral Division level from 2016 – 2022 (Source: www.cso.ie)

Area	Population for Census Year		% Change 2016-2022
	2016	2022	
State - Republic of Ireland	4,761,865	5,149,139	+8.1
Clonskeagh-Windy Arbour	2,736	3,031	+10.8
Churchtown-Woodlawn	1,481	1,525	+3.0
Clonskeagh-Farranboley	1,615	1,694	+4.9
Clonskeagh-Milltown	2,049	2,217	+8.2
Clonskeagh-Belfield	3,122	3,789	+21.4
Clonskeagh-Roebuck	2,699	3,357	+24.4
Dundrum-Taney	2,491	2,742	+10.1
Dundrum-Kilmacud	3,274	3,514	+7.3
Dundrum-Sweetmount	2,165	2,842	+31.3
Churchtown-Orwell	1,943	1,960	+0.9

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 that have reduced access to financial, social and political resources are affected. 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 and shows the overall affluence and deprivation for each ED. 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.

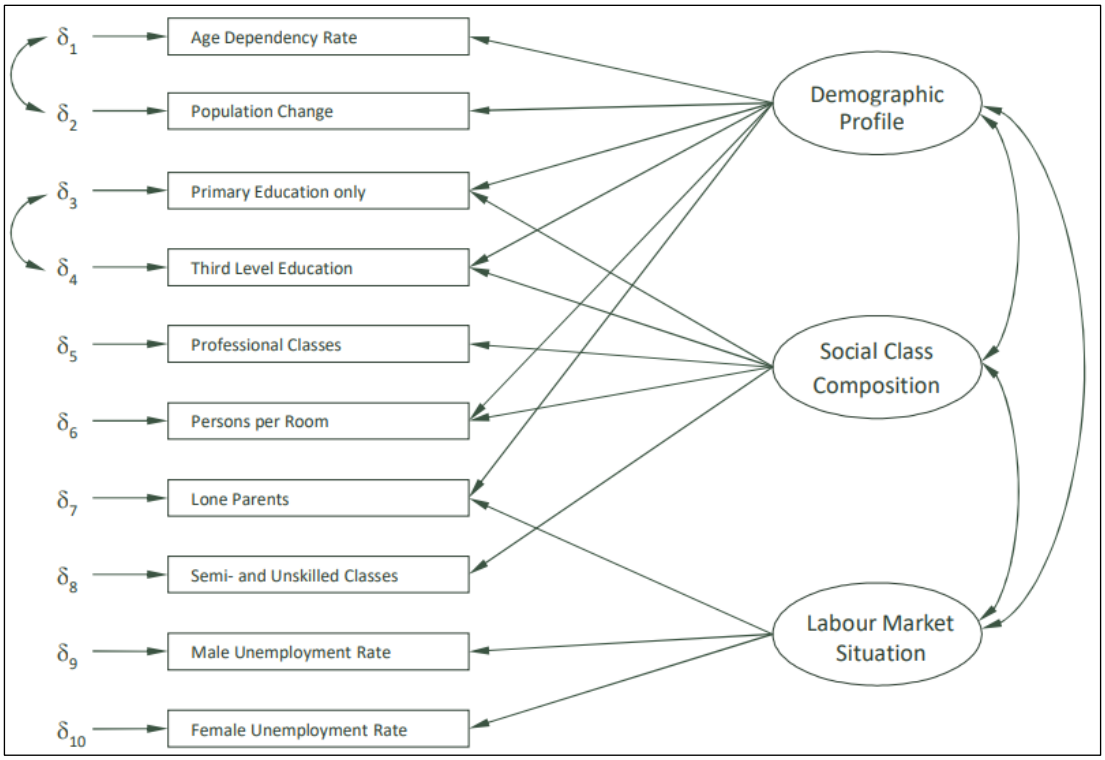


Figure 7.5 Basic Model of the Pobal HP Deprivation Index

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 7.2 below.

In order to make a uniform assessment using the conceptual model as set out in Figure 7.5 above for a relative Population Sensitivity, a Deprivation Score of 'Very disadvantaged', or 'Extremely disadvantaged' would represent a high sensitivity. Conversely, a 'Extremely affluent' or 'Very affluent' deprivation score would represent a very low sensitivity (Table 7.2).

Table 7.2 Pobal HP Index Relevant Score labels (Source: Pobal HP Deprivation Index)

Deprivation Score	Pobal HP Description	Sensitivity of Population
> 30	Extremely affluent	Very Low
20 to 30	Very affluent	Very Low
10 to 20	Affluent	Low
0 to 10	Marginally above average	Low
0 to -10	Marginally below average	Moderate
-10 to -20	Disadvantaged	Moderate
-20 to -30	Very disadvantaged	High
< -30	Extremely disadvantaged	High

The data in Table 7.3 show the Pobal HP Deprivation Index Relevant Index Scores for the Study Area based on the 2022 Census. Pobal have not released deprivation scores at the national level for 2022, so the Dublin County score has been utilised for comparison here instead. The

figures for the year 2022 show that the study area is 'Marginally Above Average' to 'Affluent'. This is higher than Dublin County which has an overall description of 'Marginally Above Average'. This indicates a Low Population Sensitivity (Deprivation) within the study area.

Table 7.3 Deprivation Score within the Study Area (Source: Pobal HP Deprivation Index, 2022 Census)

Area	Deprivation Score	Pobal HP Description
Dublin County	2.69	Marginally Above Average
Clonskeagh-Windy Arbour	11.29	Affluent
Churchtown-Woodlawn	12.55	Affluent
Clonskeagh-Farranboley	4.04	Marginally Above Average
Clonskeagh-Milltown	16.23	Affluent
Clonskeagh-Belfield	7.28	Marginally Above Average
Clonskeagh-Roebuck	12.89	Affluent
Dundrum-Taney	7.64	Marginally Above Average
Dundrum-Kilmacud	13.68	Affluent
Dundrum-Sweetmount	11.03	Affluent
Churchtown-Orwell	8.69	Marginally Above Average

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 7.4 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 to the ROI which can be defined as per the conceptual model as 'providing some care' to 'providing a lot of care'. This indicates that there is a larger proportion of working population within the Study Area, likely to be more mobile, and out of the home during the day, and

would therefore be less likely to be impacted by a development within the area as compared to a more dependant population.

Table 7.4 Age Dependency Ratio within the Study Area (Source: Pobal Geo-Profiling and 2022 Census)

Area	Age Dependency Ratio for Census Year	
	2016	2022
State - Republic of Ireland	52.70	53.22
Clonskeagh-Windy Arbour	29.39	29.97
Churchtown-Woodlawn	36.57	38.98
Clonskeagh-Farranboley	32.80	33.52
Clonskeagh-Milltown	31.12	31.84
Clonskeagh-Belfield	12.46	11.88
Clonskeagh-Roebuck	32.64	33.28
Dundrum-Taney	35.27	36.06
Dundrum-Kilmacud	27.96	30.13
Dundrum-Sweetmount	35.94	32.24
Churchtown-Orwell	40.69	42.33

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 7.5 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 7.5 Self-reported Measure of Population Health (Source: CSO, 2022 Census)

Area	% population describing their general health					
	Not Stated	Very Bad	Bad	Fair	Good	Very Good
State - Republic of Ireland	6.74%	0.32%	1.41%	8.64%	29.66%	53.23%
Clonskeagh-Windy Arbour	2.1%	0.3%	1.0%	6.7%	27.5%	62.6%
Churchtown-Woodlawn	1.9%	0.2%	0.8%	6.2%	26.0%	64.9%
Clonskeagh-Farranboley	5.3%	0.5%	1.9%	10.7%	27.4%	54.2%
Clonskeagh-Milltown	8.5%	0.2%	0.4%	4.2%	19.9%	66.9%
Clonskeagh-Belfield	6.3%	0.1%	0.4%	5.9%	28.0%	59.3%
Clonskeagh-Roebuck	6.1%	0.3%	0.6%	5.6%	26.3%	61.2%
Dundrum-Taney	3.2%	0.3%	1.3%	7.0%	28.4%	60.0%

Dundrum-Kilmacud	4.3%	0.1%	1.0%	6.44%	24.7%	63.5%
Dundrum-Sweetmount	1.7%	0.3%	1.3%	7.1%	28.1%	61.5%
Churchtown-Orwell	1.4%	0.3%	1.0%	7.7%	24.3%	65.2%

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 7.6 details the number of persons with a disability compared to the population as a whole. The data shows that the two Eds within which the Proposed Development are located (Clonskeagh-Windy Arbour and Churchtown-Woodlawn) have a similar % of Persons with a disability as the national average (22%, 20% respectively). Elsewhere within the study area the % of Persons with a disability is lower or broadly similar to the national average, which indicates that for individuals within the study area there are no greater restrictions on their daily activities, when compared to the national average.

Table 7.6 Persons with a Disability (Source: CSO, 2022 Census)

Area	Persons with a disability	Population	% Persons with a disability
State - Republic of Ireland	1,109,557	5,149,139	22%
Clonskeagh-Windy Arbour	664	3,020	22%
Churchtown-Woodlawn	310	1,529	20%
Clonskeagh-Farranboley	437	1,751	25%
Clonskeagh-Milltown	375	2,252	17%
Clonskeagh-Belfield	930	3,754	25%
Clonskeagh-Roebuck	622	3,365	18%
Dundrum-Taney	611	2,748	22%
Dundrum-Kilmacud	697	3,495	20%
Dundrum-Sweetmount	558	2,689	21%
Churchtown-Orwell	440	1,968	22%

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 an overall growth in the population between the 2016 and 2022 census. The Pobal HP Deprivation Index shows the area to be 'Marginally Above Average' to 'Affluent', indicating a Low Population Sensitivity (Deprivation) within the study area.

There is a low age dependency ratio, therefore large proportion of the population is within working age, implying a higher degree of self-sufficiency and resilience to change.

There is a high proportion of the population in the study are [54.2% - 66.9%] describing their health status as 'Very Good' and a very low proportion as 'Bad' or 'Very Bad'. The data presented above shows that the study area has a similar to slightly lower % of persons with a disability than the national average, which indicates that for persons within the area there are no greater restrictions on daily activities, compared to the national average.

Taking these factors into account, it can be concluded that the population in the study area is not particularly sensitive to change, categorising it with regard to the criteria set out in Figure 7.2 as having Low Population 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 provides 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.

While a general study area of ED's within 1 km from the Site location is included for population statistics, the wider area of 2.5 km from the Site location has been used to inform the baseline description of the area.

7.3.2.1 Community and Social Infrastructure within the Study Area

Residential and Employment Areas

Under the DLRCC Development Plan 2022 – 2028 the entire site boundary is located within land designated under the zoning Objective A, as can be seen in Figure 7.6 below. This zoning designation is to provide residential development and improve residential amenity while protecting the existing residential amenities. Much of the surrounding land in all directions is also zoned as Objective A.

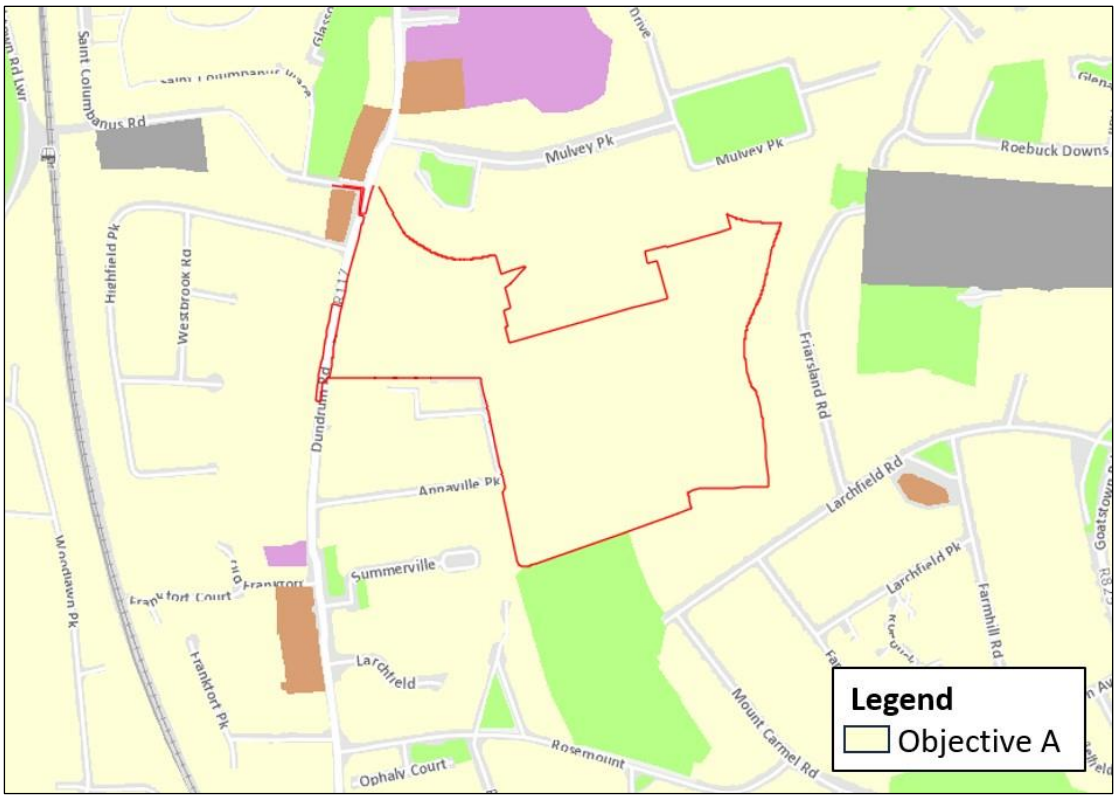


Figure 7.6 **Zoning of the Proposed Development Lands (DLR County Development Plan 2022 – 2028)**

Types of facilities within Dundrum Business Park to the north of the site include software companies; construction companies; packaging manufacturers; sustainability consultants; audio visual consultants; telecommunications providers; and computer security. Smaller commercial businesses are scattered around the study area among the residential lands.

The largest concentration of shopping facilities is Dundrum Town Centre, which is located c. 0.6km south of the site. Nutgrove Shopping Centre is also located within the Study Area, c. 1.6km southwest of the site.

The Proposed Development is bounded on all sides by existing residential estates; Mulvey Park to the north, Friarsland to the east, Larchfield to the south, and Annaville Park to the west. The wider area consists of predominately residential lands, including Windy Arbour, Churchtown, Clonskeagh, Dundrum, Roebuck and Goatstown.

There are approximately 30 no. high sensitivity receptors within 20m of the Proposed Development boundary, located in the residential estates which surround the Proposed Development on all sides.

Education, Childcare, Schools

There are a number of primary and secondary schools in the vicinity of the Proposed Development including:

- Our Lady's National School – c. 0.3km west;

- Our Lady's Grove Secondary School – c. 0.3km east;
- Our Lady's Grove Primary School – c. 0.3km east;
- Muslim National School – c. 0.5km northeast;
- Goatstown Educate Together Secondary School – c. 0.7km southwest;
- Goatstown Stillorgan Educate Together National School – c. 0.7km southwest;
- Ardtona House School – c.7km west;
- Gaelscoil na Fuinseoige – c. 0.8km southwest;
- Holy Cross School – c. 0.9km south;
- St Kilian's German School – c. 0.9km northeast;
- LFI Collège et Lycée – c. 0.9km northeast;
- Alexandra College Junior School – c. 1.0km north;
- Taney Parish Primary School – c. 1.1km south;
- Ashfield College – c. 1.2km south;
- Alexandra College Dublin – c. 1.2km north;
- Mount Anville Secondary School – c. 1.3km southeast;
- Gaelscoil Laighean – 1.4km east;
- De La Salle College – c. 1.4km west;
- The Good Shephard National School – c. 1.7km west; and
- Gonzaga College – c. 1.8km north.

The closest third level institution in the area is University College Dublin, located c. 1.1km northeast of the site.

Healthcare Services

The Healthcare Services within the study area are:

- Rowan Family Practice – c. 0.6km west;
- Woodlawn Medical Centre – c. 0.6km southwest;
- Moe Family Practice – c. 0.8km north;
- Priority Medical Clinic – c. 0.8km south;
- Centric Health – Churchtown Medical – c. 1.0km southwest;
- Dundrum Family Practice – 1.0km south;
- Goatstown Medical Centre – c. 1.0km southeast;
- Braemor Family Practice – c. 1.2km west;
- Churchtown Family Practice – c. 1.3km southwest;
- The Gables Medical Centre – c. 1.6km southwest; and
- Dodder Park Medical – c. 2.4km west.

There are two hospitals within the study area, Clonskeagh Hospital, which is located c. 1.6km north of the site, and St Vincent's University Hospital, which is located c. 2.4km northeast of the site.

Emergency Services

The nearest Garda Station is Dundrum Garda Station located c. 0.9km south of the site. The nearest Fire Station is Rathfarnham Fire Station located c. 1.5km southwest of the site.

Places of Worship

There are numerous places of worship in the vicinity of the development:

- Church of the Miraculous Medal – c. 0.6km north;
- Islamic Cultural Centre of Ireland – c. 0.7km northeast;
- Christ Church, Church of Ireland – c. 0.8km south;
- Holy Cross Church – c. 0.9km south;
- Church of the Good Shephard – c. 1.3km southwest;
- St Philip's Church – c. 1.4km northwest;
- Church of the Holy Name – c. 2.0km north;
- Church of St Thérèse, Mount Merrion – c. 2.0km east;
- St Thomas' Church of Ireland – c. 2.1km east; and
- Christ Church Rathgar – c. 2.2km northwest.

Green Infrastructure, Landscape and Amenity within the Study Area

There are many amenities within the Study Area. There is a greenway walking trail along the banks of the Dodder, located at its closest point c. 0.9km north of the site. There are also a number of parks along the banks of the Dodder north of the development, such as Dartry Park, located c. 1.2km northwest, Shanagarry Park, located c. 0.9km northwest, and Tobin Green, located c. 1.3km north. Deer Park is located c. 1.4km east of the site and also features pitches and tennis courts. There are three golf clubs within the Study Area, Castle Golf Club, located c. 1.5km to the west, Milltown Golf Club, located c. 0.4km to the west and Elm Park Golf & Sports Club, located c. 1.8km to the northeast. To the south of the site in Dundrum Town Centre there is a cinema, located c. 1.1km to the south, and the DLRCC operated Mill Theatre, located c. 1km to the south.

In terms of landscape amenity, the lands surrounding the site constitute a variety of urban land uses, but predominantly mid-low density semi-detached and terraced housing estates. Notable apartment developments within the vicinity include Trimblestown to the east of the site and Fernbank to the southwest of the LUAS bridge at Dundrum. This area can be considered of low sensitivity to the Proposed Development, which is of similar residential character.

There are no listed or scenic views, no landscape or amenity designations pertaining to the site. There are also three structures associated with the Central Mental Hospital that are listed on the Record of Protected Structures, two hospital buildings (RPS no. 2071 and no. 2073) and one chapel (RPS no. 2072).

7.3.2.2 Tourism within the Study Area

Tourism is returning to strong growth and continues to play a hugely influential role in Ireland's economic success.

The development site is located within Dún Laoghaire-Rathdown County, which has much to offer as a tourist destination, in particular its physical environment and the natural beauty of the Dublin Mountains, as well as Dublin Bay and Killiney Bay. The Dún Laoghaire-Rathdown Tourism Strategy (2024-2028) outlines the potential for tourism in the county:

'It is most known for its picturesque coastal area and stunning landscapes but is also renowned for its historic sites and vibrant cultural scene, which attract a substantial number of domestic and international visitors annually. The County's distinctive character emerges through its traditional and contemporary experiences, which makes the area suitable and attractive for local gatherings and cultural exchanges.'

The Proposed Development site is located in Dundrum, a primarily residential area. The closest area of significance to local tourism is Airfield Estate, which offers historical tours of Airfield House, horticultural tours of the landscaped gardens and educational tours of the working farm within the grounds. Overall, tourism is not a major industry in the immediate environs of the site.

7.3.2.3 Natural Resources within the Study Area

Geological Heritage and Economic Resources

Natural resources and land use in the study area has also been considered as they may have implications for the development of the lands. There are no active quarries or pits within the Proposed Development Study Area.

A review of Geological Survey Ireland online maps has shown that there is no. 1 Mineral Locality within the Study Area. There is a deposit of limestone located c. 2.2km northwest of the site.

There is one Geological Heritage Site located within the Study Area. The River Dodder weir, located at its closest point c. 1.7km north of the Proposed Development site, is a weir built on natural exposures of thick limestone beds in the channel of the River Dodder. Within the constraints of Dublin City's sparsely visible geology this outcrop is a valuable geological heritage resource.

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 no protected Recreational Waters or Bathing Waterbodies within the Study Area. The River Slang is situated to the west of the site and flows in a northerly direction to discharge into the River Dodder, and finally the Liffey Estuary and Dublin Bay. There are no protected Recreational Waters or Bathing Waterbodies along this route.

An existing drainage ditch on site runs in a northerly direction along the eastern boundary of the site, discharging to the Elm Park Stream. The Elm Park Stream discharges to Dublin Bay at Merrion Strand, which is a protected bathing waterbody under the WFD (Bathing Water ID: IEEABWC090_0000_0200).

Drinking Water Resources

A review of Environmental Sensitivity Mapping and Geological Survey of Ireland online maps that includes the Water Abstraction locations, and Groundwater Public Supply Source

Protection Areas has been undertaken. The closest Groundwater Source Protection Area to the Proposed Development is the Kilteel GWS, located over 17km to the southwest of the site. Neither the River Slang nor any of the connected downstream waterbodies are listed on the Water Framework Directive Register of Protected Areas (WFDRPA) for Drinking Water – Rivers.

The GSI dataset for groundwater wells and springs indicates three boreholes within the Study Area, located c. 0.9km west, c. 1.7km west and c. 1.9km northeast of the Proposed Development. None of the boreholes are listed under domestic use, and are located in urban areas with local authority mains water supply.

7.3.3 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.

7.3.3.1 Landslides, Seismic Activity and Volcanic Activity

In general, risk of landslides in Ireland is considered to be low, as the country is not located in a region with high seismic activity or large mountain ranges. Landslides are more common in unconsolidated material than in bedrock, and where the sea constantly erodes the material at the base of a cliff landslides and falls lead to recession of the cliffs. Landslides have occurred in Ireland in recent years in upland peat areas due to disturbance of peat associated with construction activities. The landslide susceptibility map (GSI spatial map viewer) identifies areas which are subject to landslides and is measured from low to high. The landslide susceptibility map considers the location of landslides and what causes them (slope, soil type and the impact of the flow of water). Based on the GSI spatial map viewer, the Proposed Development site is not in an area susceptible to landslides, with a GSI Landslide Susceptibility Classification of Low.

There are no active volcanoes in Ireland so there is no risk of volcanic activity.

In Ireland, seismic activity is recorded by the Irish National Seismic Network. The Geophysics Section of the School of Cosmic Physics, Dublin Institute for Advanced Studies, has been recording seismic events in Ireland since 1978 (www.dias.ie). This network consists of several seismometers that are located throughout Ireland. Seismic activity and earthquake risk in Ireland are generally considered to be low. This is because Ireland is located on the western edge of the Eurasian Plate, which is a tectonic plate that is not known for its seismic activity. However, earthquakes can still occur in Ireland, although they are typically small and have little impact. There is a very low risk of seismic activity to the Proposed Development site. This means that there is less than a 2% chance of potentially-damaging earthquake shaking in the next 50 years.

The Proposed Development site is not vulnerable to landslides, seismic activity or volcanic activity. Therefore, there is no significant potential for the Proposed Development to cause risks to human health due to its vulnerability to landslides, seismic activity or volcanic activity.

7.3.3.2 Proximity to Seveso or Industrial Emissions Site

The Seveso Directive (Directive 82/501/EEC, Directive 96/82/EC, Directive 2012/18/EU) was developed by the EU after a series of catastrophic accidents involving major industrial sites and dangerous substances. Such accidents can give rise to serious injury to people or serious damage to the environment, both on and off the site of the accident. The Chemicals Act (Control of Major Accident Hazards involving Dangerous Substances) Regulations 2015 (S.I. No. 209 of 2015) (the "COMAH Regulations"), implement the latest Seveso III Directive (2012/18/EU).

The purpose of the COMAH Regulations is to transpose the Seveso Directive into Irish law and lay down rules for the prevention of major accidents involving dangerous substances, and to seek to limit as far as possible the consequences for human health and the environment of such accidents, with the overall objective of providing a high level of protection in a consistent and effective manner.

Establishments are either lower tier establishments or upper-tier COMAH sites with above threshold quantities of dangerous substances present, and to which the provisions of the COMAH regulations apply.

The closest Notified Seveso Establishment to the Proposed Development is the Lower Tier establishment Synergen Power Limited, located c. 4.5 km northeast of the site in Dublin Port. There is a concentration of 13 no. Seveso establishments in the port, all at a greater distance from the Proposed Development than Synergen Power Limited. The site is not a Seveso facility and is not within the consultation distance of any Seveso facility. Therefore, there are no implications for major accidents or hazards at the Proposed Development site.

Figure 7.7 **Location of the Proposed Development in relation to Seveso Site Consultation Distances**

There is one EPA Licenced facility within the Study Area that could potentially give rise to cumulative effects, detailed in Table 5.7 below.

Table 7.7 **EPA Licenced Facilities nearby to the Proposed Development Site**

Registration number	Name	Category	Licence type	Distance (km)
P0216	Syntheses Limited	Industry	IEL	2.0

It is important to note that the proximity of a COMAH or licensed facility does not necessarily mean that the Proposed Development will be impacted by them or vice versa. However, it is essential to consider these sites as part of the existing environment and to consider and understand the potential for cumulative impacts or other interactions with the Proposed Development at this location.

7.3.3.3 Risk of Flooding

The potential risk of flooding on the site has been assessed. A Stage 2 Flood Risk Assessment was carried out by Barrett Mahony Civil & Structural Consulting Engineers, and is included as part of this planning application. This assessment concludes that the site lies outside the predicted 0.1% AEP (1 in a 1000 year) extent of flooding on the River Slang. It is therefore located entirely within Flood Zone C. The Proposed Development is classed as a Highly Vulnerable Development due to the presence of residential units across the site. This class of development is deemed appropriate for Flood Zone C. The surface water drainage system on site is designed to accommodate a 100yr storm + 20% climate change without flooding. Standard mitigation measures will apply on site. Apartment floor levels are set 150mm above the surrounding ground level, as are the level of the wastewater pumping stations, to minimise flood risk. All basements on site will be waterproofed. The top of basement car park entrance ramps will be set 100mm above the surrounding ground levels to avoid backflow of surface water down the ramps.

7.4 Potential Impacts of the Proposed Project

The main potential impacts on population and human health from the Proposed Development are potential for spills / leaks, air emissions, noise, visual, and traffic impacts. The baseline environment, pollution pathways, relevant mitigation measures and residual impacts have been assessed in greater detail within the corresponding specialist chapters; Chapter 9: Land, Soils, Geology and Hydrogeology; Chapter 10: Hydrology; Chapter 11: Air Quality, Chapter 13: Noise and Vibration; Chapter 14: Landscape and Visual Impact Assessment and Chapter 18: Material Assets (Roads and Traffic).

A summary of the main potential impacts as they are relevant to human health criteria during construction, commissioning, operation and decommissioning of the Proposed Development is presented herein.

7.4.1 Construction Phase

7.4.1.1 Potential Impacts on Businesses and Residences

The main potential negative impacts on local businesses and residences associated with the Proposed Development will be in relation to air quality, noise, visual impact and traffic. The potential impacts and mitigation measures to address them are dealt with within the corresponding chapters of this EIAR as follows: -

- Chapter 11: Air Quality;
- Chapter 13: Noise & Vibration;
- Chapter 14: Landscape and Visual Impact Assessment; and
- Chapter 18: Material Assets (Roads and Traffic).

The potential increase in the temporary population of the area during construction as a result of the employment of workers from outside the Dublin City Centre 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. 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 **positive, not significant, short term** impact on the economy and employment of the local and wider area.

7.4.1.2 Potential Impacts on Landscape, Amenity and Tourism

There will be no significant negative impacts on the local parks, tourism or the larger amenity areas. The Proposed Development will not create any wastewater discharge which could have a potential impact on local amenities or the local population.

Visual impacts and amenity impacts perceived by individual persons are highly subjective and difficult to characterise however, generally, the effects would be negative since construction is an inherently, unavoidably unsightly activity. It is considered that the overall impact on the community will be **negative, moderate** and **short term** during the construction phase.

7.4.1.3 Potential Impact from Land and Water Emissions on Human Health

With reference to Chapter 9 (Land, Soils, Geology and Hydrogeology), a reduction in groundwater quality via unmitigated pollutants entering the soil, the Slang River or Elm Park Stream or Dublin GWB has the potential to lead to negative impacts on human health and populations.

Furthermore, humans can also be exposed to petroleum hydrocarbons or other contaminants by inhaling the fumes / dust from contaminated soil. Depending on the type of contaminant and the level of exposure, soil contamination can have serious health implications. No contamination was detected in the site specific ground investigation report, however, as yet unknown groundwater supplies or abstractions, and as yet unknown soil contamination may exist.

Therefore, on this basis in the absence of mitigation measures the potential impacts during the construction phase on human health and populations due to changes to the potential for contamination of soil and groundwater are **negative, not significant** and **short term**.

With reference to Chapter 10 (Hydrology), during construction of the Proposed Development, a reduction in water quality via unmitigated pollutants entering the Slang River or Elm Park Stream has the potential to lead to negative impacts on human health and populations. Hydrocarbons and petroleum products for example have the greatest risk for human health when they are in drinking water. However, it is noted that there are no recorded Recreational Waters, Bathing Waterbodies, or Surface Water Drinking RPA, located downstream in the Sland River or River Dodder. However, the Elm Park Stream discharges to Dublin Bay at Merrion Strand, which is a protected bathing waterbody under the WFD. Therefore, on this basis in the absence of mitigation measures the potential impacts during the construction phase on human health and populations due to changes to the hydrological environment are **negative**, **slight** and **short term**.

7.4.1.4 Potential Impacts from Air Quality on Human Health

The key elements of construction of the Proposed Development with potential impacts on populations and human health from air quality and climate impacts are:

- Potential for Dust Soiling effects on people and property from general site preparation, vehicles and construction activities;
- Potential Human Health Impacts from dust (PM_{10} and $PM_{2.5}$.) emissions from general site preparation, vehicles and construction activities;
- Engine emissions from construction vehicles, traffic and machinery.
- A change in traffic flows on road links nearby the Proposed Development.

The greatest potential impact on air quality during the construction phase of the Masterplan is from construction dust emissions and the potential for nuisance dust and through human health impacts from PM_{10} and $PM_{2.5}$ emissions. While construction dust tends to be deposited within 250 m of a construction site, the majority of the deposition occurs within the first 50 m. 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 station meteorological data indicates that the prevailing wind direction is westerly to south-westerly with generally moderate wind (see Section 11.3.1 of Chapter 11).

In line with the UK Institute of Air Quality Management (IAQM) guidance document '*Guidance on the Assessment of Dust from Demolition and Construction'* (2014) as referenced in Chapter 11 Air Quality (Section 11.3.3) the overall sensitivity of the area to dust soiling impacts is

considered **high** based on the IAQM criteria outlined in Table 11.8. Based on the IAQM criteria outlined in Table 11.9, the worst-case sensitivity of the area to human health is considered to be **low**.

In the absence of mitigation there is the potential for **short-term, negative** and **slight** impacts to human health from air quality.

7.4.1.5 Potential Impacts from Noise and Vibration on Human Health

Exposure to excessive noise is becoming recognised as a large environmental health concern. According to the 2015 European Commission report 'Noise Impacts on Health', (European Commission, 2015), the most common effects of noise on the vulnerable include:

- Annoyance
- Sleep Disturbance
- Heart and circulation problems
- Quality of Life
- Cognitive Process
- Hearing

It is acknowledged that humans are particularly sensitive to vibration stimuli and that any perception of vibration may lead to concern. In the case of road traffic, vibration is perceptible at around 0.5mm/s and may become disturbing or annoying at higher magnitudes. Noise and vibration impacts associated with the Masterplan have been fully considered within Chapter 13 - Noise and Vibration of this EIA Report including consideration for the impacts on Populations and Human Health (noise sensitive locations).

A variety of items of plant will be in use for the purpose of demolition, site clearance and construction works. There will also be vehicular movements to and from the site that will make use of existing roads. Due to the nature of these activities, there is potential for the generation of elevated levels of noise in the vicinity of existing noise sensitive properties.

As detailed in Chapter 13 - Noise and Vibration, the closest external NSLs to the Proposed Development are at distances of approximately 5m to the south and southeast boundaries along Larchfield Road. The remaining closest NSLs are at distances of approximately 10m to 40m. Remaining properties are located at distances greater than 40 m from different work stages. The closest internal NSLs within the CMH Masterplan are directly adjacent to the site boundaries to the north i.e. the existing main hospital building, the chapel and the infirmary building. At the closest NSLs (5 – 15m), in the absence of mitigation, there will be a **negative**, **significant** to **very significant** and **short term** impact. The potential impact reduces with distance from the works, at the furthest NSLs the impact will be **negative, not significant** and **short term.**

With respect to the potential vibration impact, potential for vibration impacts during the demolition phase programme are likely to be applicable to the closest receptor locations to the proposed works. Vibration levels are also expected to be below a level that would cause disturbance to building occupants. The predicted vibration impact during the construction phase is **short-term, neutral** and **imperceptible.**

7.4.1.6 Potential Impacts from Traffic and Transportation on Human Health

The World Health Organisation Report 'Health Effects and Risks of Transport Systems: The Hearts Project' (World Health Organisation, 2006) states that road traffic is a major cause of adverse health effects - ranking with smoking and diet as one of the most important determinants of health in Europe. The report states;

> *"Traffic-related air pollution, noise, crashes and social effects combine to generate a wide range of negative health consequences, including increased mortality, cardiovascular, respiratory and stress-related diseases, cancer and physical injury. These affect not only transport users but also the population at large, with particular impact on vulnerable groups such as children and elderly people, cyclists and pedestrians"*

In the Department of Communications, Climate Action & Environment document *Cleaning Our Air – Public Consultation to Inform the Development of a National Clean Air Strategy* vehicle emissions are included as a key source of health impacts in Ireland (DOCCA&E, 2017).

As noted in Chapter 18 (Material Assets – Roads and Traffic), 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, the impact on human beings and in particular road users such as local Businesses, and Residences would be **slight, negative** and **short term.**

7.4.1.7 Potential Impacts from Major Accident Hazards and/or Natural Disasters on Population and Human Health

The Masterplan has the potential for an impact on the health and safety of workers employed during the construction phase. The activities of the Applicant's 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) to minimise the likelihood of any impacts on workers' health and safety.

As outlined in Section 7.3.3 there is a negligible risk of external natural disasters; including landslides, seismic activity, volcanic activity and sea level rise. There is a negligible risk of major accidents to occur at the facility due to the lack of proximity to Seveso/Control of Major Accident Hazards (COMAH) Regulations Establishment.

As stated in the FRA prepared by Barrett Mahony, the site is located in Flood Zones C and SUDS features will be implemented into the surface water drainage system, which will allow storage of water for the 1 in 100 year storm event plus a 20% allowance for climate change. The FRA concludes that the residual risk is low.

The potential effect is therefore **imperceptible** and unlikely in respect of Major Accident Hazards or Natural Disasters on Population and Human Health during the construction phase of the Proposed Development.

7.4.2 Operational Phase

7.4.2.1 Potential Impacts on Businesses and Residences

The main potential impacts on local businesses and residences associated with the Masterplan will be in relation to air quality, noise, visual impact and traffic. The potential impacts and mitigation measures to address them are dealt with within the corresponding chapters of this EIAR as follows:

- Chapter 11: Air Quality;
- Chapter 13: Noise & Vibration;
- Chapter 14: Landscape and Visual Impact Assessment; and
- Chapter 18: Material Assets (Roads and Traffic).

The addition of new residential accommodation to the area will have a positive impact on the vibrancy and vitality of the area and will help to support existing community and social infrastructure, in addition to further supporting nearby neighbourhood centre and commercial businesses. As set out in Section 7.3.2 of this Chapter, there is a considerable range of existing community and social infrastructure within close proximity to the subject site, which the future residents will be able to avail of. Residents will spend a portion of their income locally which would not happen without the Proposed Development. The Proposed Development will also provide café, restaurant, retail, medical, childcare and community centre units. As such, in providing these facilities the Proposed Development will also provide long term job opportunities for people living in the area to operate the facilities.

Once operational, the Proposed Development will give rise to much needed additional residential accommodation. As outlined above in Section 7.3.1.1, the Study Area has seen an overall growth in population. Over half of the ED populations grew at a rate higher than that of the state, including Clonskeagh-Windy Arbour where the Proposed Development will be located. The operational phase of the Proposed Development will result in the introduction of a greater intensity and density of residential development, delivering wider public realm improvements, in accordance with national and local planning policy objectives which seeks to deliver compact growth at suitable locations. Adequate provision of high-quality housing to serve the existing and future population of the county is an important pre-requisite and contributor to the establishment and maintenance of good human / public health. The high quality design of the Proposed Development will contribute to a positive impact on the wellbeing of future residents.

An analysis of Wind Microclimate levels was undertaken in Chapter 15 Microclimate (Wind). Winter conditions range between sitting, standing, leisure walking and business walking. Summer conditions range between sitting, standing and leisure walking. Overall, the region which is suitable for business walking is of significantly lesser extent than the region of business walking recorded for the baseline scenario, and the Proposed Development is expected to make conditions calmer overall within the local area.

Taking into account the provision of additional, high quality residential accommodation and the good level of social and community infrastructure within the area to support such a development, the impact on population will be **positive, moderate** and **long term**.

7.4.2.2 Potential Impacts on Landscape, Amenity and Tourism

The Proposed Development once operational will have no impact on shopping amenities or tourism. There will be no significant negative impacts on the local parks. All wastewater generated by the Proposed Development will be connected to the existing public foul network and so will not impact local amenities or the local population.

The Proposed Development design includes communal amenity open spaces, such as courtyards, as well as public open spaces and play areas. Therefore, the Proposed Development when operational will have a **positive, not significant** and **long term** impact on local amenities.

As discussed in Chapter 14 – Landscape and Visual, there is a strong functional and thematic relationship between the Proposed Development and the nearby Dundrum Town Centre. They both represent intensive contemporary design responses to the needs of a rapidly growing urban population. The potential effects of the Proposed Development on the local population in terms of landscape are **moderate, positive** and **long term**.

7.4.2.3 Potential Impacts from Land and Water Emissions on Human Health

With reference to Chapter 9 (Land, Soils, Geology and Hydrogeology) a reduction in groundwater quality via unmitigated pollutants entering the soil, the slang River or Elm Park Stream, or Dublin GWB has the potential to lead to negative impacts on human health and populations. Hydrocarbons and petroleum products for example have the greatest risk for human health when they are in drinking water. Furthermore, humans can also be exposed to petroleum hydrocarbons or other contaminants by inhaling the fumes / dust from contaminated soil. Depending on the type of contaminant and the level of exposure, soil contamination can have serious health implications.

During the operational stage of the development, the day-to-day activities of the completed development would be unlikely to have any direct impact on the land and soils in the surrounding environment.

Therefore, on this basis, in the absence of mitigation measures the potential impacts during the operational phase on human health and populations due to the potential for groundwater contamination are **negative**, **not significant** and **long term**.

With reference to Chapter 8 (Water), a reduction in water quality via unmitigated pollutants entering the Slang River or Elm Park Stream has the potential to lead to negative impacts on human health and populations. Hydrocarbons and petroleum products for example have the greatest risk for human health when they are in drinking water. However, it is noted that there are no recorded Recreational Waters, Bathing Waterbodies, or Surface Water Drinking RPA, located downstream in the Sland River or River Dodder. However, the Elm Park Stream discharges to Dublin Bay at Merrion Strand, which is a protected bathing waterbody under the WFD.

There are no discharges to any open water courses included in the design. The projected surface water network has been designed to provide sufficient capacity to contain and convey all surface water runoff associated with a 1 in 100 year event to the attenuation basins without

any overland flooding. In the event of an accidental leakage of oil from the parking areas, this will be intercepted by the drainage infrastructure proposed.

In the absence of mitigation measures the potential impacts during the operational phase on human health and populations due to changes to the hydrological environment are **negative**, **slight** and **long term**.

7.4.2.4 Potential Impacts from Air Quality on Human Health

As outlined in Chapter 11 Air Quality, operational phase traffic has the potential to impact local air quality as a result of increased vehicle movements associated with the implementation of the Proposed Development. The impact of NO_2, PM_{10} and $PM_{2.5}$ emissions for the modelled Opening Year and Design Year was predicted at the nearest sensitive receptors to the development. Therefore, it can be determined that the impact from air quality to human health during the operational stage (in the absence of mitigation) is **direct, negative, long-term** and **not significant.**

7.4.2.5 Potential Impacts from Noise and Vibration on Human Health

The potential risks to human health from excessive noise and vibration exposure are as described above in Section 7.4.1.5. Noise and vibration impacts associated with the development have been fully considered within Chapter 13 of the EIA Report.

Once the Proposed Development is operational, the potential noise impacts to the surrounding environment are predicted to be minimal. The residential aspect of the development is not expected to generate any significant noise sources over and above those which form part of the existing environment at neighbouring residential areas (road traffic noise, estate vehicle movements, children playing, etc.) and, hence, no significant impact are predicted in this regard.

In the absence of mitigation, the resulting impact of noise generated during the operational phase of the Proposed Development on human health is likely to be **negative, long-term, not significant** for the vast majority of noise sensitive locations, while the potential impact at the nearest residences during the operational phase (in the absence of mitigation) will be **negative, long-term,** and **slight.**

7.4.2.6 Potential Impacts from Traffic and Transportation on Human Health

The World Health Organisation Report 'Health Effects and Risks of Transport Systems: The Hearts Project' (World Health Organisation, 2006) states that road traffic is a major cause of adverse health effects - ranking with smoking and diet as one of the most important determinants of health in Europe. The report states;

> *"Traffic-related air pollution, noise, crashes and social effects combine to generate a wide range of negative health consequences, including increased mortality, cardiovascular, respiratory and stress-related diseases, cancer and physical injury. These affect not only transport users but also the population at large, with particular impact on vulnerable groups such as children and elderly people, cyclists and pedestrians"*

In the Department of Communications, Climate Action & Environment document *Cleaning Our Air – Public Consultation to Inform the Development of a National Clean Air Strategy* vehicle emissions are included as a key source of health impacts in Ireland (DOCCA&E, 2017).

As outlined in Chapter 18 Material Assets (Roads and Traffic), traffic modelling analysis was undertaken for AM and PM peak weekday periods to assess the capacity of the proposed new signalised access junction onto Dundrum Road with the Proposed Development traffic in place. In the absence of mitigation, the potential impacts of traffic generated by the Proposed Development on human health will be **negative, moderate** and **long term.**

7.4.2.7 Potential Impacts from Major Accident Hazards and/or Natural Disasters on Population and Human Health

The Masterplan has been designed with consideration given to the health and safety risks of people living and working in the vicinity. The facility has been designed by skilled personnel in accordance with internationally recognised standards, design codes, legislation, good practice and experience.

As outlined in Section 7.3.3 there is a negligible risk of external natural disasters including; landslides, seismic activity, volcanic activity and sea level rise. There is a negligible risk of major accidents to occur at the facility due to the lack of proximity to Seveso/Control of Major Accident Hazards (COMAH) Regulations sites.

As noted in Section 7.3.3, the site is located in Flood Zones C and SUDS features will be implemented into the surface water drainage system, which will allow storage of water for the 1 in 100 year storm event plus a 20% allowance for climate change. The FRA concludes that the residual risk is low.

The potential effect is therefore **imperceptible**, and unlikely, respect of Major Accident Hazards or Natural Disasters on Population and Human Health Operational Phase of the Proposed Development.

7.5 Mitigation Measures

Mitigation measures proposed to minimise the potential impacts on human health in terms of Land and Water Emissions, Air Quality, Noise and Vibration, Landscape and Visual and Traffic are discussed in the relevant sections of Chapters 9, 10, 11, 13, 14, and 18 of this EIAR respectively.

7.5.1 Construction Phase

Any perceived nuisance impacts on the immediate local population will be short-term in nature due to the length of the construction process for the Proposed Development. The remedial and mitigation measures to address the potential effects on population and human health from the Proposed Development have been assessed within the corresponding chapters of the EIAR.

7.5.1.1 Businesses and Residences

P_1: The construction contractor will establish a feedback mechanism for residents to report any concerns or issues related to construction activities. By establishing this feedback mechanism, the construction contractor will engage with the community to address concerns and provide updates on mitigation efforts.

7.5.1.2 Landscape, Amenity and Tourism

Due to the existing c.5m high perimeter stone wall around the site which will preclude visibility of much of the construction activity**,** no further mitigation is proposed.

7.5.1.3 Land and Water Emissions

P_2: All excavated materials will be visually assessed by suitably qualified persons for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of potential contaminants to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted / licensed waste disposal contractor. All sampling and soil handling will be undertaken by suitably qualified and trained persons using suitable personal protective equipment to avoid risks to human health.

P_3: The mitigation measures set out in Chapter 9: Land, Soils, Geology and Hydrogeology, Section 9.5.1 and Chapter 10: Hydrology, Section 10.6.1, will be implemented during the construction works for the protection of human health and populations. These measures relate to controlling sediment runoff, preventing spillage of hydrocarbons, soil excavation and other chemicals and groundwater dewatering works.

7.5.1.4 Air Emissions

P_4: In order to mitigate the potential dust-related health impacts during the Construction Phase, dust related mitigation measures have been provided in Chapter 11 Air Quality of this EIAR. The mitigation measures draw on best practice guidance from Ireland (DCC, 2018), the UK (IAQM (2023), BRE (2003), The Scottish Office (1996), UK ODPM (2002)) and the USA (USEPA, 1997). These measures will be incorporated into the overall Construction Environmental Management Plan (CEMP) prepared for the Site.

7.5.1.5 Noise and Vibration Emissions

P_5: Best practice noise and vibration control measures will be employed by the contractor during the Construction Phase in order to avoid significant impacts at the nearest sensitive buildings. The best practice measures set out in *BS 5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites - Noise* and the European Communities (Noise Emission by Equipment for Use Outdoors) Regulations, 2001 will be complied with. Further details are provided in Chapter 13: Noise & Vibration.

7.5.1.6 Traffic and Transportation

P_6: The mitigation measures set out in Chapter 18: Materials Assets (Roads and Traffic) will be implemented to mitigate against traffic relates impacts to human health.

7.5.1.7 Major Accident Hazards and/or Natural Disasters

There are no specific mitigation measures required during construction in respect of Major Accident Hazards and Disasters.

7.5.2 Operational Phase

7.5.2.1 Businesses and Residences

Once construction works are completed there are no specific mitigation measures required in respect of local businesses and residences.

7.5.2.2 Landscape, Amenity and Tourism

Once construction works are completed there are no specific mitigation measures required in respect of amenity and tourism.

The main siting, design and landscaping measures for the Proposed Development are all deemed appropriate and are integral to the design of the development as already assessed. Therefore no further mitigation is required.

7.5.2.3 Land and Water Emissions

No mitigation measures for land, soils or geology are required during the operational stage.

P_7: Measures incorporated into the development design to mitigate the potential effects on hydrology will be implemented, as outlined in Chapter 10 Hydrology. Design measures to minimise the likelihood of any spills entering the water environment includes the design of the car park with hydrocarbon interceptors.

7.5.2.4 Air Emissions

Once construction works are completed there are no specific mitigation measures required in respect of air quality.

7.5.2.5 Noise and Vibration Emissions

P_8: The best practice noise control techniques outlined in Chapter 13 Noise and Vibration will be reviewed and implemented as appropriate. This will ensure that noise levels are acceptable for the protection of human health.

7.5.2.6 Traffic and Transportation

P_9: The mitigation measures set out in Chapter 18: Materials Assets (Roads and Traffic) should be implemented to mitigate against traffic relates impacts to human health. This includes the implementation of a Mobility Management Plan.

7.5.2.7 Major Accident Hazards and/or Natural Disasters

Once construction works are completed there are no specific mitigation measures required in respect of Major Accident Hazards and Disasters.

7.6 Residual Impacts

7.6.1 Construction Phase

7.6.1.1 Businesses and Residences

No mitigation is proposed regarding this factor as impacts will be positive. The Construction Phase, therefore, is considered to have the potential to have a **positive, not significant, short term** residual impact on the economy and employment of the local and wider area.

7.6.1.2 Landscape, Amenity and Tourism

With reference to Chapter 14 – Landscape and Visual Impact Assessment, since mitigation measures are not proposed, residual impacts will be as described above i.e. **negative, moderate** and **short term** during the construction phase.

7.6.1.3 Land and Water Emissions

The implementation of the mitigation measures detailed in Section 7.5.1 (and Section 9.5.1 of Chapter 9: Land, Soils, Geology and Hydrogeology, and Section 10.6.1 of Chapter 10: Hydrology) will ensure that the potential impacts on human health and populations during the Construction Phase are adequately mitigated. The residual effect on human health and populations from land and water emissions during the Construction Phase is considered to be **neutral, imperceptible** and **short-term**.

7.6.1.4 Air Emissions

Best practice mitigation measures are presented for the Construction Phase of the Proposed Development. They will focus on the pro-active control of dust and other air pollutants to minimise generation of emissions at source. The mitigation measures that will be put in place during construction of the Proposed Development will ensure that the impact of the development complies with all EU ambient air quality legislative limit values. These limit values are based on the protection of human health. Therefore, the residual effect of the construction of the Proposed Development will be **short-term, direct, negative** and **not significant** with respect to human health.

7.6.1.5 Noise and Vibration Emissions

The application of binding noise limits and hours of operation, along with implementation of appropriate noise and vibration control measures (outlined fully in Section 13.5.1 of Chapter 13 Noise and Vibration, will ensure that noise impact is kept to a minimum as far as practicable. During periods when initial construction works are occurring at distances of up to

50m and other construction works at a distance of up to 20m from the nearest noise sensitive locations to the site boundary, there is potential for **temporary, negative, moderate** to **significant** noise impacts to occur. For the remainder of construction periods, construction noise impacts will be **short-term, negative, slight** to **moderate.** Vibration impacts during the construction phase will be **neutral, short-term** and **imperceptible.**

7.6.1.6 Traffic and Transportation

Provided the mitigation measures detailed in Section 7.5.1.6 and the Construction Traffic Management Plan (CTMP) are incorporated during the Construction Phase, the residual impact upon the local population from traffic is predicted to be **short-term** in nature and **slight** and **negative** in terms of effect.

7.6.1.7 Major Accident Hazards and/or Natural Disasters

Taking into account the mitigation measures outlined in Section 7.5 it is predicted that there will be no residual impacts with regard to the Construction Phase major accident hazards and/or natural disasters on population and human health.

7.6.2 Operational Phase

7.6.2.1 Businesses and Residences

No mitigation is proposed regarding this factor as impacts will be positive. The Operational Phase, therefore, is considered to have the potential to have a **positive, moderate, long term** residual impact on businesses and residences of the local population.

7.6.2.2 Landscape, Amenity and Tourism

No mitigation is required regarding amenity during the Operational Phase due to the positive nature of the identified impacts. The Operational Phase, therefore, is considered to have the potential to have a **positive, long term** and **not significant** residual impact on amenities and tourism.

With reference to Chapter 14 – Landscape and Visual Impact Assessment, since mitigation measures are not proposed, residual impacts will be as described above i.e. **positive, moderate** and **long term** during the operational phase.

7.6.2.3 Land and Water Emissions

The implementation of the mitigation measures detailed in Section 7.5.2 will ensure that the potential impacts on human health and populations once the Proposed Development is constructed and operational are adequately mitigated. The residual effect on human health and populations from land and water emissions during the Operational Phase is considered to be **neutral, imperceptible** and **long term.**

7.6.2.4 Air Emissions

Dispersion modelling of traffic emissions at sensitive receptors in proximity to impacted road links during the operational phase indicate pollutant emissions will be in compliance with the relevant air quality standards. Therefore, the operational phase impact to air quality as a result of increased traffic is **direct, long-term, negative** and **not significant**.

7.6.2.5 Noise and Vibration Emissions

Proprietary noise and vibration control measures will be employed as part of the detailed design in order to ensure that noise emissions from building services plant do not exceed the adopted criterion at any nearby NSLs. The residual impact of noise generated during the operational phase of the Proposed Development on human health is likely to be **negative, not significant** and **long term.**

7.6.2.6 Traffic and Transportation

As outlined in Chapter 18 Material Assets (Roads and Traffic), there will be a moderate increase in the use of the road network by private vehicles in the immediate vicinity of the proposed access. A mobility management plan will promote more sustainable forms of transport and will significantly mitigate these impacts. The residual impact to population and human health from traffic will be **negative, not significant** and **long term.**

7.6.2.7 Major Accident Hazards and/or Natural Disasters

It is predicted that there will be no residual impacts regarding Operational Phase major accident hazards and/or natural disasters on population and human health.

7.7 Monitoring

7.7.1 Construction Phase

The construction Contractor will prepare a detailed CEMP that will include all mitigation measures set out within this EIAR and any subsequent planning conditions relevant to the Proposed Development. It will also set out in detail the overarching vision of how the Construction Contractor of the Proposed Development will manage the Site in a safe and organised manner. The Contractor will appoint a competent person who will prepare and maintain the noise, vibration, dust, and groundwater monitoring plan.

Additional monitoring requirements are set out in Chapters 9: Land, Soils, Geology and Hydrogeology, 10: Hydrology, 11: Air Quality, 13: Noise & Vibration, 14: Landscape and Visual Impact Assessment and 18: Material Assets (Roads and Traffic) of this EIAR.

7.7.2 Operational Phase

No additional monitoring other than that which is set out in Chapters 9: Land, Soils, Geology and Hydrogeology, 10: Hydrology, 11: Air Quality, 13: Noise & Vibration, 14: Landscape and Visual Impact Assessment and 18: Material Assets (Roads and Traffic) of this EIAR required.

7.8 Reinstatement

This is not applicable to Chapter 7 of this EIAR.

7.9 Interactions

This section discusses interactions between Population and Human Health and other specialist environmental topics considered in this EIAR.

7.9.1 Land, Soils Geology and Hydrogeology

There is a risk of accidental pollution to land, soil and geology within the area from construction works, such as excavations and oil / diesel spillages from construction plant and equipment. Surface water runoff from the surface of the excavated areas may result in silt discharges to the surrounding network. The potential impact during construction on Population and Human Health in respect of the environmental factor of Land, Soils and Geology is **negative, short term** and **not significant.**

The sources of pollution that could potentially have an effect on the soils and geology of Proposed Development during the operational phase shall be oil and fuel leaks from parked cars, service vehicles, etc. However, due to hardstanding areas this is more likely to impact on the water environment. The potential impact during operation on Population and Human Health in respect of the environmental factor of Land, Soils, and Geology is **long term, neutral** and **imperceptible**.

7.9.2 Hydrology

There is a risk of accidental pollution to water within the area from construction works, such as oil / diesel spillages from construction plant and equipment. Surface water runoff from the surface of the excavated areas may result in silt discharges to the surrounding network. There is a risk of contamination to the existing water supply during connection to the public water supply. The potential impact during construction on Population and Human Health in respect of the environmental factor of Water is **negative, not significant** and **short term.**

When operational, there are no discharges to any open water courses included in the design. The projected surface water network has been designed to provide sufficient capacity to contain and convey all surface water runoff associated with the 1 in 100 year event to the attenuation basins without any overland flooding. In the event of an accidental leakage of oil from the parking areas, this will be intercepted by the drainage infrastructure proposed. As such, the potential for unmitigated off-site flooding or contamination of surface water from oil / diesel spillages will not have potential to impact on human health, populations, and material assets. The effect is considered to be **long-term, imperceptible** and **neutral**.

7.9.3 Air Quality and Climate

Dust emissions from the construction stage of the Proposed Development have the potential to impact populations through nuisance dust. There are some high sensitivity residential receptors in the vicinity of the site. In the absence of mitigation there is the potential for **not**

significant, direct, negative, short-term effects to nearby sensitive receptors as a result of dust emissions from the Proposed Development.

The traffic generated by the Proposed Development during operation has been assessed and it has been determined that pollutant concentrations will be in compliance with the Air Quality Standards. The effect to human health during the operational stage will be **direct, negative, long-term,** and **not significant.**

7.9.4 Noise and Vibration

During the construction phase of the Proposed Development there will be a potential temporary to short term impact on nearby properties due to noise emissions from site traffic and other activities. During periods when initial construction works are occurring at distances of up to 50m and other construction works at a distance of up to 20m from the nearest noise sensitive locations to the site boundary, there is potential for **temporary, negative, moderate** to **significant** noise impacts to occur. For the remainder of construction periods, construction noise impacts will be **short-term, negative, slight** to **moderate.**

During operations predicted noise emissions from the additional traffic, and mechanical and electrical services do not exceed the adopted criterion at any nearby noise sensitive locations. The resultant noise impact is **negative**, **not significant** and **long-term**.

7.9.5 Landscape and Visual Impact

Visual impacts perceived by individual persons are highly subjective and difficult to characterise however, generally, the effects would be negative since construction is an inherently, unavoidably unsightly activity. It is considered that the overall interaction between the community and landscape and visual will be **negative, moderate** and **short term** during the construction phase.

There is a strong functional and thematic relationship between the Proposed Development and the nearby Dundrum Town Centre. They both represent intensive contemporary design responses to the needs of a rapidly growing urban population. As a result, it is anticipated that the interaction between the local population and landscape and visual will be **positive, moderate,** and **long term.**

7.9.6 Material Assets, including Transport and Waste

The Proposed Development will have not have an impact on material assets such as water supply and power supply. The predicted interaction between the connection to utilities and the populations and businesses in the surrounding area is **imperceptible** and **neutral**.

The potential impacts on human beings are in relation to incorrect management of waste during construction and / or operation, which could result in littering and presence of vermin – with associated potential for negative impacts on human health and residential amenity. A carefully planned approach to waste management and adherence to the project specific RWMP and mitigation measures in Chapter 7 (Population & Human Health) and Chapter 20, will ensure appropriate management of waste and avoid any negative impacts on the local population. The effects should be **long-term, imperceptible** and **neutral**.

There is potential for construction traffic to impact from a noise and dust perspective in relation to the surrounding road network. There is also potential for traffic congestion, due to increased heavy good vehicles on the road network which may also perform turning movements, unloading, etc., in areas that impact on traffic. There is potential for construction traffic to have a **slight, negative** effect on the surrounding environment. However, the duration of this impact will be **short-term**.

When operational the Proposed Development will generate a number of trips by various modes of travel including vehicular, pedestrian, cycle and public transport. As the affected junctions have sufficient capacity impact from the Proposed Development will be minimal. The interaction will be **negative, not significant** and **long-term.**

7.10 Cumulative Impacts

7.10.1 Construction Phase

The implementation of mitigation measures within each chapter and detailed in Section 7.5.1; as well as the compliance of adjacent development with their respective planning permissions, will ensure there will be minimal cumulative potential for change in soil quality or the natural groundwater regime during the construction phase of the Proposed Development.

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 in terms of traffic, dust, and noise.

Contractors for the Proposed Development will be contractually required to operate in compliance with a project-specific CEMP and Construction Traffic Management Plan which will include the mitigation measures outlined in this EIA Report. The construction phase for the overall development of the applicant owned lands would be restricted by the same binding limits for noise, dust, and emissions to water.

According to the IAQM guidance (2023) should the construction phase of the Proposed Development coincide with the construction phase of any other developments within 350m then there is the potential for cumulative construction dust related impacts to nearby sensitive receptors. However, provided the mitigation measures outlined in Section 7.5.1, are implemented throughout the construction phase of the Proposed Development significant cumulative dust impacts are not predicted. The predicted residual cumulative air quality impacts during the construction phase are **short-term, direct, negative,** and **not significant.**

In the event that other construction activities are taking place concurrently with the construction of the Proposed Development, there is potential for cumulative noise impacts to occur. Due to the proximity and nature of construction works associated with the Proposed Development, however, noise levels from the Proposed Development will dominate the noise environment when occurring in proximity to the noise sensitive locations along its immediate boundary. The contribution from other sites will therefore have a slight impact (i.e. will be at least 10 dB below those associated with the Proposed Development) such that the construction noise levels discussed in Section 7.4.1 will remain a representation of a worst

case analysis. Cumulative construction noise effects of impact are expected to be **negative, moderate** to **significant** and **short-term.**

7.10.2 Operational Phase

The potential cumulative impacts of the Proposed Development during the operational phase in terms of Air Emissions, Noise generation and Traffic generation in the context of the Permitted Development have been considered in Chapter 11 Air Quality, Chapter 13 Noise and Vibration and Chapter 18 Material Assets (Roads and Traffic). The assessments indicate that the Proposed Development is not likely to result in significant adverse impacts on Human Health either alone or in combination with any likely future projects.

The cumulative impact is included within the operational stage impact for the Proposed Development, which has assessed operational road traffic emissions generated by the Proposed Development and committed developments. The significance of the effect on air quality due to the cumulative operational phase impact of the Proposed Development will be **direct, long-term, negative** and **not significant.**

During the operational phase any cumulative impacts will be due to an increase in road traffic noise. However, given the insignificant levels of noise increase as a result of the traffic associated with this Proposed Development, it is not expected that cumulative traffic noise will increase by any significant margin as a result of this Proposed Development.

7.11 'Do-Nothing' Effect

If the Proposed Development were not to proceed, the subject land would for the short term remain as it is, in which case there is no potential for the positive impacts associated with increased housing supply, increased local amenities and community spaces.

In the long-term, it is likely that the lands would be developed in time for another similar development in line with the DLRCC ***Objective A*** land designation for the site.

7.12 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.

7.13 References

Central Statistics Office. Statbank Databases (Accessed June 2024, https://www.cso.ie/en/databases/)

Central Statistics Office. Census of Population, 2016 and 2022. (Accessed June 2024, https://www.cso.ie/en/census/)

Central Statistics Office. Labour Force Survey, 2020 (Accessed June 2024, www.cso.ie/en/statistics/labourmarket/labourforcesurveylfs)

Dún Laoghaire-Rathdown County Council, Dún Laoghaire-Rathdown County Development Plan 2022-2028, 2022.

Environment Protection Agency, Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022)

Environment Protection Agency, Advice Notes for Preparing Environmental Impact Statements Draft (EPA, 2015)

European Commission (EC), Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (EC, 2017).

Pobal HP Deprivation Index (Accessed June 2024, https://data.gov.ie/dataset/pobal-hp-deprivation-index)

Seveso Directive (Directive 82/501/EEC, Directive 96/82/EC, Directive 2012/18/EU)

8.0 BIODIVERSITY

8.1 Introduction

This section of the Environmental Impact Assessment report (EIAR) was carried out by Altemar Ltd. It assesses the biodiversity value of the proposed development area and the potential impacts of the development on the ecology of the surrounding area within the potential Zone of Influence (ZOI). It also outlines the standard construction, operational, and monitoring measures that are proposed to minimise potential impacts and to improve the biodiversity potential of the proposed development site.

Desk studies were carried out to obtain relevant existing biodiversity information within the ZOI. The assessment extends beyond the immediate development area to include those species and habitats that are likely to be impacted upon by the project. Details of the proposed development are seen in Chapter 3 of the EIAR. The development will consist of the construction of a residential scheme of 934 no. dwellings on an overall site of c. 9.7 ha.

The programme of work in relation to biodiversity aspects of the EIAR have been designed to identify and describe the existing ecology of the area and detail sites, habitats or species of conservation interest. It also assesses the significance of the likely impacts of the scheme on the biodiversity elements and outlines measures to alleviate identified impacts. Residual impacts are also identified.

A separate Appropriate Assessment Screening and Natura Impact Statement – Information for a Stage 1 (AA Screening) and Stage 2 (Natura Impact Statement) AA, in accordance with the requirements of Article 6(3) of the EU Habitats Directive, has been produced. It was determined that:

'*Following the implementation of the mitigation measures outlined, the construction and presence of this development would not be deemed to have a significant impact. No significant impacts are likely on Natura 2000 sites, alone in combination with other plans and projects based on the implementation of mitigation measures.*
No significant effects are likely on Natura 2000 sites, their features of interest or conservation objectives. The proposed project will not will adversely affect the integrity of European sites.'

8.2 Methodology

A pre-survey data search was carried out. This included examining records and data from the National Parks and Wildlife Service, National Biological Data Centre, the Environmental Protection Agency, in addition to aerial, 6-inch maps and historic satellite imagery. A detailed desktop review and field surveys were carried out, initially in April 2020 and continued through 2021 to 2024.

The Breeding Bird Assessments in 2023 & 2024 were also carried out by Altemar (Appendix 8.4). This breeding bird assessment report has been prepared by Frank Spellman. Frank (BSc. Zoology & MSc. Zoology) has extensive experience in carrying out a wide range of fauna surveys as both a sub-contractor and employee for environmental consultancies and organisations in Ireland and the US. These include both roving and static acoustic bat surveys, terrestrial non-avian mammal surveys, breeding/wintering bird surveys, and freshwater ecology surveys. Frank has been lead ornithologist on numerous development projects within

Ireland carrying out full wintering bird and breeding bird assessments. The 2024 habitat and species assessments were carried out by Emma Peters of Altemar. Emma Peters (BSc (Hons.) Environmental Science) is a skilled ecological assessor with aptitude for flora identification, invasive species and bat detection through static detector surveys, dusk emergence, and dawn re-entry surveys. Emma has been the lead ecologist in 30+ projects responsible for mammal tracking, camera trapping, wintering bird, breeding bird, bat surveys, flora and habitat mapping.

The Wintering Bird Assessment 2020/2021 was carried out by MKO (Appendix 8.1). This wintering bird assessment report was prepared by Kathryn Sheridan (M.Sc.), an Ornithologist with MKO, Patrick Manley (B.Sc.), a Project Ornithologist with MKO and Project Director, Dervla O'Dowd (B.Sc. Env.). The field surveys were undertaken in the 2020/2021 winter season by Donnacha Woods and Kathryn Sheridan, both of whom are competent experts in bird surveying. The Wintering Bird Assessment in 2021/2022 was carried out by Flynn Furney (Appendix 8.2) and again by Flynn Furney in 2023/2024 (Appendix 8.3). The 2021/2022 and 2023/2024 survey work was carried out by Eric Dempsey.

All bat surveys from 2020-2023 were carried out by Bryan Deegan. Bryan Deegan is the managing director of Altemar. Bryan is an environmental scientist, aquatic biologist and marine biologist with 30 years' experience of ecological survey in Irish terrestrial and aquatic environments, providing ecological services to the State, Semi-State and industry. Bryan Deegan (MCIEEM) holds a MSc in Environmental Science, BSc (Hons.) in Applied Marine Biology, NCEA National Diploma in Applied Aquatic Science and a NCEA National Certificate in Science (Aquaculture). Bat surveys in 2024 were also carried out by Bryan Deegan, Frank Spellman (MSc Zoology, BSc Zoology), Emma Peters (BSc Environmental Science) and Gayle O'Farrell (BSc (Hons.) Agri-Environmental Sciences) of Altemar.

Table 8.1. Survey Details

Survey	Surveyor	Date
Habitat	Bryan Deegan (MCIEEM)	13th August 2020, 21st August 2020, 10th August 2021 and 14th June 2023
Habitat	Emma Peters	14th May 2024
Flora	Bryan Deegan (MCIEEM)	13th August 2020, 15th September 2021, 10th August 2021, 12th October 2021, 14th June 2023 and 14th May 2024 (with Emma Peters)
Bat Surveys (inspections, static detector and emergent)	Bryan Deegan (MCIEEM)	13th August 2020, 21st August 2020, 10th August 2021 and 12th October 2021
Bat Surveys (detector and emergent)	Bryan Deegan (MCIEEM) Emma Peters Frank Spellman Gayle O'Farrell	25th May 2023, 13th June 2023, 1st February 2024 (internal), 28th May 2024 and 8th July 2024
Mammal	Bryan Deegan (MCIEEM)	23rd February 2021, 3rd April 2023, 27th November 2023, 8th January 2024, 1st, 2nd, 14th and 22nd February 2024 and 16th April 2024
Mammal	Dr Chris Smal	22nd of July 2024
Breeding Bird 2023	Frank Spellman	7th, 14th and 30th June 2023

Breeding Bird 2024	Frank Spellman	23rd April, 10th May, 17th May and 7th June 2024
Wintering Bird 2020/2021	Kathryn Sheridan and Donnacha Woods	12 surveys from September 2020 to the March 2021.
Wintering Bird 2021/2022	Billy Flynn and Eric Dempsey	7 surveys between 24th November 2021 and 28th February 2022.
Wintering Bird 2023/2024	Eric Dempsey	10 surveys between 14th November 2023 and 15th March 2024

Proximity to designated conservation sites and habitats or species of conservation interest

Designated conservation sites within 15km of the subject site and those with potential hydrological pathway were studied (Figures 8.1-8.8). This included sites of National importance (National Heritage Areas (NHA), proposed National Heritage Areas (pNHA) and Ramsar sites), in addition to Natura 2000 sites (Special Areas of Conservation (SAC) and Special Protection Areas (SPA). There is no direct or indirect pathway to designated sites beyond 15km.

Up to date GIS data (National Parks and Wildlife (NPWS) WMS data in addition to shapefiles) were acquired and plotted against 1km, 5km, 10km, and 15km buffers from the subject site. The potential zone of influence (ZOI) was set at a radius of 2km from the proposed development. Where there was a potential for the ZOI to be influenced by natural biodiversity corridors *e.g*. surface water drains, rivers or woodland these were also take into account and assessment extended. It should be noted that an open surface drain is present within the centre of the site and flows to the eastern boundary. This drain has a direct pathway to Dublin Bay. A data search of rare and threatened species within 5km of the Site was provided by NPWS. Additional information on rare and threatened species was researched through the National Biodiversity Data Centre maps data search and previous planning applications in the vicinity.

Habitats, Flora and Avian Ecology

A pre-survey data search was carried out. This included a literature review to identify and collate relevant published information and ecological studies previously conducted and comprised of information from the following sources: the National Parks and Wildlife Service (NPWS), NPWS Rare and Protected Species Database, National Biodiversity Data Centre, in addition to aerial, 6 inch, satellite imagery. Following a desktop survey, walk-over surveys of the site were carried out as outlined in Table 8.1 with the most recent survey on the 14th May 2024. Habitat mapping was carried out according to Fossitt (2000) using ArcGIS 10.5 and displayed on Bing satellite imagery. Any rare or protected species were noted. Additional observations were noted on species and habitats. Survey for mammals was carried out on dates as outlined in Table 8.1 by means of a thorough search within the study area. The presence of mammals is indicated principally by their signs, such as resting areas, feeding signs or droppings – though direct observations are also occasionally made. The survey also included search for habitats suitable for amphibians and reptiles.

The nature and type of habitats present are also indicative of the species likely to be present; the habitats present were assessed in general accordance with techniques adopted for the Badger and Habitat Survey of Ireland (Smal, 1995) and habitats listed by Fossitt (2000). The field survey was supplemented by an evaluation of relevant literature and existing information. Survey for mammals was conducted on 23rd February 2021 and between 1st

February 2024 and 16th April 2024 within the appropriate season for badger *Meles meles* surveys. Badger surveys are best conducted in winter (December to April, with optimum period mid-January to April). Additional site visits were carried out, in conjunction the National Parks and Wildlife Service and the DLR Biodiversity Officer, to discuss the badgers on site on the 20th March 2024 and 25th June 2024. The wintering bird survey reports are seen in Appendix 8.1, 8.2 and 8.3. Breeding bird Surveys are seen in Appendix 8.4. The Mammal impact assessment is seen in Appendix 8.5.

Bat Fauna

Bat assessments were undertaken on the 13th August 2020, 21st August 2020, 10th August 2021, 12th October 2021 and 25th May 2023, 13th June 2023, 01st February 2024 (internal), 28th May 2024 and 8th July 2024, by Bryan Deegan, Emma Peters, Frank Spellman and Gayle O'Farrell within the optimal survey period. In addition, three static bat monitors were installed. The onsite habitats and buildings were visually assessed for their favourability for bats and the site survey was supplemented by a review of Bat Conservation Ireland's (BCIreland) Bat Records Database. Onsite trees were assessed for their bat roosting potential. The bat assessment was undertaken within the active bat period (March – October) when detector surveys are possible. Temperatures were greater than 10°C after sunset on all surveys. Winds were light and there was no rainfall during the handheld detector surveys. The bat fauna impact assessment is seen in Appendix 8.6.

Invasive Species

On the 13th August 2020, 10th August 2021, 14th June 2023 and 14th May 2024 the proposed development site was surveyed and an assessment carried out for the presence of invasive species that are listed under the European legislation, the Birds and Natural Habitats Regulations 2011 (SI 477 of 2011)(as amended) , Section 49(2) which prohibits the introduction and dispersal of species listed in the Third Schedule whereby '*any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow [….] shall be guilty of an offence*.'

8.3 Baseline Environment

8.3.1 Proximity to Designated Conservation Sites and Habitats or Species of Conservation Interest

As can be seen from Figures 8.1 – 8.8., there are a number of conservation sites located in close proximity to the proposed development site, namely, South Dublin Bay SAC (2.8 km), South Dublin Bay and River Tolka Estuary SPA (2.8 km), South Dublin Bay pNHA (2.8 km), and Sandymount Strand/Tolka Estuary Ramsar site (2.9 km). There is a direct hydrological pathway to these conservation sites via the proposed surface water drainage strategy and the existing drain that runs through the site (Figure 8.9 and 8.10). Out of an abundance of caution, it is considered that this direct hydrological pathway has the potential to significantly affect the conservational objectives of the above sites in addition to North Dublin Bay (SAC & pNHA)(7.5km), North Bull Island (SPA & Ramsar site)(7.5km), and North-West Irish Sea SPA (7.7 km).

The distance and details of the Natura 2000 sites (SAC & SPA) within 15km are set out in Table 8.2 and NHA (including pNHAs) and Ramsar sites within 15km of the proposed development are seen in Table. 8.3.

Table 8.2. Proximity to Natura 2000 sites

Site Code	Natura 2000 site	Distance
Special Areas of Conservation		
IE0000210	South Dublin Bay SAC	2.8 km
IE0002122	Wicklow Mountains SAC	7.1 km
IE0000206	North Dublin Bay SAC	7.5 km
IE0001209	Glenasmole Valley SAC	9.2 km
IE0000725	Knocksink Wood SAC	9.7 km
IE0003000	Rockabill to Dalkey Island SAC	9.9 km
IE0000713	Ballyman Glen SAC	11.1 km
IE0000202	Howth Head SAC	12.1 km
IE0000199	Baldoyle Bay SAC	13 km
Special Protection Areas		
IE0004024	South Dublin Bay and River Tolka Estuary SPA	2.8 km
IE0004040	Wicklow Mountains SPA	7.4 km
IE0004006	North Bull Island SPA	7.5 km
IE004236	North-west Irish Sea SPA	7.7 km
IE0004172	Dalkey Islands SPA	9.8 km
IE0004016	Baldoyle Bay SPA	12.9 km
IE0004113	Howth Head Coast SPA	14.1 km

Table 8.3. Proximity to pNHA and Ramsar sites

Conservation Site	Distance
proposed National Heritage Area (pNHA)	
South Dublin Bay	2.8 km
Booterstown Marsh	2.8 km
Fitzsimon's Wood	3.1 km
Grand Canal	3.1 km
Royal Canal	5.1 km
Dolphins, Dublin Docks	5.3 km
Dodder Valley	5.7 km
North Dublin Bay	6.1 km
Dalkey Coastal Zone and Killiney Hill	7.3 km
Dingle Glen	7.4 km
Santry Demesne	7.5 km
Ballybetagh Bog	8.4 km
Loughlinstown Woods	9 km
Liffey valley	9.1 km
Glenasmole Valley	9.3 km
Knocksink Wood	9.7 km
Ballyman Glen	11.1 km
Lugmore Glen	11.1 km
Howth Head	12.1 km
Powerscourt Woodland	12.2 km
Glencree Valley	12.2 km
Baldoyle Bay	12.9 km
Slade of Saggart and Crooksling Glen	13.7 km
Dargle River Valley	13.7 km

Great Sugar Loaf	14.4 km
Sluice River Marsh	14.6 km
Ramsar sites	
Sandymount Strand/Tolka Estuary	2.9 km
North Bull Island	7.6 km
Baldoyle Bay	13 km

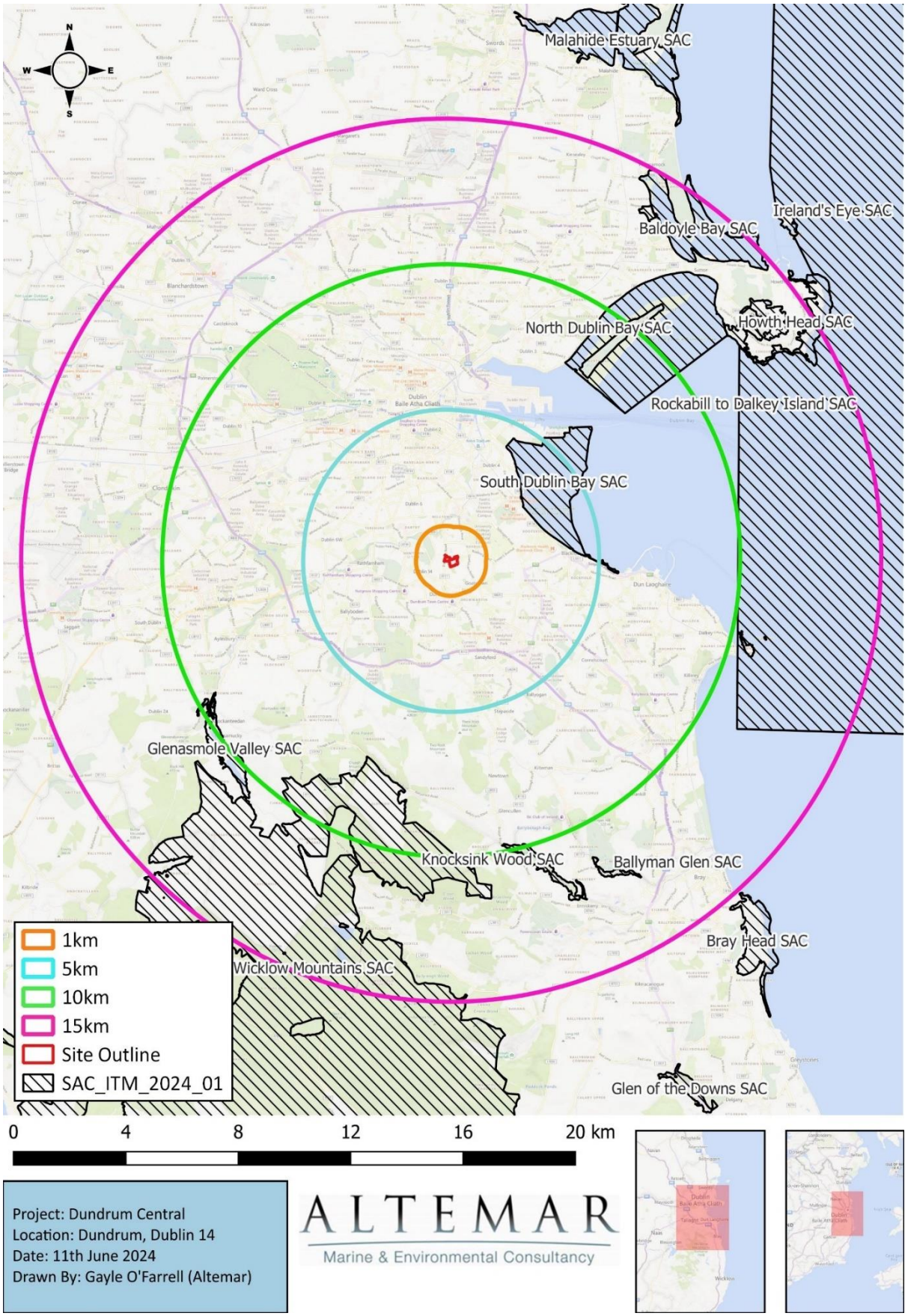


Figure 8.1. Special Areas of Conservation (SAC) within 15km of subject site

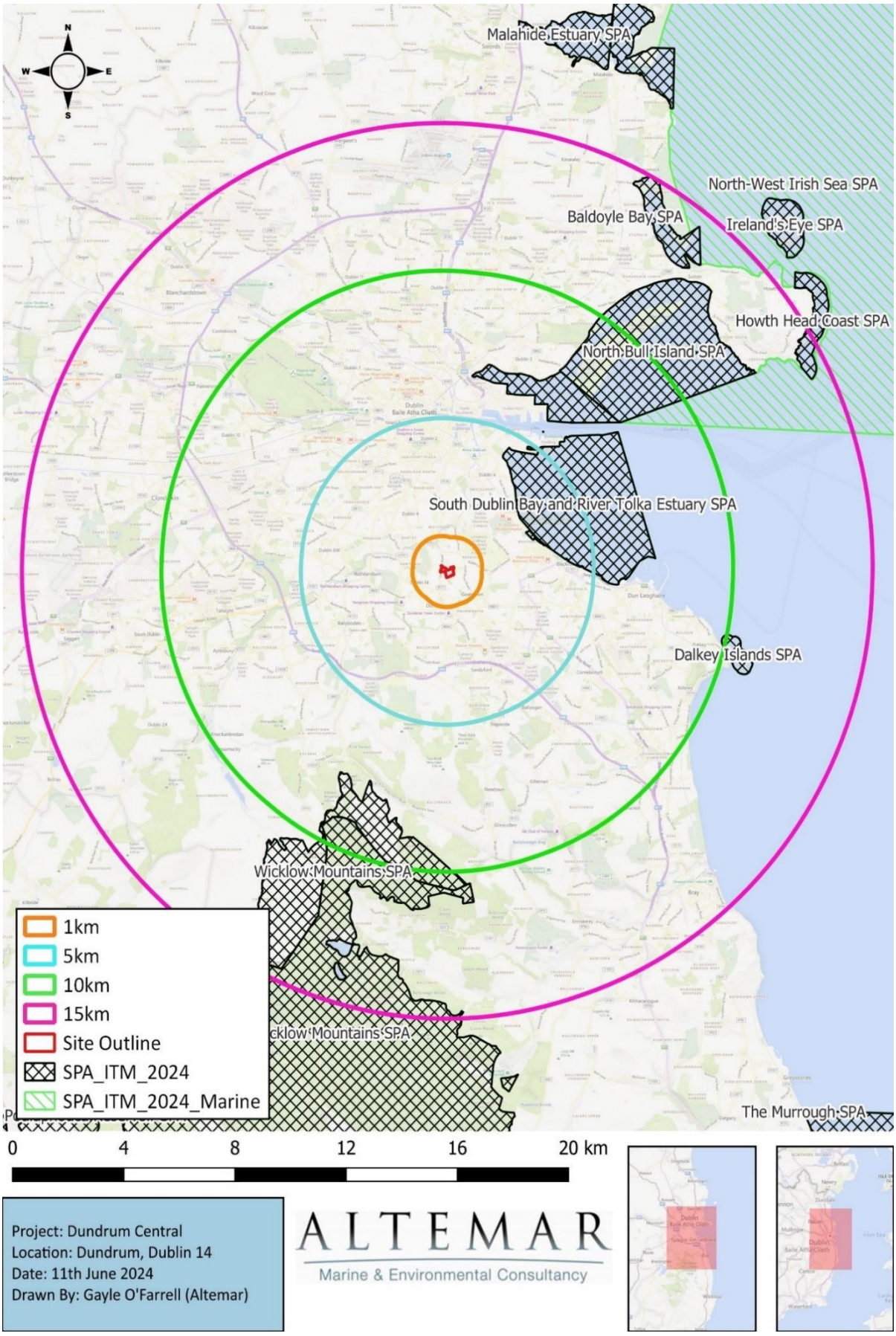


Figure 8.2. Special Protection Areas (SPA) within 15km of subject site

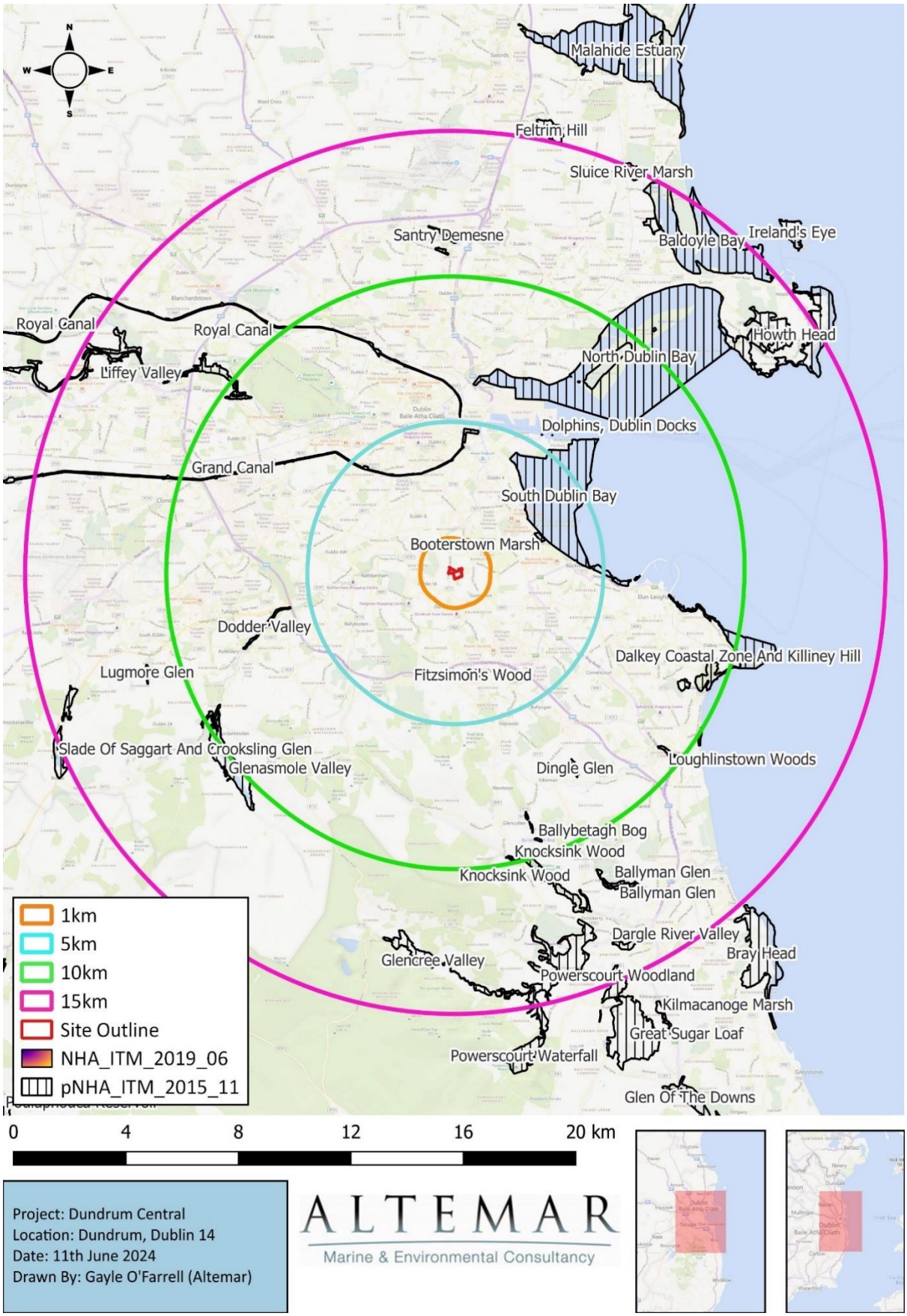


Figure 8.3. National Heritage Areas (NHAs) and Proposed National Heritage Areas (pNHAs) within 15km of subject site

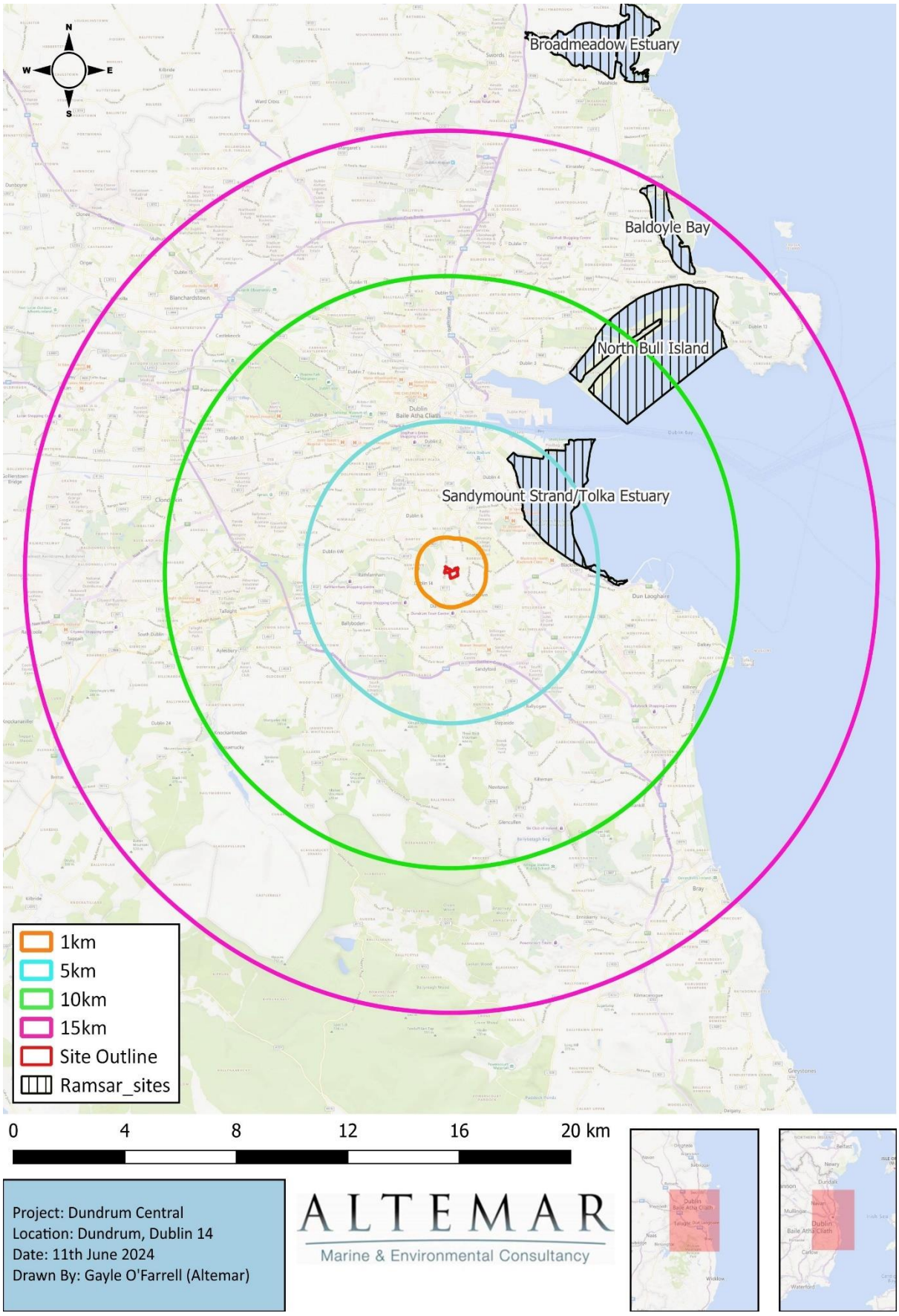


Figure 8.4. Ramsar sites within 15km of subject site

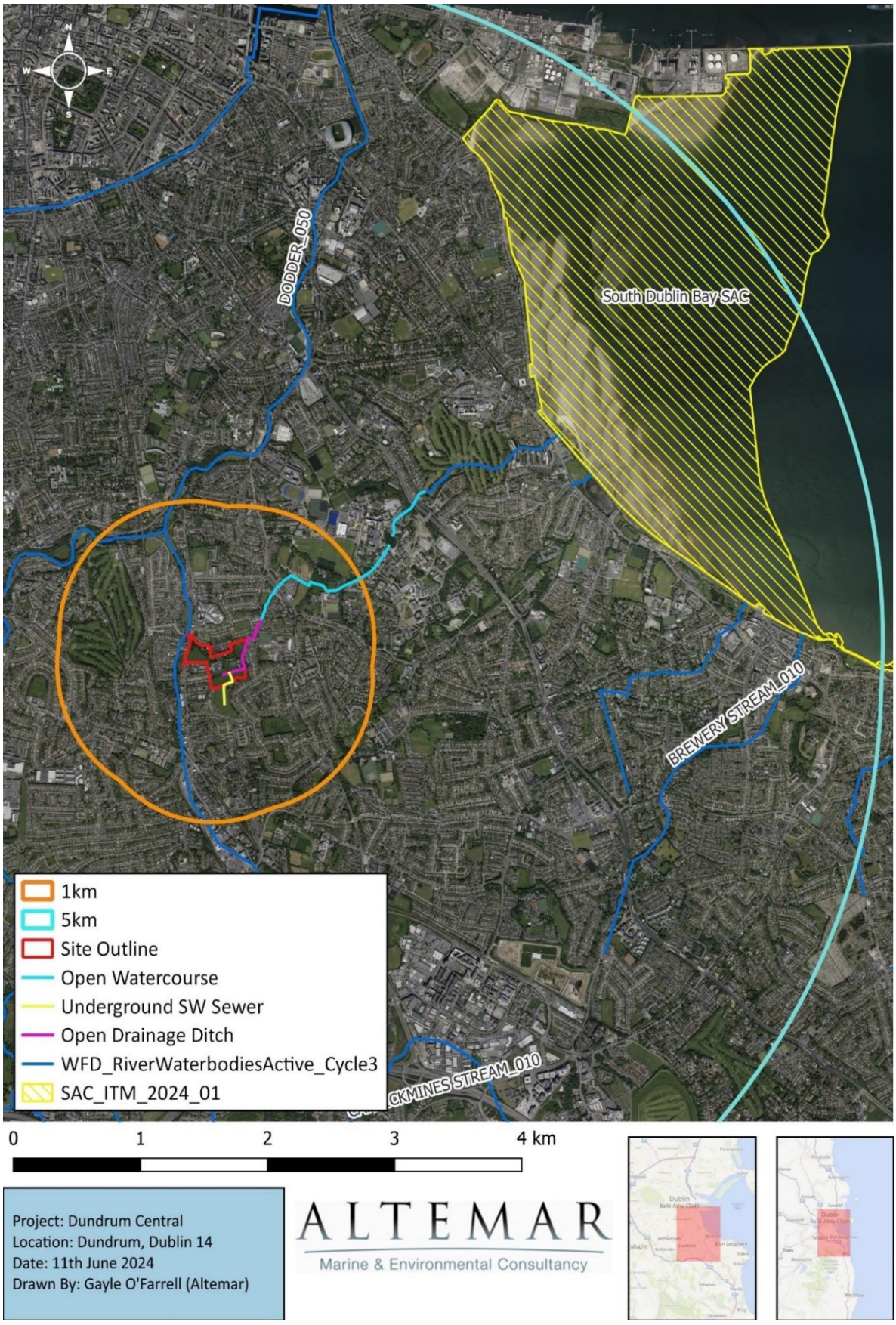


Figure 8.5. Waterbodies and SACs in close proximity to subject site

Figure 8.6. Waterbodies and SPAs in close proximity to subject site

Figure 8.7. Waterbodies and pNHAs in close proximity to subject site

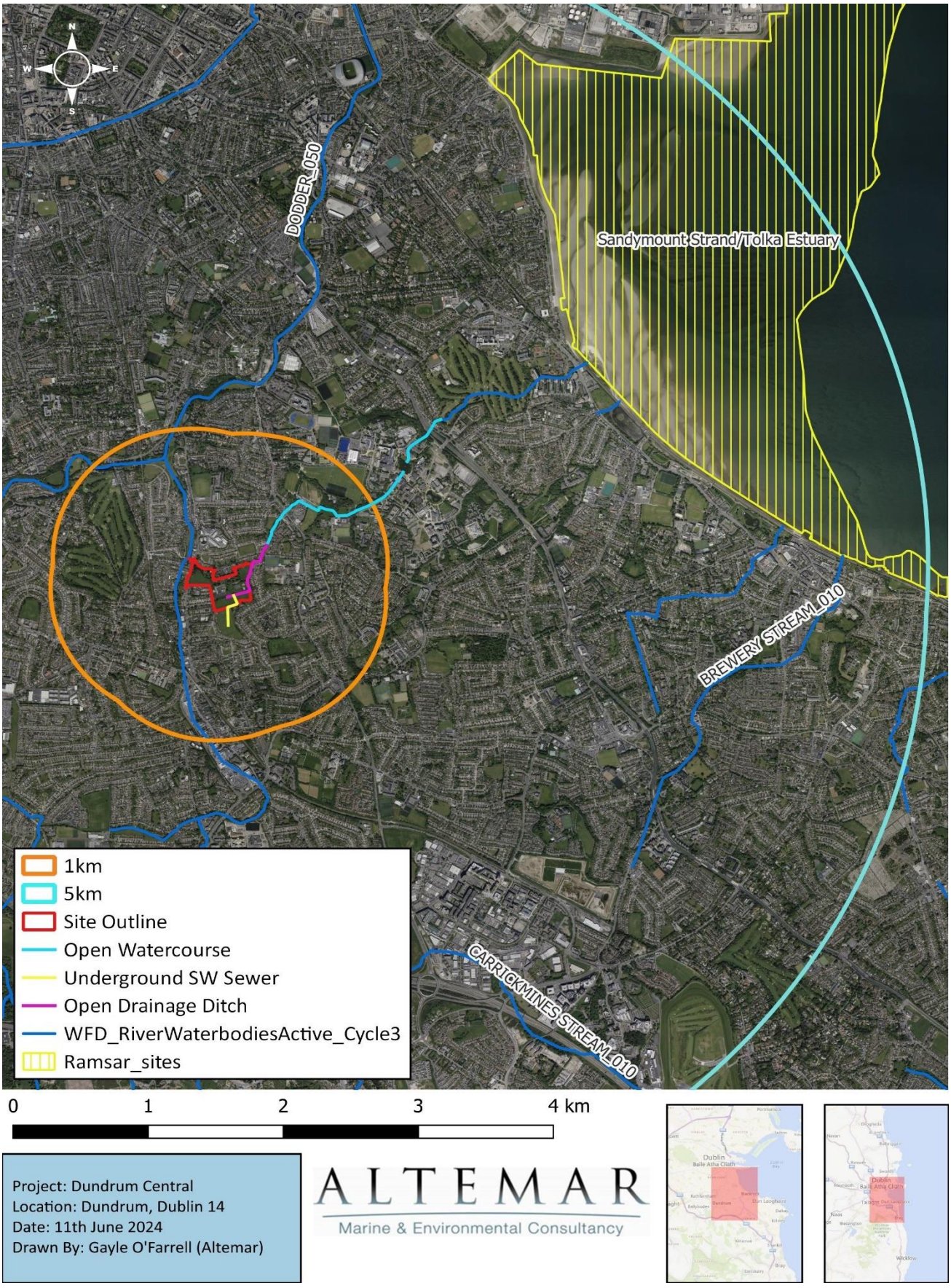


Figure 8.8. Waterbodies and Ramsar sites in close proximity to subject site

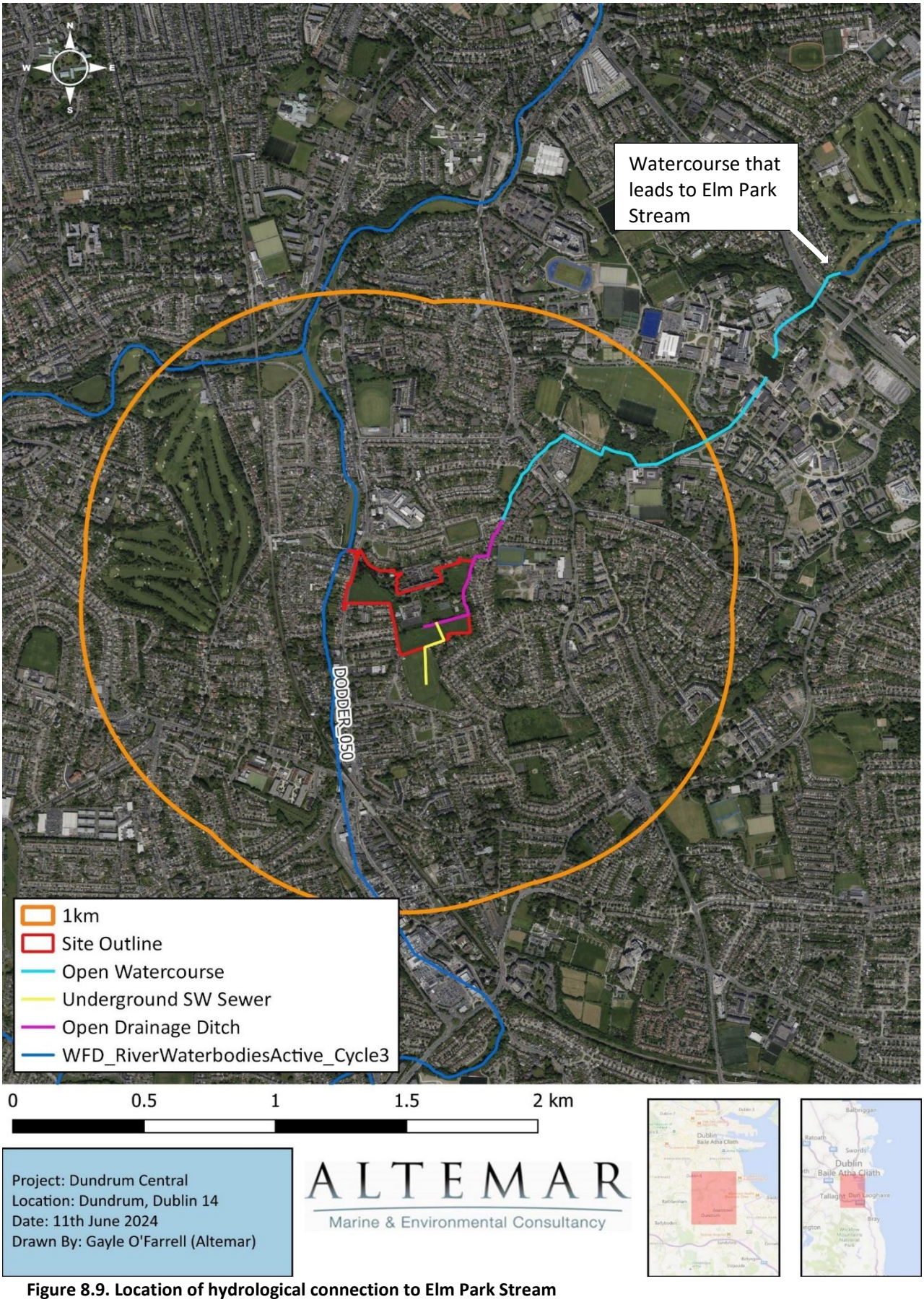
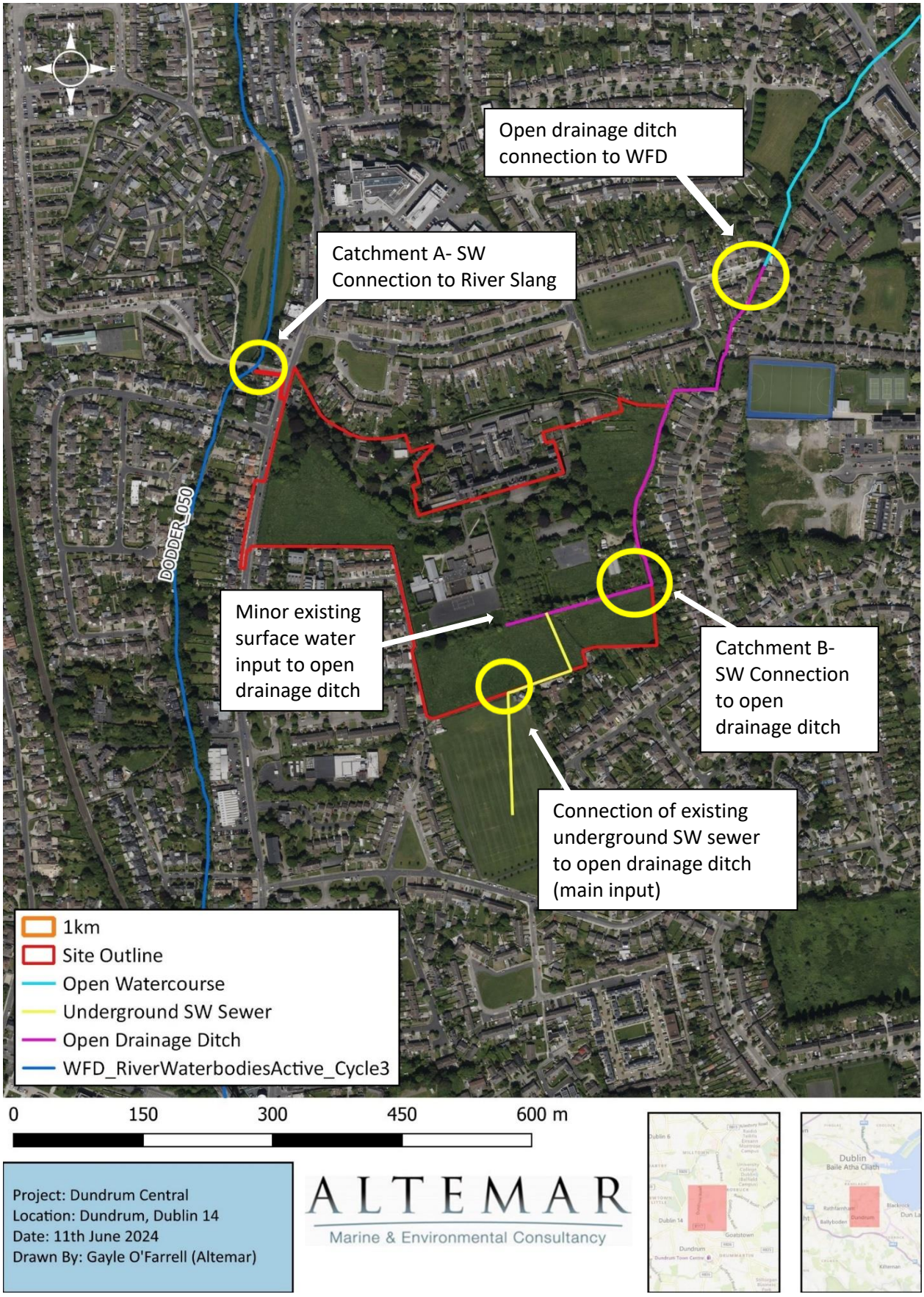


Figure 8.9. Location of hydrological connection to Elm Park Stream



8.10. Outline of hydrological connections between waterbodies

Biodiversity Records

The National Biodiversity Data Centre's online viewer was consulted to determine the extent of biodiversity and / or species of interest in the area. An desk based assessment was carried out and it recorded no species of interest within the site area. Following this, a 2km^2 grid was assessed (O12U). Table 8.4 provides a list of all species of interest recorded in the 2km^2 grid area.

Table 8.4. List Of All Species of Interest Recorded in the 2km2 Grid Area	
Barn Swallow (*Hirundo rustica*)	Common Frog (*Rana temporaria*)
Black-headed Gull (*Larus ridibundus*)	Common Kestrel (*Falco tinnunculus*)
Common Kingfisher (*Alcedo atthis*)	Common Pheasant (*Phasianus colchicus*)
Common Starling (*Sturnus vulgaris*)	Common Swift (*Apus apus*)
Common Wood Pigeon (*Columba palumbus*)	Eurasian Curlew (*Numenius arquata*)
Eurasian Oystercatcher (*Haematopus ostralegus*)	Great Cormorant (*Phalacrocorax carbo*)
Herring Gull (*Larus argentatus*)	House Martin (*Delichon urbicum*)
House Sparrow (*Passer domesticus*)	Lesser Black-backed Gull (*Larus fuscus*)
Mallard (*Anas platyrhynchos*)	Mew Gull (*Larus canus*)
Mute Swan (*Cygnus olor*)	Rock Pigeon (*Columba livia*)
Sand Martin (*Riparia riparia*)	Snowy Owl (*Bubo scandiaca*)
Tufted Duck (*Aythya fuligula*)	Butterfly-bush (*Buddleja davidii*)
Indian Balsam (*Impatiens glandulifera*)	Japanese Knotweed (*Fallopia japonica*)
Donacia semicuprea	*Limnebius nitidus*
Large Red Tailed Bumble Bee (*Bombus (Melanobombus) lapidarius*)	Sand Feather-moss (*Brachythecium mildeanum*)
Brown Rat (*Rattus norvegicus*)	Eastern Grey Squirrel (*Sciurus carolinensis*)
European Otter (*Lutra lutra*)	Eurasian Badger (*Meles meles*)
Lesser Noctule (*Nyctalus leisleri*)	House Mouse (*Mus musculus*)
Soprano Pipistrelle (*Pipistrellus pygmaeus*)	Pipistrelle (*Pipistrellus pipistrellus sensu lato*)
Himalayan Honeysuckle (*Leycesteria formosa*)	West European Hedgehog (*Erinaceus europaeus*)

An assessment of files received from the NPWS (Code No. 2020_185) which contains records of rare and protected species and grid references for sightings of these species. There are recorded sightings of West European Hedgehog (*Erinaceus europaeus*) within a 1km^2 grid that includes a southern portion of the subject site. The Common Frog (*Rana temporaria*) and the Otter (*Lutra lutra*) were noted by NPWS within the area of the proposed development. No species of conservation importance were noted by NBDC within or in the vicinity of the proposed development.

Terrestrial Habitats, Flora and Avian Ecology

The proposed development area was surveyed 13th August 2020, 21st August 2020, 23rd February 2021, 10th August 2021, 15th September 2021, 12th October 2021, 14th June 2023 and 14th May 2024. Additional surveys were carried out for wintering and breeding birds in 2020, 2021, 2022, 2023 and 2024. Habitats encountered were classified according to Fossitt (2000) and are shown in Figure 8.11, based on the site visit in May 2024. Distinct habitats were noted, and species detailed.

Figure 8.11. Fossitt (2000) habitat map

The following habitats were noted:

GA2- Amenity grassland (improved).
A small amount of the open space on site consists of mown amenity grassland. The managed area of this habitat is to the south of the main treelined entrance. This habitat was managed in previous years however as most grassland areas have been left unmown, they have gathered species diversity into a dry meadow. Species included clovers (*Trifolium spp*.), plantains (*Plantago spp*.), thistles (*Cirsium arvense & C. vulgare*), creeping buttercup (*Ranunculus repens*), ivy (*Hedera helix*), common birds-foot-trefoil (*Lotus corniculatus*), docks (*Rumex spp*.), bramble *(Rubus fruticosus agg*.), daisy (*Bellis perennis*), sun spurge (*Euphorbia helioscopia*), creeping cinquefoil *(Potentilla reptans),* yarrow (*Achillea millefolium*), nipplewort (*Lapsana communis*), field forget-me-not (*Myosotis arvensis*), snapdragon (*Antirrhinum majus*), tree echium (*Echium pininana*), coltsfoot (*Tussilago farfara*), and nettle (*Urtica dioica*). The invasive three-cornered leek (*Allium triquetrum*) was noted within this habitat.

Plate 1. GA2- Amenity grassland (improved).

WD5-Scattered Trees and Parkland.
The grassland extends into significant areas of the site where scattered trees are noted. Similar flora are noted in these areas as was noted in the Amenity Grassland areas. However, tree species included Copper Beech (Fagus sylvatica 'Purpurea'), Norway Maple (Acer platanoides), Atlas Cedar (Cedrus atlantica), Atlas Cedar (*Cedrus atlantica*), Holly cv. (Ilex aquifolium), Sycamore cv. *(Acer pseudoplatanus*), White Flowering Cherry (*Prunus Sp*.), rowan (*Sorbus aucuparia*), Monkey Puzzle (*Araucaria Araucana*), Douglas Fir (Pseudotsuga menziesii), Deodar Cedar (*Cedrus deodara*), Monterey Pine (*Pinus radiata*). Of note is the orchard on site which is located on the central area of the site proximate to the drainage ditch. Here the grass has been left unmanaged giving rise to species such as white clover (*Trifolium*

repens), red clover (*Trifolium pratense*), daisy (*Bellis perennis*), plantains (*Plantago spp*.), thistles (*Cirsium s*p.), creeping buttercup (*Ranunculus repens*), docks (*Rumex spp*.), cat's-ear (*Hypochaeris radicata*), nettle (*Urtica dioica*), dandelion (*Taraxacum spp*.), cow parsley (*Anthriscus sylvestris*), lesser trefoil (*Trifolium dubium*, bramble (*Rubus fruticosus*), hedge bindweed (*Calystegia sepium*), red valerian (*Centranthus ruber*), Cyclamen (*Cyclamen hederifolium*), wallflower *(Erysimum cheiri / Cheiranthus cheiri),* ramsons (*Allium ursinum*), cotoneaster (*Cotoneaster spp.*), and ground-elder (*Aegopodium podagraria*).

Plate 2. WD5-Scattered Trees and Parkland.

GS2- Dry meadows and Grassy Verges

Much of the site was dominated by Dry meadows and grassy verges in areas where the grass was left unmown. Species included meadow buttercup (*Ranunculus acris*), ragwort (*Senecio jacobaea*), thistles (*Cirsium s*p.), wild carrot (*Daucus carota*), rape (*Brassica napus*), kidney vetch (*Anthyllis vulnerary*), field bindweed (*Convolvulus arvensis*), cow parsley (*Anthriscus sylvestris*), clovers (*Trifolium spp*.), cleavers (*Galium aparine*), creeping cinquefoil (*Potentilla reptans*, smooth sow-thistle (*Sonchus oleraceus*), broad-leafed dock (*Rumex obtusifolius*), germander speedwell (*Veronica chamaedrys*), teasel (*Dipsacus fullonum*), herb Robert (Geranium *roberianum*), holly (*Ilex aquifolium*), Cuckoo-flower (*Cardamine pratensis*), Canadian fleabane (*Erigeron canadensis*),), garlic mustard *(Alliaria petiolata),* Lily-of-Nile (*Agapanthus africanus*), buddleja (*Buddleja davidii*), foxglove (*Digitalis purpurea*), great willowherb (*Epilobium hirsutum*), long-headed poppy (*Polygonum arenastrum*), and nettle (*Urtica dioica*).

Plate 4. Dry meadows and grassy verges.

WS1- Scrub

Several areas on site were unmaintained and were let "go wild". This was particularly evident on the northeast corner of the site along the boundary wall. Species in this area included thistles (*Cirsium sp*.), creeping buttercup (*Ranunculus repens*), common ragwort (*Senecio jacobaea*), colt's Foot (*Tussilago farfara*), winter heliotrope (*Petasites pyrenaicus*), hoary willowherb (*Epilobium parviflorum*), blackcurrant (*Ribes nigrum*), wild teasel (*Dipsacus fullonum*), butterfly-bush (*Buddleja davidii*), rosebay willowherb (*Chamaenerion angustifolium*), hedge bindweed (*Calystegia sepium*), ivy (Hedera helix), honeysuckle (*Lonicera periclymenum*), cleavers (*Galium aparine*), great willowherb (*Epilobium hirsutum*), common vetch (*Vicia sativa ssp. Segetalis*), bramble (*Rubus fruticosus agg*.), field forget-me-not (*Myosotis arvensis*), rape (*Brassica napus*), meadowsweet (*Filipendula ulmaria*), common mallow (*Malva sylvestris*), great mullein (*Verbascum thapsus*) and traveller's-joy (*Clematis vitalba*). It is important to note that an area of Indian Balsam (*Impatiens glandulifera*) was noted in a small area of damp ground in the northeast corner of the site. This is an invasive species that is listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. No. 477 of 2011) which makes it an offence under Regulation 49 to plant, disperse, allow or cause to grow this plant.

Plate 5. WS1- Scrub

WL2- Treelines & Hedgerows WL1

Large mature treelines dominate the site particularly along the entrance driveway and to the south east of the main building. Combined with the scattered trees and parkland they provide a mature sylvian dominated landscape. Species include Corsican pine (*Pinus nigra sub sp*.), ash (*Fraxinus excelsior*), sycamore (*Acer pseudoplatanus*), red oak (*Quercus rubra*), lime (*Tilia sp*.), birch (*Betula sp*.), blue cedar (*Cedrus Atlantica* 'Glauca'), copper beech (*Fagus sylvatica 'Purpurea'*), horse chestnut (*Aesculus hippocastanum*).

Hedgerows are present on site but these are made up primarily of non native ornamental species including Leyland Cypress (*Cupressocyparis x leylandii*), Contoneaster sp., Griselinia (*Griselinia littoral*s), privet (*Ligustrum sp.*), Pittosporum sp., laurel (*Laurus nobilis*) and cherry laurel (*Prunus laurocerasus*). However, some native species were noted including Hawthorn (*Crataegus monogyna*), Holly (Ilex aquifolium), yew (*Taxus baccata*), and elder (*Sambucus nigra*).

Plate 6. WS1 hedgerow.

BL3-Built Land

The subject site has a history of high herbicide use, however, management of the site has reduced for over a year. As seen in Appendix 8.6 the buildings on site were inspected for bat presence and use. As stated in Appendix 8.6 no evidence of bat use was noted within the main hospital buildings on site. It should be noted that the main buildings on site are still brightly lit with halogen lamps overnight and this would deter bats from using these buildings. Lighting has been reduced in perimeter areas of the site including the farm buildings in the north east of the former CMH. In the 2024 bat surveys it was noted that three common pipistrelle bats had commenced utilising one of these buildings (upper floor of the former gardener's building). This building (Plate 9) is considered to be a bat roost. No works are proposed on this building as part of this application.

Plate 7. Central mental hospital main building.

Plate 8. Tarmac driveway.

Plate 9. Disused farm buildings onsite.

Plate 10. WD5-Scattered Trees and Parkland (Orchard).

Evaluation of Habitats

The site was previously highly maintained and has increased biodiversity value due to the lack of management. Wildflowers are blooming from the seed bank, longer vegetation and encroaching scrub has provided a larger resource for birds to nest. No rare or protected habitats were noted. However, the treelines and mature trees within the scattered trees and parkland habitats would be deemed to be of local biodiversity importance primarily as a result of being a foraging and roosting habitat for both birds and bats.

Plant Species

The plant species encountered at the various locations on-site are detailed above. No protected species were noted. Records of rare and threatened species from NPWS were examined. No rare or threatened plant species were recorded in the vicinity of the Site. A small stand of Himalayan balsam (invasive species listed under S.I. 477) is noted on site.

Fauna

As outlined in the Mammal survey (Appendix 8.5- Non-avian terrestrial mammal impact assessment for a proposed development at former Central Mental Hospital, Dundrum Road, Dublin 14.) ‘’*A total of four mammal species were confirmed within the survey area by visual confirmation and behavioural evidence: badger (Meles meles), fox (Vulpes vulpes), grey squirrel (Sciurus carolinensis) and brown rat (Rattus norvegicus). An active badger sett was identified in the northeast of the survey area, under a concrete slab adjacent to an area previously used for housing livestock. An active breeding sett was also identified and confirmed*

by camera footage within the treeline boundary between fields in the northeast and the gravel garden in the east. Two cubs were observed regularly emerging. The male boar was observed exiting the former Central Mental Hospital site via the stream exit under the wall in the east of the site. Foxes were also regularly recorded using this to exit the site. Monitoring is on-going to determine whether both badgers and foxes are re-entering from this point. A desk based review of existing records revealed that five additional species, European Otter (Lutra lutra), House Mouse (Mus musculus), Wood Mouse (Apodemus sylvaticus), West European Hedgehog (Erinaceus europaeus) and Pine Marten (Martes martes) have been recorded in the vicinity of the survey area. No evidence of these five species was observed within the survey area.''

As outlined in Appendix 8.5 "*Overall, considering the scale of the site, the survey area is of moderate importance to mammal species. An active badger sett and an active badger breeding sett are located in the northeast and east of the site respectively. The badger is a Red Data Book species. It is standard best practice to make special provisions for badgers affected by development, specifically the implementation of exclusion zones around setts*."

A badger survey and mitigation plan has been prepared by Dr Chris Smal (mammal ecologist) is included in Appendix 8.7. This report was prepared in consultation with the NPWS staff and the Development Applications Unit of NPWS. As outlined in this report "*The setts, latrines and badger feeding (rooting and 'snuffle' holes) signs have been mapped on Figure 4. One rooting was of a bee's nest – badgers are known to feed on bees when available. The camera observations (by Altemar) confirm that sett S2 is a Main sett (i.e. breeding sett) with one boar, one sow and 2 cubs present. Whilst this sett has only one entrance, the spoil heap there is very large and indicative of a fairly substantial tunnel system below ground that would include several chambers. No entrances in the adjacent grassland could be seen, but the tunnel system may well extend into the grassland area to some extent.*

Badger presence (a boar) was confirmed by trail camera at sett S1; subsequently, cubs were seen near that sett also. This sett was considered to be a Subsidiary sett: i.e. a sett within the territory of a social group in use by badgers on occasion but not a breeding sett. The spoil heap was overgrown but of medium size. The tunnel system there would be quite short but will include one or more chambers below ground.

Another camera placed at the culvert under the high wall revealed a boar utilising the drain/culvert to access lands off-site to the east – which are gardens and residential areas. This culvert is not far from the Main sett (S2).

Generally, few badger paths were seen during survey but such will have largely been obscured by high grass growth and scrub cover at this season.

The rooting signs were well distributed throughout the survey area. These, along with the latrine sites, suggest that this badger group is foraging throughout the site. Also they exit the site into adjoining areas via the drain culvert (whilst this access is very poor given the narrow bars). Badgers may cross the road at the main entrance (but security staff reported no badgers having been seen there). Badgers do feed on fruits and feeding signs were seen within the apple orchard."

Bat fauna

Bat surveys were carried out onsite which included bat emergent and detector surveys (Appendix 8.6). The survey also carried out an inspection of the buildings on site and static detectors were placed on site. As outlined in Appendix 8.6. '*No evidence of bat activity was noted in the buildings on site and no bats were noted emerging from onsite buildings in 2020, 2021 and 2023. However, in 2024 three common pipistrelle bats were noted emerging from the Gardner's compound (outside the proposed development site). In relation to trees on site, a single Leisler's bat was observed emerging from a Horse Chestnut (Tree 0401) on the eastern section of the site in 2020 and a single common pipistrelle was noted emerging from an adjacent Horse Chestnut in 2024. Foraging activity Common pipistrelle (Pipistrellus pipistrellus), Soprano pipistrelle (Pipistrellus pygmaeus), Lesser Noctule (Nyctalus leisleri) were also noted on site. The removal of the trees on site will result in a loss of foraging areas and two bat roosts*.'

The buildings where the three common pipistrelle bats are located will not be altered by the proposed development. However, this area could potentially be impacted by increased lighting as a result of the proposed development.

Avian Fauna

Wintering bird assessments are seen in Appendices 8.1, 8.2, and 8.3. As outlined in Appendix 8.1 Black-headed gull and Herring Gull were observed regularly commuting over the proposed development. Curlew and brent geese were observed commuting over the proposed development site infrequently. The wintering bird assessment relating to the 2021/2022 season (Appendix 8.2) noted that "*Of the target species of the bird survey, only one SCI species listed for the Special Protection Areas within the ZOI of the proposed development was recorded. This was Black-headed Gull. This species was also recorded in the previous survey by MKO (2021). Two other SCI species recorded in the previous survey (Curlew and Brent Goose) were not recorded within the survey period of this present survey*." Similarly, the wintering bird assessment relating to the 2023/2024 season (Appendix 8.3) noted that two of the target species were recorded foraging and/or roosting onsite, one of which being the Black-headed Gull. The other target species recorded was Herring Gull. The updated survey results are consistent with the previous surveys carried out by MKO in 2020/2021 and Flynn Furney in 2021/2022. The findings of the bird surveys would indicate that there is only limited potential for disturbance or displacement of the SCI species of the SPAs within the ZOI arising from the proposed development. It is not predicted that the proposed development would result in any habitat loss of any significance to any SCI species.

In addition to the birds noted in Appendices 8.1, 8.2, 8.3, the following birds were noted on site during the wintering bird surveys:

Table 8.5. Bird species noted on site

Common Name	*Scientific Name*
Woodpigeon	*Columba palumbus*
Wren	*Troglodytes troglodytes*
Robin	*Erithacus rubecula*
Blackbird	*Turdus merula*
Blue tit	*Parus caeruleus*
Starling	*Sturnus vulgaris*
Great tit	*Parus major*
Rook	*Corvus frugilegus*
Song Thrush	*Turdus philomelos*
Dunnock	*Prunella modularis*
Goldfinch	*Carduelis carduelis*
Hooded Crow	*Corvus cornix*
Herring gull (on roof possibly nesting)	*Larus argentatus*
Magpie	*Pica pica*
Great tit	*Corvus monedula*
Black-headed Gull	*Chroicocephalus ridibundus*

As outlined in the conclusion of the 2021/2022 Flynn Furney wintering bird survey (Appendix 8.2) *"Of the target species of the bird survey, only one SCI species listed for the Special Protection Areas within the ZOI of the proposed development was recorded. This was Black-headed Gull. This species was also recorded in the previous survey by MKO (2021). Two other SCI species recorded in the previous survey (Curlew and Brent Goose) were not recorded within the survey period of this present survey.*

No direct impacts to any of the SPAs within the ZOI may be expected. This is given the remove of these sites from the area proposed for development and the lack of connectivity between this and the protected sites. Indirect effects on the SPAs (e.g. on water quality) are considered unlikely given the nature of the proposed development and the lack of connectivity to these

designated sites. As described in the MKO report, best practice design and site practice would prevent such impacts from arising.
While some disturbance and displacement impacts may occur to the SCI species recorded, this would not be deemed to be of potential significance. This is due to the habituation of this species to anthropogenic disturbance within the site and wider urban area and its likely habitation to any disturbance resulting from the proposed development.
Some loss of foraging habitat for this species will occur. However, this is not considered significant given the relative abundance of this habitat type (amenity grassland) within both the immediate and wider areas surrounding the site."

As outlined in the conclusion of the 2023/2024 Flynn Furney wintering bird survey (Appendix 8.3) "*Of the target species of the bird survey, only one SCI species listed for the Special Protection Areas within the ZOI of the proposed development was recorded. This was Black-headed Gull. This species was also recorded in the previous surveys by MKO (2021) and FFEC (2022). Two other SCI species recorded in the 2021 survey (Curlew and Brent Goose) were not recorded within the survey period of this present survey.*
No direct impacts to any of the SPAs within the ZOI may be expected. This is given the remove of these sites from the area proposed for development and the lack of connectivity between this and the protected sites. Indirect effects on the SPAs (e.g. on water quality) are considered unlikely given the nature of the proposed development and the lack of connectivity to these designated sites. As described in the MKO report (2021), best practice design and site practices would prevent such impacts from arising.
While some disturbance and displacement impacts may occur to the SCI species recorded, this would
not be deemed to be of potential significance. This is due to the habituation of this species to anthropogenic disturbance within the site and wider urban area and its likely habitation to any disturbance resulting from the proposed development. Some loss of foraging habitat for these species will occur. However, this is not considered significant given the relative abundance of this habitat type (amenity grassland) within both the immediate and wider areas surrounding the site."

The 2023 & 2024 breeding bird assessments are seen in Appendix 8.4. As outlined in this report "*A total of 25 species in 2023 and 23 species in 2024 were recorded within the overall survey area. Seven species in 2023 and ten species (six within the proposed site outline) in 2024 were recorded breeding or displaying behaviour indicative of breeding.*
In 2023, four green-listed species (blackcap, feral pigeon, magpie and wren) and three amber-listed species (goldcrest, herring gull, swallow) were confirmed breeding within the survey area.
In 2024, six green-listed bird species of conservation concern were recorded breeding within the proposed site outline; blackbird, magpie, robin, rook, woodpigeon and wren. No amber-listed bird species of conservation concern were recorded breeding within the proposed site outline.
A hotspot of breeding activity observed within the proposed site outline consists of a mature coniferous canopy and a deciduous (mostly ash) stand with a scrub understory, in the west of the survey area south of the main entrance. Another hotspot outside of the proposed site outline exists in an area of old stone buildings/sheds in the northeast of the site, where nests of swallow (amber BoCCI) were confirmed. Although no other specific areas of high breeding value for birds exists, standalone mature trees (coniferous and deciduous) throughout the site provide valuable breeding habitat for corvid species."

Invasive Species

Himalayan balsam (*Impatiens glandulifera*) was noted on site. No other invasive plant or animal species listed under the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011) Section 49, the Third Schedule: Part 1 Plants, Third Schedule: Part 2A Animals were noted on site. The distribution of this invasive species was restricted to a small area in the north east corner of the site.

8.4 Potential Impacts of the Proposed Project

This section of the EIAR examines the potential causes of impact that could result in positive or negative effects arising on the species and habitats that occur within the ZOI of the proposed development. The following assessment of potential impacts is based on the EPA EIAR Guidelines 2022 (the EIAR Guidelines). These impacts could arise during either the construction or operational phases of the project. The following terms are derived from the EPA EIAR Guidelines and are used to describe the likely significant effects on the ecological receptors arising from the construction and operation of the proposed development.

Magnitude of effect and typical descriptions

Magnitude of effect (change)		Typical description
High	Adverse	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements.
	Beneficial	Large scale or major improvement of resource quality; extensive restoration; major improvement of attribute quality.
Medium	Adverse	Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements
	Beneficial	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality.
Low	Adverse	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements.
	Beneficial	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial effect on attribute or a reduced risk of negative effect occurring
Negligible	Adverse	Very minor loss or alteration to one or more characteristics, features or elements.
	Beneficial	Very minor benefit to or positive addition of one or more characteristics, features or elements.

Criteria for Establishing Receptor Sensitivity/Importance

Importance	Ecological Valuation
International	Sites, habitats or species protected under international legislation e.g. Habitats and Species Directive. These include, amongst others: SACs, SPAs, Ramsar sites, Biosphere Reserves, including sites proposed for designation, plus undesignated sites that support populations of internationally important species.
National	Sites, habitats or species protected under national legislation e.g. Wildlife Act 1976 and amendments. Sites include designated and proposed NHAs, Statutory Nature Reserves, National Parks, plus areas supporting resident or regularly occurring populations of species of national importance (e.g. 1% national population) protected under the Wildlife Acts, and rare (Red Data List) species.

Importance	Ecological Valuation
Regional	Sites, habitats or species which may have regional importance, but which are not protected under legislation (although Local Plans may specifically identify them) e.g. viable areas or populations of Regional Biodiversity Action Plan habitats or species.
Local/County	Areas supporting resident or regularly occurring populations of protected and red data listed-species of county importance (e.g. 1% of county population), Areas containing Annex I habitats not of international/national importance, County important populations of species or habitats identified in county plans, Areas of special amenity or subject to tree protection constraints.
Local	Areas supporting resident or regularly occurring populations of protected and red data listed-species of local importance (e.g. 1% of local population), Undesignated sites or features which enhance or enrich the local area, sites containing viable area or populations of local Biodiversity Plan habitats or species, local Red Data List species etc.
Site	Very low importance and rarity. Ecological feature of no significant value beyond the site boundary

Quality of Effects	Effect Description
Negative /Adverse Effect	A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance).
Neutral Effect	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
Positive Effect	A change which improves the quality of the environment (for example, by increasing species diversity, or improving the reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).

Significance of Effects

Significance of Effect	Description of Potential 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	An effect which obliterates sensitive characteristics.

Duration and Frequency of Effect	Description
Momentary	Effects lasting from seconds to minutes
Brief	Effects lasting less than a day
Temporary	Effects lasting less than a year
Short-term	Effects lasting one to seven years.
Medium-term	Effects lasting seven to fifteen years.
Long-term	Effects lasting fifteen to sixty years.
Permanent	Effects lasting over sixty years

Duration and Frequency of Effect	Description
Reversible	Effects that can be undone, for example through remediation or restoration

Describing the Probability of Effects	Description
Likely Effects	The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.
Unlikely Effects	The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.

8.4.1 Construction Phase

The proposed construction of a residential development could potentially impact on the existing ecology of the site and the surrounding area. These potential construction impacts would include impacts that may arise during the site clearance, re-profiling of the site and the building phases of the proposed development. Potential Impacts are assessed below for each of the ecological components:

Designated Conservation sites

There is an intact biodiversity corridor/ hydrological pathway from the proposed development site to the Dublin Bay Designated sites via the drain on site and the Elm Park Stream and via the surface water drainage to the River Slang. Impacts could arise from runoff during site re-profiling, installation of attenuation tanks and ground works, that could impact on the watercourses, through the introduction of pollution and silt, with downstream impacts to the designated sites within Dublin Bay. Construction phase mitigation measures will be required to be in place to ensure compliance with the Water Pollution Acts and to ensure no adverse effects on downstream designated sites. In addition, the project has to comply with SUDS, County Council requirements and the provision of additional measures such as petrochemical interceptors and silt interception. An AA Screening and a NIS have been submitted with this planning application.

The AA Screening concluded that:
"*Having taken into consideration the proposed project, surface water strategy, the distance between the proposed development site to designated conservation sites and the direct hydrological pathway link to conservation sites located within Dublin Bay, it is concluded that this development has the potential to give rise to impacts on designated sites. The construction and operation of the proposed development has the potential to impact on the conservation objectives/features of interest of five Natura 2000 sites: South Dublin Bay SAC (2.8km), North Dublin Bay SAC (7.5 km), South Dublin Bay & River Tolka SPA (2.8 km), North Bull Island SPA (7.5 km) and North-West Irish Sea SPA (7.7 km).*
Acting on a strictly precautionary basis, an NIS is required in respect of the effects of the project on these European sites because it cannot be excluded on the basis of best objective scientific information following screening, in the absence of control or mitigation measures that the plan or project, individually and/or in combination with other plans or projects, will have a significant effect on the named European Site/s.
An NIS or Stage 2 Appropriate Assessment is not required for the effects of the project on all other listed Natura sites above because it can be excluded on the basis of the best objective scientific information following screening that the plan or project, individually and/or in combination with other plans or projects, will have a significant effect on the European Site/s.
A Natura Impact Statement is required for the proposed development."

The NIS concluded that:
"*No significant effects are likely from the proposed development, either alone or in combination with any other plans or projects on Natura 2000 sites, their features of interest or conservation objectives. The proposed project will not will adversely affect the integrity of European sites.*"

In the absence of mitigation, the proposed development would be seen to have a negative, minor adverse, short term and likely effect on designated sites during construction. Mitigation is required.

Aquatic Ecology

Due to the salmonid nature of the River Dodder (downstream of the surface water connection), the presence of Atlantic salmon (*Salmo salar*) and European eel (*Anguilla Anguilla*) and the in direct pathway via the public surface water network, in addition to the direct pathway to the Elm Park Stream, in the absence of mitigation there is potential for negative effects on instream biodiversity through the introduction of silt and petrochemicals into the aquatic environment during construction. Mitigation measures will be required to be in place to ensure compliance with Water Pollution Acts. Invasive species were noted on-site and as a result, the construction works would need to address the presence of invasive species on-site. Movement of soil in the vicinity of the invasive species or lack of treatment of the Himalayan balsam could lead to downstream impacts.

In the absence of mitigation, the proposed development would be seen to have a negative, minor adverse, short term, not significant, local and likely effect on aquatic ecology during construction. Mitigation is required.

Habitats, Botany and Avian Ecology

The impact of the proposed development during construction phase will be a loss of habitats and species in the vicinity of the treelines, scattered trees and parkland, the onsite drain and grassland. It would be expected that the avian fauna associated with these habitats would also be displaced. No flora or habitats of conservation importance were noted during the surveys. The majority of the proposed development area consists of built ground or amenity grassland habitat, which are of lower importance to biodiversity. There will be a reduction of these habitats on site. The orchard which is considered of site importance to biodiversity will be removed. A compensatory orchard has been designed into the project.

During the site visits no bird species of conservation importance as listed on Annex I of the EU Birds Directive were recorded. Curlew have been recorded in very low numbers historically. The most significant impact to birds will be during the construction phase with the permanent removal of any grassland, trees and to a lesser extent the levelling of the land to accommodate the buildings. Localised disturbance due to noise on site is foreseen. However, given the nature of the works and the existing tall perimeter wall on site, this disturbance would not be expected to extend significantly beyond the development boundary.

Protected Terrestrial Mammals

The protected species badger (*Meles meles)* was observed on site. An active badger sett was identified in the northeast of the survey area, under a concrete slab adjacent to an area previously used for housing livestock. An active breeding sett was also identified and confirmed by camera footage within the treeline boundary between fields in the northeast and the gravel garden in the east. Both setts were not present on site prior to 2024 surveys. Two cubs were observed regularly emerging from the breeding sett. The badger is a Red Data Book species. A Badger assessment and mitigation plan has been prepared by Dr Chris Smal (mammal specialist) in consultation with NPWS (Development Applications Unit) and DLR

biodiversity officer. The badger sett under the concrete slab (not breeding sett) is not in the site outline. The breeding sett will be retained during construction. In the absence of mitigation there is potential for disturbance and destruction of badger setts on site. Phasing of the project is designed to mitigate the potential effects on badgers in consultation with NPWS and badger specialist Dr. Chris Smal. It is standard best practice to make special provisions for badgers affected by development. The badger assessment and mitigation plan is seen in Appendix 8.7. A Badger Conservation Management Plan is seen in Appendix 8.8. It is proposed to retain the active breeding sett on site during the construction and operational phases of the development. An artificial Sett will be constructed on site. The smaller sett is outside the site development area and will be monitored throughout the works. The site plan and landscape plan has been modified to provide additional space in the vicinity of the badger breeding sett and further protection measures have been added by including landscaping features to ensure long term protection of the badgers on site.

In the absence of mitigation, the proposed development would be seen to have a negative, moderate adverse, not significant, national, short term and likely effect on mammals during construction. Mitigation in consultation with NPWS is required.

Bat Fauna

As outlined in Appendix 8.6*, 'No bats emerging from onsite main buildings were observed. A bat root of three common pipistrelles is located in the Gardener's compound buildings (outside of the proposed development site). Foraging activity was relatively low. The site is brightly lit with security lighting and construction lighting could reduce foraging on site. Trees on site have the potential for bat roosting and two bat roosts were noted within two separate Horse Chestnut trees. The removal of large trees on site will result in the loss of at least two bat roost in addition to reducing the sites foraging potential. However, in proximity to the existing buildings on site lighting will be reduced from current levels of floodlighting and it would be expected that bats would continue to forage on site particularly in the darker open space areas.'*

In the absence of mitigation, the proposed development would be seen to have a negative, minor adverse, short term, not significant, international and likely effect on bat fauna during construction. Mitigation is required.

Amphibians and reptiles

Frogs and newts may occur on site. However, these species were not noted during surveys, but may be present due to the drain on site. There is no loss of habitat on site as the drain will be maintained on site. A detention basin will be created which could form a positive effect. There would be some initial disturbance of on site habitats during construction which could potentially impact on amphibians. A pre-construction inspection will be carried out.

In the absence of mitigation, the proposed development would be seen to have a negative, minor adverse, short term, not significant, national and likely effect on amphibian and reptile fauna during construction. Mitigation is required.

Potential impacts on surrounding areas

The proposed development site is relatively isolated from surrounding areas by the presence of a tall institutional wall surrounding the site. This in effect helps isolate the site from the surrounding areas, with the exception of avian fauna and the drain that passes through the site. The drain on site will be maintained and landscaped. The majority of treelines will be maintained. As a result, the proposed development would not be expected to fragment

biodiversity corridors connected to the site, as the site is already isolated from surrounding areas. There will be a loss of some vegetation on site, but this is not expected to impact significantly on surrounding areas. Works on site could lead to noise and light impacts but these are not expected to impact significantly outside the site boundary.

In the absence of mitigation, downstream hydrological effects are likely. In relation to the volume of water supplying the drain on site, several discussions too place within the project team in relation to ensuring that the volume of water within this system is maintained. It was concluded by the engineers that the vast majority of the water that is contained within the drain enters the site via an underground culvert from the south of the site and it is not proposed to alter the supply to the drain. However, works on site in the absence of mitigation could potentially lead to downstream impacts as a result of contaminated surface runoff or pollution. Without the implementation of standard construction phase controls including silt interception, there could be impacts on aquatic species downstream. Mitigation is required.

In the absence of mitigation, the proposed development would be seen to have a negative, minor adverse, short term, not significant, local and likely effect on surrounding areas during construction. Mitigation is required.

8.4.2 Operational Phase

Impacts of Landscaping

It is proposed to retain a significant portion of the treelines and a portion of the scattered trees and parkland areas. Following construction of the buildings and associated roads, the planting of trees and landscaping will also be carried out. Altemar had detailed discussions with the landscape architects to enhance biodiversity on site. This included including native planting, wetland areas, bird and bat boxes, in addition to new hedgerows and an orchard.

In the absence of mitigation, the proposed landscaping would be seen to have a positive, minor beneficial, long term, not significant, local and likely effect on biodiversity during operation. Mitigation is required.

Designated Conservation sites within 15km

During operation of the development foul water will be discharged to online mains services. Runoff from the development and roads will have to comply with County Council and SUDS requirements and will be attenuated and discharged at greenfield rates to the public surface water network. The waterflow will be maintained in the drain on site and no significant loss in water or deterioration in water quality is expected. However, mitigation is required to ensure that pollution controls are in place and operational so that no significant effects on conservation sites will occur.

In the absence of mitigation, the proposed development would be seen to have a negative, minor adverse, long term, not significant, international and likely effect on designated sites during operation. Mitigation is required.

Aquatic Ecology

Petrochemical runoff from the site and road could potentially negatively directly or indirectly impact the aquatic ecology. Runoff from the development and roads will have to comply with

County Council drainage requirements and will require petrochemical interception and will be attenuated and discharged at greenfield rates to the public surface water network. The drainage connections and the installations in relation to petrochemical interception should be inspected by the project ecologist.

In the absence of mitigation, the proposed development would be seen to have a negative, minor adverse, long term, not significant, local and likely effect on aquatic ecology during operation. Mitigation is required.

Habitats, Botany and Avian Ecology

During the operational phase of the development there will be an increase in disturbance including noise and light that could potentially impact on birds on site. As the landscaping elements improve with maturity it would be expected that the biodiversity value of the site to birds and flora would also increase. This would result in an increase in biodiversity in the long term. Light spill on site will increase from the current baseline which would have a negative effect on biodiversity. However, it should be noted that significant security lighting was present on site during the former use of the site as the Central Mental Hospital. Landscape, light spill and habitat management will be important to overall impact of the operational phase. Ecological supervision of the elements of the accompanying Habitat management Plan are required.

Protected Terrestrial Mammals

Two active badger setts are present onsite, with one noted as a breeding sett. A sow and two cubs were observed almost daily by camera footage. The badger is a Red Data Book species. It is standard best practice to make special provisions for badgers affected by development. A Badger Survey Assessment and Mitigation Measures Plan has been prepared by Dr Chris Smal (Mammal ecologist) in consultation with NPWS and DLR biodiversity officer. The small set under the concrete slab is not within the proposed development site. The breeding sett will be retained on site while an artificial sett will be built to temporarily translocate the badgers on site. Phasing of the project is designed to mitigate the potential effects on badgers in consultation with NPWS. It is standard best practice to make special provisions for badgers affected by development.

In the absence of mitigation, the proposed development would be seen to have a negative, moderate adverse, long term, not significant, national and likely effect on mammals during operation. Mitigation is required as outlined in the Badger Survey Assessment and Mitigation Measures Plan.

Bat Fauna

No evidence of bat activity was noted in the buildings on site and no bats were noted emerging from onsite buildings in 2020, 2021 and 2023. However, in 2024 three common pipistrelle bats were noted emerging from the Gardner's compound (outside the proposed development site). In relation to trees on site, a single Leisler's bat was observed bat was emerging from a Horse Chestnut (Tree 0401) on the eastern section of the site in 2020 and a single common pipistrelle was noted emerging from an adjacent Horse Chestnut in 2024. Foraging activity Common pipistrelle (*Pipistrellus pipistrellus*), Soprano pipistrelle (*Pipistrellus pygmaeus*), Lesser Noctule (*Nyctalus leisleri*) were also noted on site.

The removal of the trees on site will result in a loss of foraging areas and two bat roosts. Lighting has the potential to impact on bat foraging during operation. Dark zones have been created on site within open spaces including the walled garden. Loss of foraging sites and commuting habitat may temporarily displace certain species. Low impact lighting has been chosen in the vicinity of the retained treeline (See lux lighting contour on lighting plan (Appendix 8.6)). The proposed lighting plan should not significantly impact the bat species that will utilise the retained treelines. A derogation licence will be required due to disturbance of the bat roost from lighting and the removal of a tree, which was noted as a bat roost during 2024 surveys. In May 2024, discussions took place between the architects, lighting specialists and Altemar to improve the biodiversity value of the site and reduce light spill. The lighting plan has been modified to take into account bat foraging and reduce the level of spill into dark areas of the site Ecological supervision is required to ensure compliance with landscaping, lighting and the accompanying Habitat management Plan. Mitigation is required in the form of a post construction light spill assessment.

In the absence of mitigation, the proposed development would be seen to have a negative, minor adverse, long term, not significant, international and likely effect on bats during operation. Mitigation is required.

Amphibians and reptiles

New ponds and water features are proposed that would encourage frogs and potentially newts within the area. Lizards were not noted on site and the proposed development would not be expected to impact on lizards.

In the absence of mitigation, the proposed development would be seen to have a beneficial, minor beneficial, long term, not significant, local and likely effect on Amphibians and reptiles during operation.

8.5 Mitigation Measures

Mitigation measures will be incorporated into the proposed development project to minimise the potential negative impacts on the ecology within the ZOI. These measures are outlined below in sequence and incorporate elements outlined elsewhere in this EIAR.

As the main potential vector for impacts would be seen to be via the pathway to Dublin Bay via the public surface water connection to the River Slang and the drain to the Elm Park Stream, mitigation will be in place to protect the biodiversity within the watercourses and downstream of the watercourses. Mitigation measures are also required for bats and badgers on site. No additional mitigation measures are required besides those outlined within the Hydrology and the Air Quality and Climate Chapters of the EIAR. These measures are deemed sufficient to deal with Hydrology and the Air Quality and Climate elements that could potentially impact on biodiversity. In relation to specific biodiversity mitigation measures the following will be implemented.

8.5.1 Construction Phase

B_1 An Ecological Clerk of Works will oversee the project and will operate in consultation with NPWS and the DLR biodiversity officer.

B_2 A pre-construction inspection for terrestrial mammals will be carried out.

B_3 An Ecological Clerk of Works (ECoW) will be appointed to oversee the construction phase and to oversee the implementation of all mitigation including compliance with Wildlife Acts and Water Pollution Acts and ensure that biodiversity in neighbouring areas including birds will not be impacted.

B_4 Relevant guidelines and legislation (Section 40 of the Wildlife Acts, 1976 to 2012) in relation to the removal of trees and timing of nesting birds will be followed e.g. do not remove trees or shrubs during the nesting season (1st March to 31st August). If removal is required during this season the removal of woody material will be carried out under the supervision of an ecologist. If nesting birds are present NPWS will be contacted and removal will be subject to conditions outlined by NPWS.

B_5 Lighting during construction will be carried out in consultation with the project ecologist.

B_6 Removal of deciduous trees. Should any mature broadleaved tree be scheduled for removal as part of the development plans, it will first be surveyed for bat presence by a suitably experienced specialist. If bats are found, an application for a derogation licence should be made to the National Parks and Wildlife Service to allow its legal removal. Such trees will be felled in the period late August to late October, or early November, in order to avoid disturbance of any roosting bats as per National Roads Authority guidelines (NRA 2006a and 2006b) and also to avoid the bird breeding seasons. Any tree felling will be completed by mid-November at the latest as bats roosting in trees are very vulnerable to disturbance during their hibernation period (November – April). Trees may be removed at other times but the likelihood of encountering bats during works will be higher. Trees with ivy-cover, once felled, will be left intact onsite for 24 hours prior to disposal to allow any bats beneath foliage to escape overnight. A derogation licence for bats for bat roosts on site is seen in Appendix 2 of Appendix 8.6.

B_7 Trees to be retained. Several species of bats roost in trees. Where possible, treelines and mature trees that are located immediately adjacent to planned construction areas or are not directly impacted will be avoided and retained intact. Retained trees will be protected from root damage by machinery by an exclusion zone of at least 5 metres or equivalent to canopy height. Such protected trees will be fenced off by adequate temporary fencing prior to other works commencing.

B_8 A pre-construction bat assessment will be carried out on all buildings to be demolished.

B_9 Native species will be chosen in all landscaping schemes. Planting schemes will attempt to link in with existing wildlife corridors (hedgerows and treelines), both onsite and off, to provide continuity of wildlife corridors. Retention of boundary hedgerows and treelines will also serve to screen the development.

B_10 Lighting restrictions. In general, artificial light creates a barrier to bats so lighting will be avoided where possible. Where lighting is required, directional lighting (i.e. lighting which only shines on work areas and not nearby countryside) will be used to prevent overspill during construction. This can be achieved by the design of the luminaire and by using accessories such as hoods, cowls, louvers and shields to direct the light to the intended area only. Mature trees will not be directly lit during construction or operation of the proposed development.

B_11 45 bird boxes and 10 bat boxes will be placed on site as an enhancement and mitigation measure. The position of these boxes will be carried out in consultation with an ecologist.

B_12 Control measures will be carried out on the Himalayan balsam on site as outlined in the CEMP.

B_13 Measures and recommendations outlined in Appendix 8.7. Badger Survey Assessment and Mitigation Measures will be followed in consultation with NPWS. Mitigation measures outlined in the Badger Conservation Management Plan (Appendix 8.8) will be carried out.

B_14 The measures outlines in the Invasive Species management Plan (Appenxix 8.10) will be followed.

8.5.2 Operational Phase

B_15 A post construction bat survey will be carried out and lighting on site will be assessed by an ecologist post construction.

B_16 A post construction inspection of drainage connections to the onsite drain will be carried out by the project ecologist to ensure that the petrochemical interceptor is in place and working.

B_17 A Habitat Management Plan will be in place and monitored by the project ecologist. The Habitat Management Plan (Appendix 8.9) has been prepared by Altemar with the support of AECOM Ireland Ltd. It involves the implementation of significant Habitat Management measures in line with the Dun Laoghaire Rathdown County Council Development Plan 2022-2028.

8.6 Residual Impacts

Based on the implementation of the mitigation measures above and outlined in the Hydrology Chapter of the EIAR, no designated sites will be impacted by the proposed development. The successful implementation of the CEMP and additional measures outlined in the EIAR will be essential to the successful mitigation/offsetting of the loss of biodiversity on site.

The project ecologist will oversee the implementation of the mitigation measures outlined in the biodiversity chapter of the EIAR. This will include the carrying out of works in compliance with the Badger Conservation Plan and the Habitat Management Plan. In addition, bat mitigation measures will me in place in relation to the removal of trees on site and the potential effects on light spill on existing bats roosting on site. In addition, pollution control measures will be implemented to prevent downstream effects on biodiversity and designated sites.

The proposed development has satisfactorily addressed the current ecology on site into its design so that application of the mitigation measures outlined in this EIAR will help reduce its impact on the local ecology to an adequate level. Where possible biodiversity enhancement measures have been retained and implemented into design to enhance the overall biodiversity value of the site. As a result of the loss of certain biodiversity features on site and the introduction of new buildings and increased human disturbance in addition to the implementation of a sensitive landscaping strategy, with biodiversity enhancement measures it is considered that the overall impact on the ecology of the proposed development will result in a long term neutral residual impact on the existing ecology of the site and locality overall. This is primarily as a result of the loss of terrestrial habitats on site, supported by the creation of additional terrestrial biodiversity features, mitigation measures and a sensitive lighting strategy.

8.7 Monitoring

During construction extensive monitoring will be in place in relation to badgers on site, in consultation with NPWS. Pre-construction surveys will be carried out for terrestrial mammals and bats. An Ecologist will monitor the site from pre-construction surveys, during Construction Phases and Post Construction. The drain on site will be monitored daily for turbidity for the length of the construction period.

8.8 Reinstatement

No reinstatement works are required for ecological features. However, upon completion of works within proximity of the badger breeding sett, the breeding sett will be reopened in consultation with NPWS. The proposed development would be managed on site in accordance with the Habitat Management Plan.

8.9 Interactions

The biodiversity elements of this EIAR have involved consultation with a wide section of the Project Team particularly in relation to the Construction Management, design, drainage, lighting and landscape elements of the proposed Project. There are numerous inter-related environmental topics described in detail throughout this EIAR document which are of relevance to the biodiversity chapter. The biodiversity chapter of the EIAR involves interactions with the Land, Soils, Geology and Hydrogeology, Hydrology, Air Quality and Climate, Noise and Vibration, Traffic and Transport, Waste Management and Site Services. Following the implementation of mitigation measures outlined in the EIAR the following interactions are noted.

8.9.1 Land, Soils, Geology & Hydrogeology

During the construction phase, excavated soil, stone, clay and made ground will be generated from the excavations required to facilitate site levelling and construction of the new foundations. It is estimated that excavated material will need to be removed off-site. However, it is envisaged that material will be reused on-site as fill. Where material has to be taken off-site, it will be taken for reuse or recovery, where practical, with disposal as a last resort. As such, there is the potential for impacts on local biodiversity via the proposed excavation and re-profiling works. There will be a loss of some vegetation on site, but this is not expected to impact significantly on surrounding areas Following the implementation of mitigation measures outlined in Chapter 8 and Chapter 9, the predicted effects on biodiversity are ***short to long term, imperceptible,*** and ***neutral.*** The biodiversity of the subject site is likely to improve following the completion of landscaping works.

8.9.2 Hydrology

During the construction and operational phases of development, there is the potential for downstream impacts on the on-site drainage ditches, proximate watercourses, and designated conservation sites via contaminated surface water runoff. Following the implementation of mitigation measures outlined in Chapter 8 and Chapter 10, the predicted effects on biodiversity are ***short term, imperceptible,*** and ***neutral.***

8.9.3 Air Quality and Climate

During the construction phase of development, given the nature and scale of the proposed works, there is the potential for dust and materials to enter the existing surface water sewer, drainage ditches, and proximate watercourses during site clearance and re-profiling works with the potential for downstream impacts on biodiversity and designated conservation sites. Following the implementation of mitigation measures outlined in Chapter 8, Chapter 11 and Chapter 12 the predicted effects on biodiversity are ***short term, imperceptible,*** and ***neutral.***

8.9.4 Noise and Vibration

During the operational phase of the development, there will be an increase in disturbance including noise and vibration that could potentially impact on birds on site. Following the implementation of mitigation measures outlined in Chapter 8 and Chapter 13, the predicted effects are ***short term and minor adverse.***

8.9.5 Traffic and Transport

During the construction phase of development, heightened traffic within and immediately surrounding the subject site (resulting from the transport of construction materials and the commuting of workers to the site) has the potential to impact on local biodiversity through increased disturbance. Following the implementation of mitigation measures outlined in Chapter 8 and Chapter 18, the predicted effects on biodiversity are ***short and long term, imperceptible,*** and ***neutral.***

8.9.6 Waste Management

There is the potential for impacts on local biodiversity and the potential for downstream impacts on proximate watercourses and designated sites via the storage and transportation of waste and pollution from the subject site during the construction phase of development. 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 19, the predicted effects on biodiversity are ***short long term, imperceptible,*** and ***neutral.***

8.9.7 Site Services

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. Following the implementation of mitigation measures outlined in Chapter 8 and Chapter 20, the predicted effects on biodiversity are ***short and long term, imperceptible,*** and ***neutral.***

8.9.8 Interactions - Overall

There is potential for interaction between the biodiversity and other chapters outlined in the EIAR, during construction and operation. The mitigation measures that will be put in place for the proposed development will ensure that the impact on biodiversity would be negligible following the implementation of mitigation measures.

8.10 Cumulative Impacts

There are several proposed developments located in the area immediately surrounding the subject site. The following is a list of planning applications in close proximity to the subject

site as identified on the Department of Housing, Local Government and Heritage's 'National Planning Application Database' portal (25th August 2024)[1],:

Table 8.7. Projects granted permission by Dún Laoghaire-Rathdown County Council (DLRCC) or An Bord Pleanála (ABP)

DLRCC/ ABP Reg. Ref.	Address	Decision Date	Overview of Development
ABP31293522	0.79 ha at Sommerville House, Dundrum Road, Dublin 14	Live Application	- Demolition - 111 no. apartments - 39 no. car parking spaces - 56. No. short stay bicycle storage spaces - Communal courtyard spaces
ABP31013821	Mount Saint Mary's and Saint Joseph's, Dundrum Road, Dundrum, Dublin 14	25th Aug 2021	- LRD - Demolition 2,913.8 sq m - 231 no. residential units - After school childcare facility 161 sq m - Café 83 sq m - 118 no, car parking spaces - 462 no. cycle spaces - 4 no. motorcycle spaces
D19A/0162	Former Shell Garage, Roebuck Road, Clonskeagh, Dublin 14	8th August 2019	- Demolition - 43 no. residential units - 47 no. car parking spaces - 92 no. cycle parking spaces
ABP30835320	The car sales premises currently known as Vector Motors (formerly known as Victor Motors), Goatstown Road, Dublin 14, D14FD23	3rd Feb 2021	- LRD (Student accommodation) - 960 sq m demolition - 239 no. bed spaces - 6 no car parking spaces
D20A/0328	University College Dublin, Belfield, Dublin 4	21st Jan 2021	- Extension to the existing car park to provide 239 no. additional car parking spaces, resulting in a total permanent surface car park comprising 300 no. car-parking spaces (61 no. existing spaces plus 239 no. new additional spaces). - The proposed development also seeks a modification of the Athletics Track development permitted under Dun Laoghaire Rathdown County Council Reg. Ref. D19A/0001, to omit 185 no. permitted temporary car parking spaces, resulting in a total of 70 no. temporary car parking spaces being delivered as part of the permitted Athletics track development.

[1] https://housinggovie.maps.arcgis.com/apps/webappviewer/index.html?id=9cf2a09799d74d8e9316a3d3a4d3a8de

DLRCC/ ABP Reg. Ref.	Address	Decision Date	Overview of Development
ABP30943021	2.12 ha at Our Lady's Grove, Goatstown Road, Dublin 14	3rd June 2021	- LRD - Student Accommodation - 698 no. bed spaces - 9 no. car parking - 4 no. motorcycle - 860 no. cycle parking
ABP31128721	c.0.9ha at No. 97A Highfield Park (D14P710), and No. 1 Frankfort Castle (D14 HY03), No. 2 Frankfort Castle (D14DE72) and Frankfort Lodge (D14C9P2), Old Frankfort, Dublin 14	20th Dec 2021	- LRD - 115 no. residential units - 80 sq m creche
ABP31182621	Lands at Knockrabo, Mount Anville Road,, Goatstown, Dublin 14	01/11/2021	- 227 no. apartments and associated site works.
ABP30768320	Green Acres Convent, Drumahill House and the Long Acre, Upper Kilmacud Road, Dundrum, Dublin 14	24/07/2020	- Provision of 54 no. additional apartments on previously permitted development of 253 no. apartments under ABP-304469-19, increase in childcare facility and associated site works.
ABP315883	'Dunelm', Rydalmount, Milltown Road, Dublin 6	22/2/2023	- Demolition of structures, construction of Build to Rent apartments comprising of 63 apartments in 2 blocks with all associated site works
ABP305261	Building 5, Dundrum Town Centre, Sandyford Road, Dundrum, Dublin 16	23/08/2019	- 107 no. apartments, cafe and associated site works.

The site is an existing enclosed area with limited connectivity to habitats outside the development area. Whilst, the drain on site leads outside the wall of the site and downstream to Natura 2000 sites, no potential cumulative impacts are likely. This is because the development will have to incorporate measures to protect water quality in compliance with legislative standards for receiving water quality (European Communities Environmental Objectives (Surface Water) Regulations (S.I. 272 of 2009 and S.I. 77 of 2019).

Given the isolated nature of the proposed development site no fragmentation of habitats is expected. An additional application will be submitted in relation to the development of the main Central Mental Hospital building, in addition to other works. The assessment on site also included an evaluation of this area of the site (Figure 8.11). The proposed works would not be seen to have a cumulative impact on biodiversity. Mitigation measures will be in place and discussions are ongoing with NPWS in relation to bats and badgers on site. Given this, it is considered that in combination effects with other existing and proposed developments in proximity to the application area would be unlikely, neutral, not significant and localised. It is concluded that no significant effects on conservation sites occur as a result of the proposed development in combination with other projects. No in combination effects likely to occur.

No projects in the vicinity of the proposed development would be seen to have a significant in combination effect on conservation sites.

8.11 'Do-Nothing' Effect

It would be expected that should the Site remain undeveloped, that there would be a natural succession to scrub once maintenance ceases. The biodiversity value of the site would increase as a result of neglect or a reduction in maintenance on site. However, the site has been identified for development within the Local Area Plan and it would be expected that these lands will be developed at some stage and that the impacts of any development would be broadly similar to those of proposed development.

8.12 Difficulties Encountered in Compiling the Chapter

No difficulties were encountered in the preparation of the Biodiversity Chapter of this EIAR. Several fieldwork dates were within in the initial stages of the Covid-19 pandemic. The Site surveys were carried out on-site by a single outdoor fieldworker with no contact with any other person.

8.13 Conclusion

The Biodiversity Chapter of the EIAR involved extensive surveys and interactions within the project team being carried out over several years. The flora, fauna and habitats within the proposed development area are outlined in detail and the potential impacts on biodiversity and designated sites were assessed. Detailed mitigation measures have been outlined and will be carried out during the construction and operational phases of the development including measures to ensure the protection of badgers and bats on site. In conclusion, the proposed development has satisfactorily addressed the potential impacts on biodiversity on site and within the potential zone of influence. It is considered that the overall impact on the biodiversity of the proposed development is a long term neutral residual impact on the existing biodiversity. However, the implementation of the proposed landscaping and Habitat Management Plan will provide significant on-site biodiversity enhancement features and provide long term positive benefits to the biodiversity on site.

8.14 References

Department of Environment Heritage and Local Government Circular NPW 1/10 and PSSP 2/10 on Appropriate Assessment under Article 6 of the Habitats Directive – Guidance for Planning Authorities March 2010.

Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities, Department of the Environment, Heritage and Local Government 2009; http://www.npws.ie/publications/archive/NPWS_2009_AA_Guidance.pdf

Managing NATURA 2000 Sites: the provisions of Article 6 of the Habitats Directive 92/43/EEC, European Commission 2000; http://ec.europa.eu/environment/nature/Natura2000/management/docs/art6/provision_of_art6_en.pdf

Assessment of Plans and Projects Significantly Affecting NATURA 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC; http://ec.europa.eu/environment/nature/Natura2000management/docs/art6/Natura_2000_assess_en.pdf

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 https://ec.europa.eu/environment/nature/natura2000/management/pdf/methodological-guidance_2021-10/EN.pdf

Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission; http://ec.europa.eu/environment/nature/Natura2000/management/docs/art6/guidance_art6_4_en.pdf

Guidance document on the implementation of the birds and habitats directive in estuaries and coastal zones with particular attention to port development and dredging; http://ec.europa.eu/environment/nature/Natura2000/management/docs/guidance_doc.pdf

The Status of EU Protected Habitats and Species in Ireland. http://www.npws.ie/publications/euconservationstatus/NPWS_2007_Conservation_Status_Report.pdf

NPWS (2013) Conservation Objectives: South Dublin Bay SAC 000210. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2013) Conservation Objectives: North Dublin Bay SAC 000206. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2012) Conservation Objectives: Baldoyle Bay SAC 000199. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2013) Conservation Objectives: Rockabill to Dalkey Island SAC 003000. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2016) Conservation Objectives: Howth Head SAC 000202. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

NPWS (2017) Conservation Objectives: Wicklow Mountains SAC 002122. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

NPWS (2021) Conservation Objectives: Glenasmole Valley SAC 001209. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.

NPWS (2021) Conservation Objectives: Knocksink Wood SAC 000725. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.

NPWS (2019) Conservation Objectives: Ballyman Glen SAC 000713. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.

NPWS (2015) Conservation Objectives: South Dublin Bay and River Tolka Estuary SPA 004024. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2015) Conservation Objectives: North Bull Island SPA 004006. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2013) Conservation Objectives: Baldoyle Bay SPA 004016. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2022) Conservation objectives for Dalkey Islands SPA [004172]. First Order Sitespecific Conservation Objectives Version 1.0. Department of Housing, Local Government and Heritage.

NPWS (2022) Conservation objectives for Howth Head Coast SPA [004113]. First Order Sitespecific Conservation Objectives Version 1.0. Department of Housing, Local Government and Heritage.

NPWS (2023) Conservation Objectives: North-west Irish Sea SPA 004236. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.

NPWS (2022) Conservation objectives for Wicklow Mountains SPA [004040]. First Order Site-specific Conservation Objectives Version 1.0. Department of Housing, Local Government and Heritage

9.0 LAND, SOILS, GEOLOGY AND HYDROGEOLOGY

9.1 Introduction

This chapter of the EIAR assesses the impacts of a proposed development, primarily residential at the lands at the Central Mental Hospital, Dundrum Road, Dundrum, Dublin 14. This chapter of the EIAR will be read in conjunction with the architectural and engineering drawings submitted as part of this planning application.

This chapter has been prepared by John Considine, BE, MIStructE, MIEI, CEng, FConsEIM, Chartered Engineer of Barrett Mahony Consulting Engineers. John is a Chartered Civil/Structural Engineer and a Fellow of the Association of Consulting Engineers of Ireland. He has over 35 years' experience as a consulting engineer covering civil engineering design and structural engineering design, principally in Ireland & the UK where he has been involved in many high-profile projects. He has been involved in the preparation of EIAR documents for over ten years and is particularly familiar with the area in and around Dublin where many of his projects are located.

Christina Fox, BEng (Hons) MSc CEng MIEI of Barrett Mahony Consulting Engineers (BMCE) also inputted into the chapter. Christina is a Chartered Engineer with Engineers Ireland and has been practicing as a consulting engineer for over eleven years. Christina holds an undergraduate degree in Civil Engineering and a master's degree in Structural and Geotechnical Engineering. Her experience includes civil and structural engineering design on a wide range of projects across Ireland, UK, EU, Norway and Africa.

Figure 9.1: Site Location

9.2 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 2022), the EIA Directive, Advice Notes on Current Practice (in preparation of Environmental Impact Statements) (EPA 2015), 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
- Geotechnical Site Investigation Report
- Civil Engineering Drawings Prepared by Barrett Mahony Consulting Engineers
- Geological Survey of Ireland (GSI) online maps and databases
- Eastern CFRAMS Flood Mapping from OPW
- EPA online maps and databases
- Topographical Survey
- Teagasc soil and sub-soil data.

9.3 Baseline Environment

9.3.1 Existing Site

The subject site is c9.6 ha with an additional 0.1 ha of works area on the Dundrum Road. It is currently occupied by the former Central Mental Hospital. There are other ancillary buildings on the site which are proposed to be demolished as part of the works, these include a swimming pool/sports hall, 2-storey red-brick building and temporary structures including portacabins.

The site is bounded on all sides by a boundary wall. Vehicular access to the site is through existing gates off the Dundrum Road at the Northwest corner.

There is considerable variation in ground levels across the site. In broad terms the main part of the site slopes down gradually from the southwest corner towards the northeast corner, from +45.21m OD down to +39.76m OD. The western portion of the site slopes down towards the Dundrum Road entrance at +38.44m OD. These low points are the furthest locations from the high topography in the south corner at a distance of 410m and 430m away respectively. Please refer to Figure 9.2 which is a summarised topographical survey.

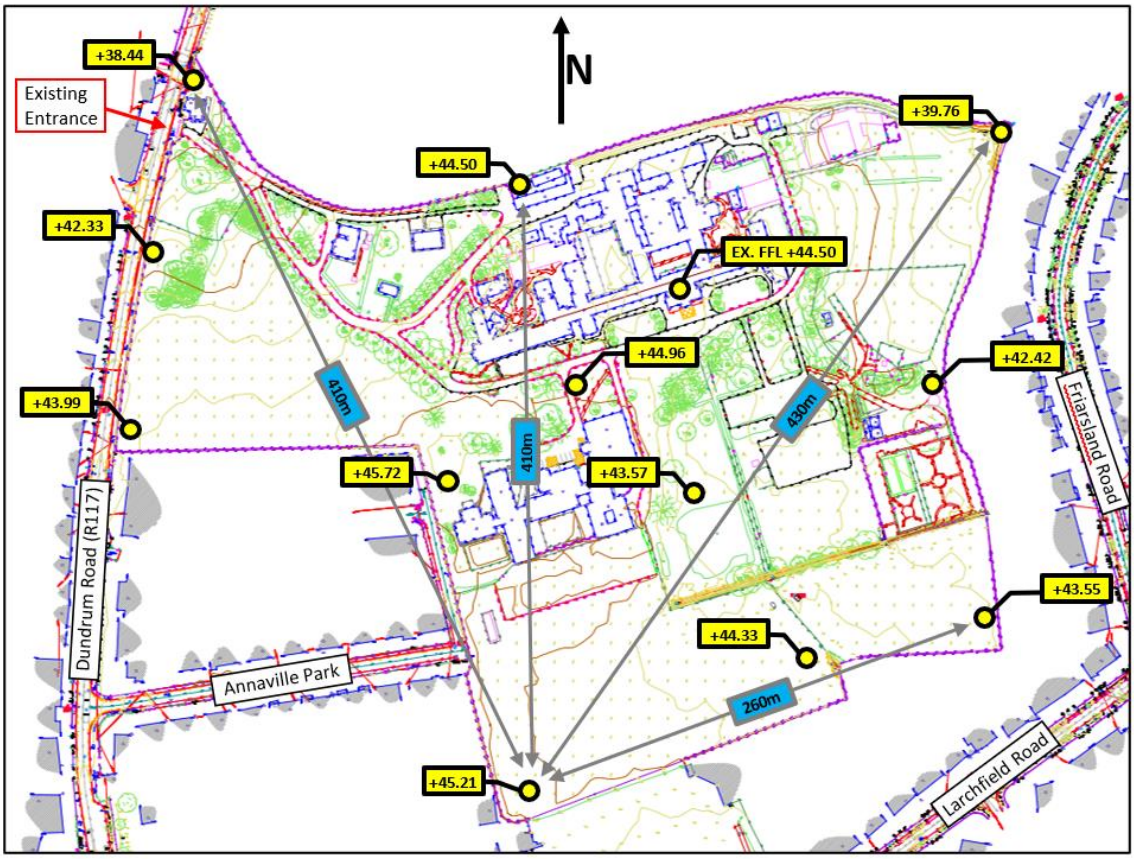


Figure 9.2: Summary of the Existing Site Topography Superimposed on Topographical Survey Drawing (Ordnance Datum Levels).

9.3.2 Site Investigation Works

A site investigation was carried out in November 2021 by Site Investigations Ltd, which is included in Appendix 9.1 of this chapter. As ground conditions have not changed on site since then, this investigation remains current. The site investigation consisted of cable percussive boreholes, trial pits, soakaway tests, foundations pits, slit trenches and California Bearing Ratio (CBR) tests. All fieldworks were carried out in accordance with BS 5930:2015, Engineers Ireland GI Specification and Related Document 2nd Edition 2016 and Eurocode 7: Geotechnical Design. Below is a breakdown of the works carried out:

- 16 no. Cable Percussive Boreholes
- 35 no. Trial Pits
- 4 no. Soakaway Tests
- 7 no. Foundation Inspection Pits
- 3 no. Slit Trenches
- 6 no. CBR Tests

Refer to table 9.1 and table 9.2 for the borehole log extract and summary table.

There was a total of 16no. boreholes were put down in a minimum diameter of 200mm through soils and rock strata to their completion depths by a combination of methods, including light percussion boring using a Dando 150 rig.

Figure 9.3: Site Investigation Works Plan

Table 9.1: Borehole Log Extract

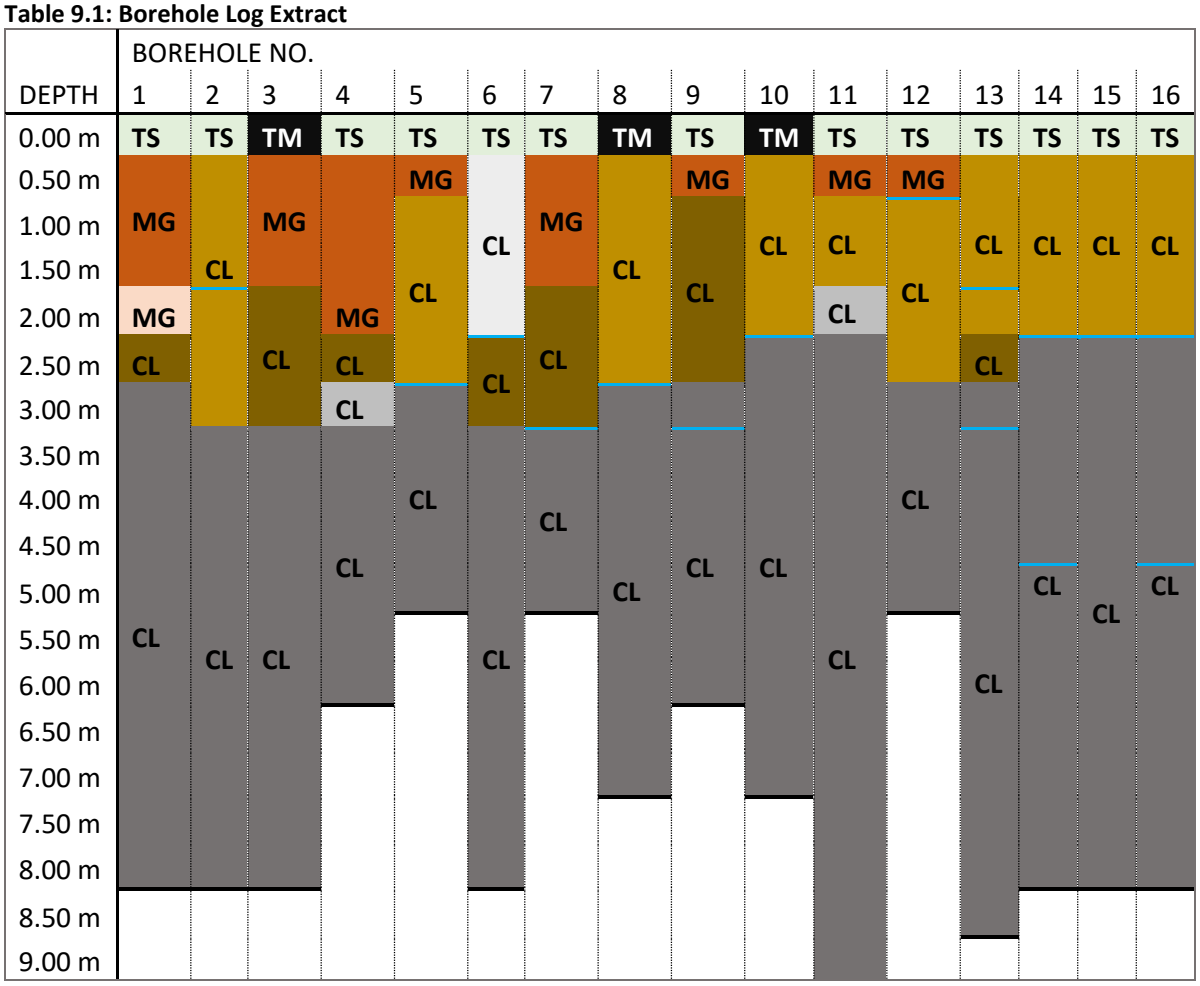


Table 9.2: Borehole Log Extract Legend

TS		Topsoil
TM		Tarmacadam: Grey Silty Sandy Gravel
MG		Made Ground: Light Brown Sandy Slightly Gravelly Silty Clay
MG		Made Ground: Brown Sandy Slightly Gravelly Silty Clay With Medium Cobble Content
CL		Firm Brown Sandy Slightly Gravelly Silty Clay with Low Cobble Content
CL		Stiff Brown/Grey Sandy Slightly Gravelly Silty Clay with Low Cobble Content
CL		Soft Grey Sandy Slightly Gravelly Silty Clay with Low Cobble Content
CL		Stiff Brown/Grey Sandy Slightly Silty Black Sandy Gravelly Clay with Low Cobble Content
CL		Very Stiff Black Sandy Slightly Gravelly Clay with Low Cobble Content
		Water Strike - Refer to BH Log
		Obstruction - Refer to BH Log

9.3.3 Bedrock Geology

The bedrock geology of this area is Carboniferous Limestone of the Lucan Formation. The bedrock is identified as a combination of dark limestone and shale, refer to Figure 9.4 below. Bedrock was located approximately 8.5m below ground level, per the site investigation report.

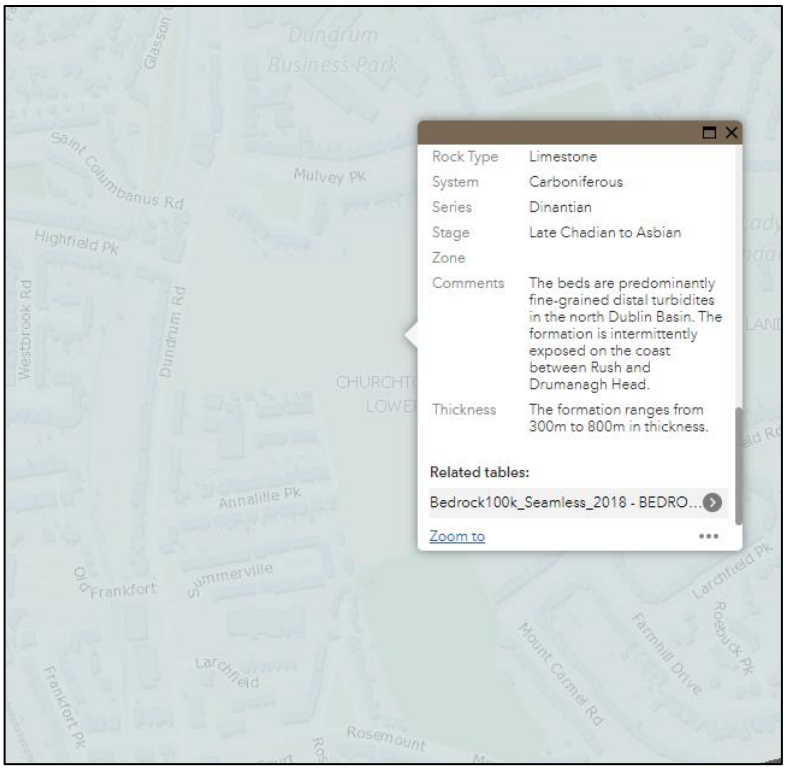


Figure 9.4: Bedrock Mapping of Site by GSI *(https://gis.epa.ie/EPAMaps/, n.d.)*

9.3.4 Subsoil (Quaternary) Geology

As can be seen in Table 9.1, the near surface subsoil is predominantly comprised of made ground or firm sandy clay

The quaternary period is the most recent stage of the geological period. It marks the period of the Ice Age and the postglacial period which extends to the present day. Most surface deposits were deposited in the Quaternary Period and provide the parent materials for the soils in the area.

Most sediments of the Quaternary period were deposited during the Ice Age itself either directly from the huge ice sheets or by meltwater from the sheets as they melted. Ice sheets would have slowly eroded the underlying bedrock producing sediment. This sediment may include particles of all sizes ranging from clay to boulder and which when spread over the surface by glacial ice, takes the form of till (boulder clay). Alternatively, sediment may be carried and sorted by meltwater and deposited as sand and gravel, with silt and clay deposited separately in lake systems or carried away to the sea. Glacial deposits therefore contain fragments of the type of bedrock over which the ice originally passed.

9.3.5 Soils

The GSI soils map indicates the predominant soil type in the development area to be till derived from limestones. An extract from the GSI soils map relevant to the site is detailed in Figure 9.5 below.

Teagasc soil maps classify soils beneath most of the site as Urban, refer to Figure 9.6.

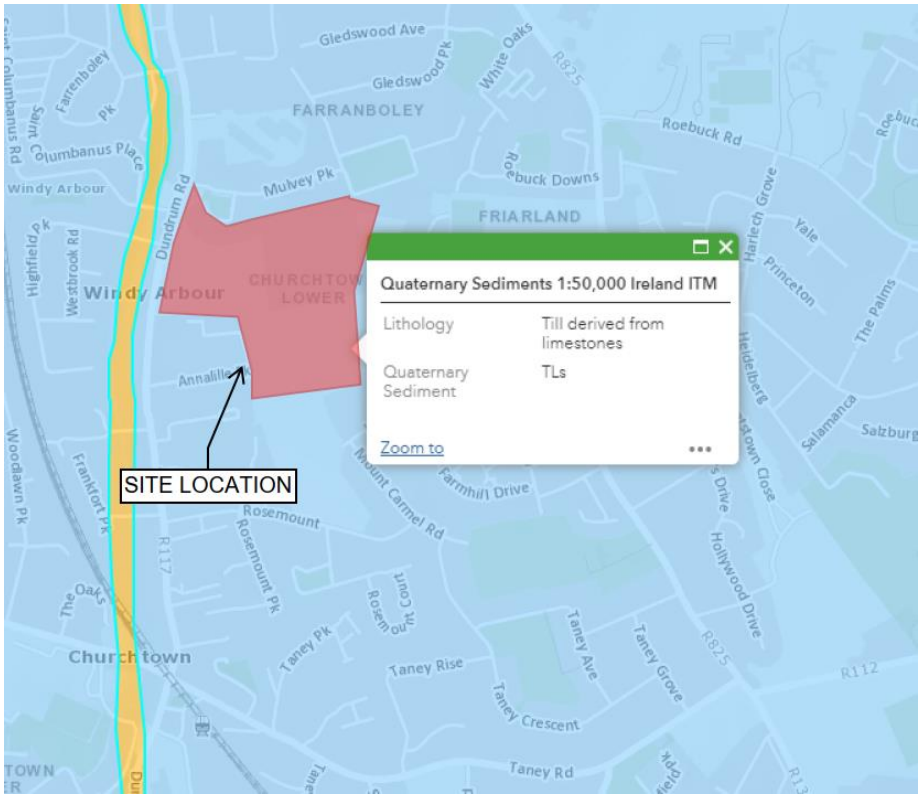


Figure 9.5: Extract from GSI Quaternary Mapping – Till Derived from Limestones *(GSI, n.d.)*

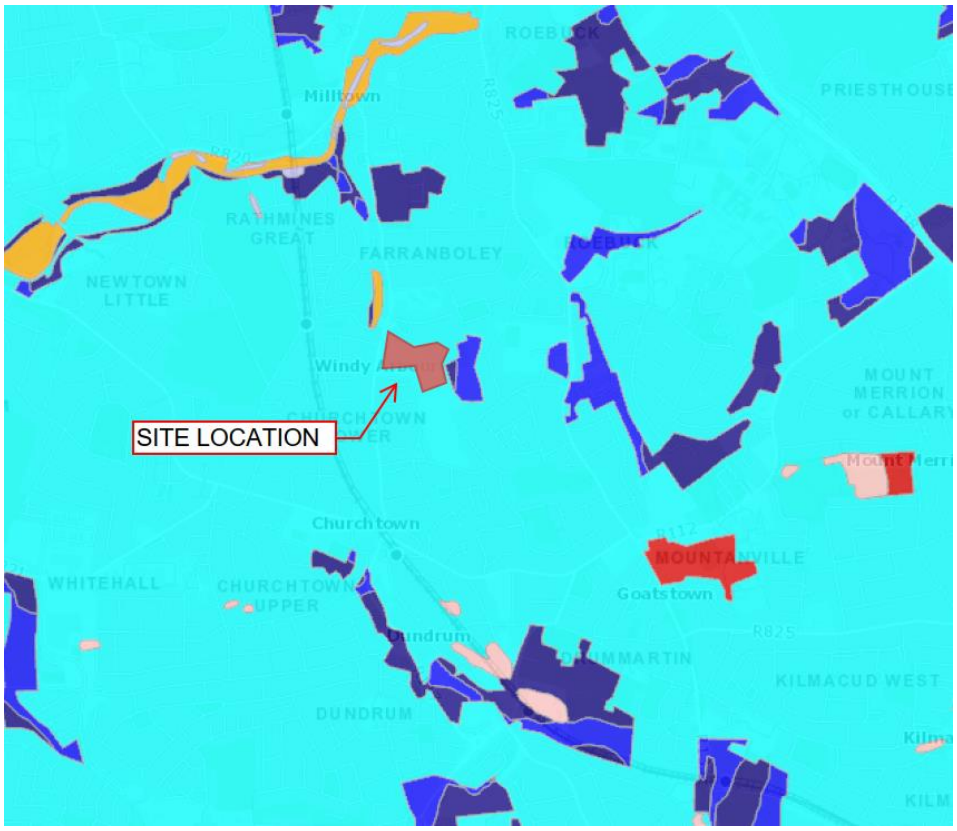


Figure 9.6: Extract from Teagasc Soil Map *(Teagasc, n.d.)* (blue = urban soil types)

9.3.6 Hydrogeology

9.3.6.1 Regional Hydrogeology

Groundwater can be defined as water that is stored in, or moves through, pores and cracks in sub soils. Aquifers are rocks or deposits that contain sufficient void spaces, and which are permeable enough to allow water to flow through them in significant quantities. The potential of the rock to store and transport water is governed by permeability, of which there are two types, intergranular and fissure permeability.

Intergranular permeability is found in sediments, sands, gravels, and clays. Fissure permeability is found in bedrock, where water moves through (and is stored in) cracks, fissures, planes, and solution openings.

When considering groundwater, it is important to consider the underlying geology, its complexity including faults, the large amounts of water and rainfall available for recharge and the overlying Quaternary deposits. The bedrock geology of this area is defined in Figure 9.4 as limestone with shale, (Dublin Calp Limestone).

The Geological Survey of Ireland has devised a system for classifying the aquifers in Ireland based on the hydrogeological characteristics, size and productivity of the groundwater resource. The three main classifications are Regionally Important Aquifers, Locally Important Aquifers and Poor Aquifers.

In Figure 9.7 the site area is classified by the GSI as a Locally Important Aquifer which is moderately productive only in local zones. This is an aquifer with a limited and relatively poorly connected network of fractures, fissures and joints, giving a low fissure permeability which tends to decrease further with depth. A willow zone of higher permeability may exist within the top few metres of more fractured/weathered rock, and higher permeability may also occur along fault zones. These zones may be able to provide larger 'locally important' supplies of water. In general, the lack of connection between the limited fissures results in relatively poor aquifer storage and flow paths that may only extend a few hundred metres and the site consists primarily of Till (TLs) with no karst features in this area.

There are no groundwater wells or springs recorded on the GSI Groundwater Data Viewer mapping on or near the site. Limestones with this aquifer classification typically exhibit low storability.

A site investigation was carried out in 2021 which included assessment of soil infiltration rates based on the requirements of BRE digest 365. The results of these tests are included in the site investigation report and further detail on the methodology used is included within the infrastructure report appendices.

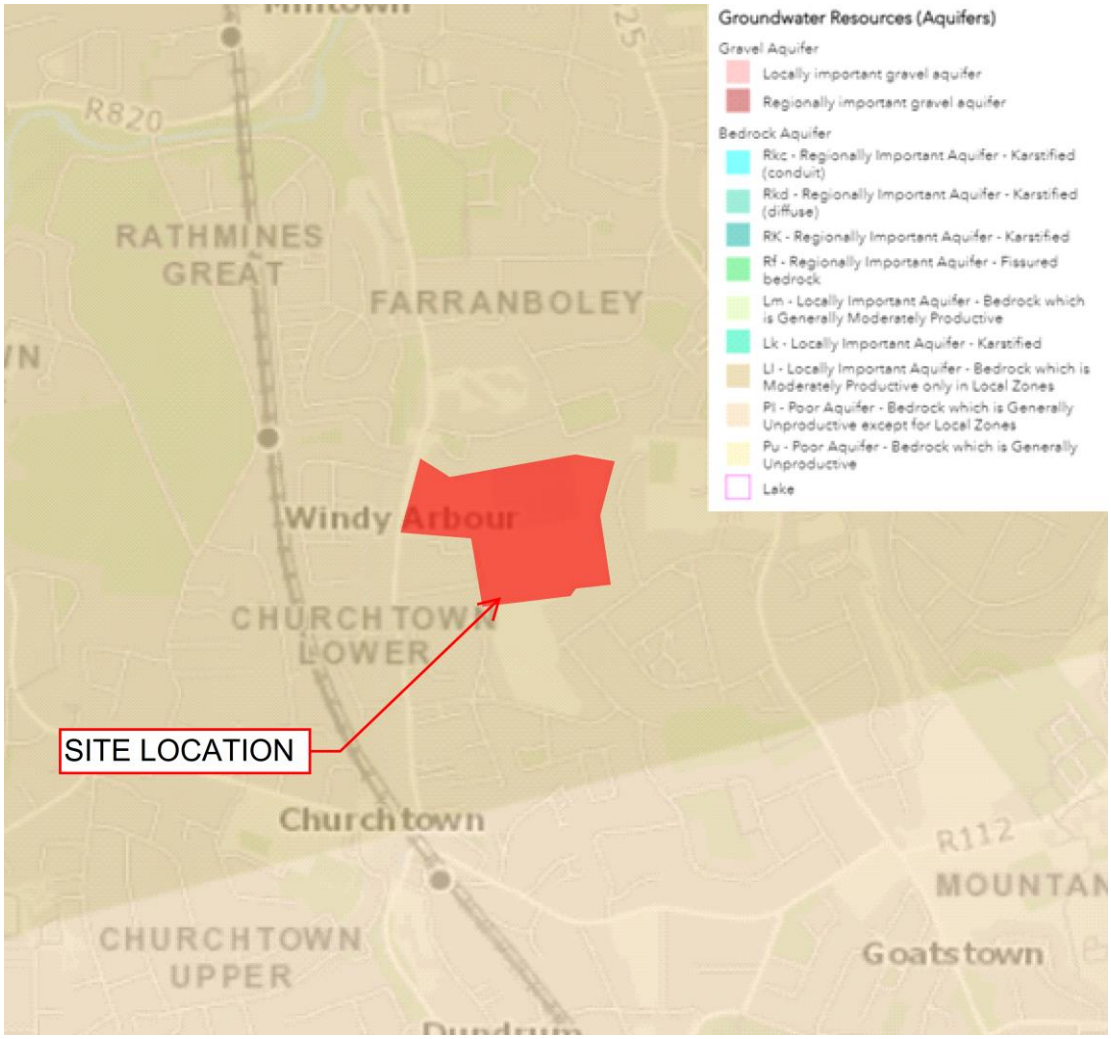


Figure 9.7: Extract from GSI Groundwater Aquifers – Bedrock Aquifer *(GSI, n.d.)*

9.3.6.2 Groundwater Vulnerability

Aquifer or groundwater vulnerability is a relative measure of the ease with which the groundwater could be contaminated by human activity and depends on the aquifer's intrinsic geological and hydrogeological characteristics. The vulnerability is determined by the permeability of any overlying deposits. For example, bedrock with a thick, low permeability, clay-rich overburden is less vulnerable than bedrock with a thin, high permeability, gravelly overburden.

Groundwater vulnerability categories are defined by the GSI as:

- **X - Extreme rock at or near surface or karst**
- **E - Extreme**
- **H - High**
- **M - Moderate**
- **L - Low**

These categories are used for mapping purposes and in the assessment of risk to ground waters. The classifications are based on the thickness and permeability of the sub-soils overlying the aquifer. The GSI has classified the aquifer vulnerability underlying the site in Figure 9.8 as "L" (low).

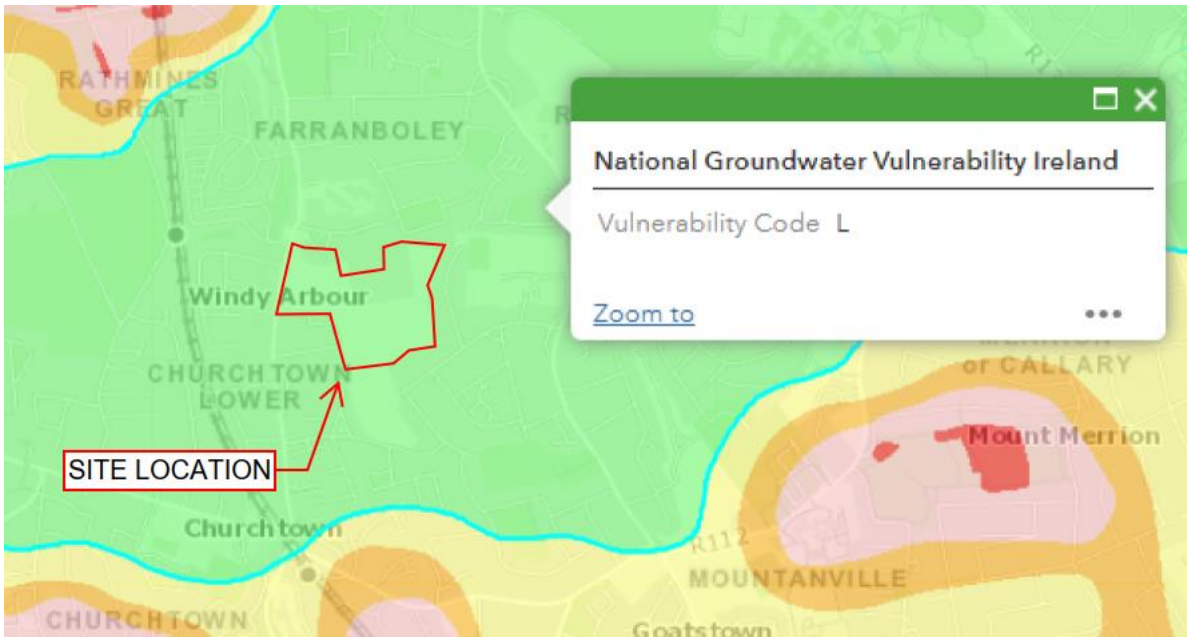


Figure 9.8: Extract from GSI Ground Water Data – Site has "L" (low) Vulnerability *(GSI, n.d.)*

9.3.6.3 Local groundwater usage and source protection area

The GSI online map does not identify any significant or notable abstraction wells within the vicinity of the proposed development. No groundwater protection zones are marked in proximity to the site. The site is located in an urban area with a public water main supply network negating the need for wells.

9.3.6.4 Recharge

Effective rainfall is the amount of rainfall available as either recharge to ground or run-off to surface water after evaporation and taken up by plants and per Figure 9.9, this is 21mm/yr or 62mm/yr. The recharge coefficient, which is the proportion of effective rainfall to recharge groundwater, is estimated at 20% on the site. Recharge is the amount of rainfall that replenishes the aquifer, it is a function of the effective rainfall, the permeability and thickness of the subsoil and the aquifer characteristics.

Figure 9.9: Extract from GSI Groundwater Recharge Map *(GSI, n.d.)*

9.3.6.5 Groundwater

The characteristics of the underlying limestone bedrock and local topography appear to have a strong influence in the hydrogeology of the site. Groundwater is likely present within the upper levels of the bedrock with little or no groundwater present within the subsoils.

9.3.6.6 Groundwater Quality

Under the requirements of the Water Framework Directive, the Dublin groundwater body was classified as having an overall good status for water quality and quantity 2010-2015. The second cycle was undertaken between 2016-2021 and similarly, the overall groundwater body was classified as good. The third cycle is currently underway and will run from 2022-2027.

9.3.6.7 Groundwater Flood Risk

Groundwater flooding can occur on a site during lengthy periods of heavy rainfall, typically during later winter/early spring when the groundwater table is already high. If the groundwater level rises above surface level, it can pond at local points and cause periods of flooding.

9.4 Potential Impacts of the Proposed Project

9.4.1 Construction Phase

9.4.1.1 Direct

The predicted direct impacts of the proposed development on the land and soils of the surrounding environment are assessed in this section for the construction phase.

It is anticipated that the general development site works, and excavation proposals will not impact the underlying bedrock geology during the construction phase. The maximum excavation depth for lift pits in basements is anticipated to extend to a depth of 4.5m below ground level. The impacts on the underlying bedrock geology arising from the construction phase will be minimal, with maximum excavation depths terminating c.4.0m above encountered bedrock levels.

The initial development of the site will involve extensive stripping of the topsoil and existing hardstanding (approximately the upper 300mm of soil). Excavation of subsoil layers is required to facilitate site development works, in particular the construction of foul and surface water sewers and underground surface water storage structures (attenuation). Bulk excavation is also required for several basements in the development. Reusable excavated soils and rock will be retained on-site for backfilling or drainage purposes to reduce the total volume of imported & exported material. Non-reusable surplus subsoil caused by excavations for foundations, roads and drainage will be stockpiled and taken off-site to a licensed landfill facility.

The associated construction earthworks and the removal of the topsoil and site hardstanding will expose subsoil layers to the effects of weathering. This will result in the erosion of soil, particularly in times of adverse weather conditions. Final buildings, roads and landscaping will eliminate these impacts. It is anticipated that the impact on soils arising from the construction phase will be negative, temporary and not significant.

The bulk earthworks are associated with the site strip and excavation of basements, half-basements and foundations for the new buildings with some levelling & re-grading of the site to accommodate roads & footpaths as necessary. The estimated earthworks quantities are set out in table 9.2 below. The material excavated in the site strip is expected to be either made ground or Brown Boulder clay. Brown Boulder clay leading to Black Boulder clay is expected to be encountered during bulk excavation for the basement. Rock is not expected to be present within the excavated depth. The likely impact from the works will be moderate, permanent and negative.

Table 9.2 – Predicted Bulk Excavation Volumes and Disposal

Phase	Site Strip (m^3)	Bulk Excavation (m^3)	Fill Material (m^3)	Net (m^3)
Phase 1	14,500	40,953	2,368	38,585
Phase 2	7,677	15,379	4,681	10,699
Total	**22,177**	**56,332**	**7,049**	**49,284**

Figure 9.10: Plan View of the Development Showing the Block Layout and Outline Phasing.

9.4.1.2 Indirect

There are areas of the site covered in hardstanding and it will be necessary to remove surplus and potentially hazardous materials (soil contaminated with fuel from tanks/vehicles) from the site via trucks. As part of the construction process, there will also be increased traffic to the site to facilitate the delivery of the required materials. Large volumes of stone will be required for construction of the roads, foundations and services and large quantities of concrete, bricks, steel, tar etc. will also be required for the construction works on-site.

The regular movement of heavy machinery and plant to and from the site would also result in an increased risk to the integrity of the surrounding road network, as well as facilitating the unwelcome transfer of mud and dust to surrounding access routes in the absence of mitigation.

9.4.1.3 Worst Case Scenario

There is a potential risk of localised contamination of the land and soils due to the accidental release of diesel fuel or similar hazardous materials during the construction phase, through the failure of secondary containment or a material handling accident on the site, resulting in a negative, moderate, permanent impact on the land and soils. Appropriate remediation measures would be required depending on the nature and extent of any contamination caused under such a scenario. Potential remediation measures may include the excavation and treatment of contaminated soil and in-situ remediation techniques.

Small amounts of asbestos may be encountered as part of the demolition of existing infrastructure on site. Asbestos survey to be prepared in advance of any works being undertaken on site. In the unlikely event that asbestos is encountered DLRCC are to be notified, and a specialist contractor is to be commissioned to remove and dispose of any asbestos safely.

9.4.2 Operational Phase

9.4.2.1 Direct

Buildings, roads and landscaping for the development will negate the initial negative impact from the operational phase and will protect the exposed soils from ongoing weathering and erosion. The affects to the land & soils from the operational phase of the project will be neutral, imperceptible, and permanent.

9.4.2.2 Indirect

No indirect impacts on the land and soils are predicted for the operational phase.

9.4.2.3 Worst Case Scenario

On completion of the construction phase, it is not envisaged that there would be a further direct impact on the soil or geological structure. The day-to-day activities of the completed development would be unlikely to have any direct impact on the land and soils in the surrounding environment.

9.5 Mitigation Measures

9.5.1 Construction Phase

LS_1: To prevent the accidental release of hazardous materials (fuels, paints, cleaning agents, etc.) during construction site activity all hazardous materials will be stored within secondary containment designed to retain at least 110% of the storage contents. Temporary bunds for

oil/diesel storage tanks will be used on the site during the construction phase of the project. Safe materials handling of all potentially hazardous materials will be emphasised to all construction personnel employed during this phase of the project.

LS_2: Sediment runoff will be minimised by sediment skirts around soil stockpiles, sediment retention barriers in temporary surface water drains and the use of adequate construction roads.

LS_3: The provision of wheel wash areas at the construction entrances to the development will minimise the amount of soil deposited on the surrounding road network.

LS_4: Measures will be implemented throughout the construction stage to minimise the risk of contamination of the soil from accidental oil and petrol leakage from site plant. All lock up/storage areas will have a metal or concrete leak proof floor. Any accidental chemical spillages will be cleaned up and disposed of in an approved landfill site in accordance with the chemical manufacturer's recommendations.

LS_5: Exposed soil surfaces to be protected with 150mm stone hardcore layer.

9.5.2 Operational Phase

During the operational phase of the proposed development there is limited potential for site activities to impact on the geological environment of the area and therefore no mitigation measures are required.

Ensuring appropriately designed and constructed site services will protect the soils and geology from future contamination arising from operation of the developments.

9.6 Residual Impacts

9.6.1 Construction Phase

The residual impacts are the final or intended effects which occur after the proposed mitigation measures have been implemented.

If the proposed mitigation measures in section 9.5 are implemented then the residual impacts from the construction phase of the development on the land and soils in the surrounding environment will be negative, temporary, and not significant.

9.6.2 Operational Phase

The residual impacts on the surrounding land and soils environment due to the operational phase works will be neutral, imperceptible, and permanent.

9.7 Monitoring

9.7.1 Construction Phase

The contractor will be required to monitor the implemented mitigation measures proposed as part of the EIAR document and CEMP.

9.7.2 Operational Phase

No further impact on the land and soils is anticipated during the operational phase and therefore no monitoring is required.

9.8 Interactions

9.8.1 Public Health

There is the potential for public health issues to arise due to the contamination of the land and soils due to the construction works. If the proposed mitigation measures are applied during the construction process, then the danger to public health will be negative, imperceptible and short term.

9.8.2 Any Other Applicable

There are interactions between land, soils, geology and hydrogeology and material assets and built assets (traffic). Throughout the construction stage of the project, there will be an increase in traffic on the roads due to deliveries to and from the site, site personnel and construction works. This impact will be negative, temporary and significant. There will be an increase in traffic in the general vicinity of the site during the operational stage, this will be negative, permanent and slight.

There are interactions between land, soils, geology and hydrogeology and surface water, with some surface water conveyed and stored in SuDS features such as soakaways and discharging to the ground where possible, replicating the existing greenfield site drainage as closely as possible. The likely impact will be permanent, slight and neutral.

There are interactions between land, soils, geology and hydrogeology and material assets, with the construction of basements and drainage/utilities impacting the quantity of soil and subsoil as these materials will be removed to facilitate construction. The likely impact will be moderate, permanent and negative.

There are interactions between lands and soils and material assets (waste) during the construction phase. The excavated material volume to be disposed off-site is 71,000m^3 approx. which comprises of 22,000m^3 from the site strip & a net cut volume of 49,000m^3 from the bulk excavation. The net cut volume assumes reasonably that excavated material can be used as bulk fill on site. There will only be limited opportunities to use some of the site strip topsoil in green field and landscaped areas on site. Excavated material will be disposed off-site to a licensed waste disposal facility. Refer to the Construction & Demolition Waste Management Plan for further information. Adherence to the mitigation measures in Chapter 9 & 19 and the requirements of the C&DWMP, will ensure the effect is long-term, imperceptible, and neutral.

There are interactions between land, soils, geology and hydrogeology and air quality. Due to activities such as land clearing, excavations, stockpiling of materials etc. all of which have the

potential for interactions between air quality and land and soils in the form of dust emissions. However, 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. Refer to the air quality section of the EIAR for further information.
There are interactions between land, soils, geology and hydrogeology and archaeology. During the Construction Phase, there is the potential for direct impacts on archaeological features because of construction activities, primarily ground excavation.

There are interactions between land, soils, geology and hydrogeology and the biodiversity. During the construction phase, excavated soil, stone, clay and made ground (c. 56,000 m^3) will be generated from the excavations required to facilitate site levelling and construction of the new foundations. A further 22,000 m^3 will be generated by the site strip. It is estimated that c. 71,000 m^3 of excavated material will need to be removed off-site with c. 7,000 m^3 of excavated material reused on-site as fill. Where material has to be taken off-site, it will be taken for reuse or recovery, where practical, with disposal as a last resort. As such, there is the potential for impacts on local biodiversity via the proposed earthworks on site. There will be a loss of some vegetation on site, but this is not expected to impact significantly on surrounding areas. Following the implementation of mitigation measures outlined in Chapter 9, the predicted effects on biodiversity are short to long term, imperceptible, and neutral. The biodiversity of the subject site is likely to improve following the completion of landscaping works.

9.9 Cumulative Impacts

The potential cumulative impacts of the proposed development on Land and Soils have been considered in conjunction with developments in the surrounding area. We outline the status of each project and the expected cumulative impacts associated with this development.

An online planning search was undertaken by Tom Phillips & Associates for current and recently permitted development applications within a 2km radius of the proposed site within the past year. These projects are evaluated for cumulative effects in Table 9.3 below.

Table 9.3: Cumulative Effects of current and recently permitted developments

Reg. Ref.	Location	Development Description	Decision	Status	Likely Cumulative Effects
ABP30943021	2.12 ha at Our Lady's Grove, Goatstown Road, Dublin 14	698 no. student bedspace accommodation and associated site works.	GRANT PERMISSION	Committed (Permitted/Under Construction)	The proposed site is approximately 0.26km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Land, Soils, Geology or Hydrogeology during the construction or operational phase of the developments.
ABP31128721	c.0.9ha at No. 97A Highfield Park (D14P710), and No. 1 Frankfort Castle (D14 HY03), No. 2 Frankfort Castle (D14DE72) and Frankfort Lodge (D14C9P2), Old Frankfort, Dublin 14	115 no. apartments, creche and associated site works.	GRANT PERMISSION	Committed (Permitted/Under Construction)	The proposed site is approximately 0.39km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Land, Soils, Geology or Hydrogeology during the construction or operational phase of the developments.
ABP31182621	Lands at Knockrabo, Mount Anville Road, Goatstown, Dublin 14	227 no. apartments and associated site works.	GRANT PERMISSION	Committed (Permitted/Under Construction)	The proposed site is approximately 1.14km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Land, Soils, Geology or Hydrogeology during the construction or operational phase of the developments.
ABP31013821	Mount Saint Mary's and Saint Joseph's, Dundrum Road, Dundrum, Dublin 14	Demolition of existing buildings on site and part of the granite wall along Dundrum Road, excluding Small Hall, construction of 231 no. apartments, childcare facility and associated site works.	GRANT PERMISSION	Committed (Permitted/Under Construction)	The proposed site is approximately 0.95km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Land, Soils, Geology or Hydrogeology during the

Reg. Ref.	Location	Development Description	Decision	Status	Likely Cumulative Effects
					construction or operational phase of the developments.
ABP30768320	Green Acres Convent, Drumahill House and the Long Acre, Upper Kilmacud Road, Dundrum, Dublin 14	Provision of 54 no. additional apartments on previously permitted development of 253 no. apartments under ABP-304469-19, increase in childcare facility and associated site works.	GRANT PERMISSION	Committed (Permitted/Under Construction)	The proposed site is approximately 1.44km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Land, Soils, Geology or Hydrogeology during the construction or operational phase of the developments.
ABP30446919	Greenacres, Longacre and Drumahill House, Upper Kilmacud Road, Dundrum, Dublin 14	253 no. apartments and associated works.	GRANT PERMISSION	Built & occupied.	The proposed site is approximately 1.44km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Land, Soils, Geology or Hydrogeology during the construction or operational phase of the developments.
ABP248265 D16A/0818	Green Acres Convent, Kilmacud Road Upper, Dublin 14.	Demolition of the former Green Acres Convent and the construction of 120 no. apartments in 2 blocks ranging in height from 2 to 5 storeys with all associated site works.	GRANT PERMISSION	Committed (Permitted/Under Construction)	The proposed site is approximately 1.45km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Land, Soils, Geology or Hydrogeology during the construction or operational phase of the developments.
D20A/0328	University College Dublin, Belfield, Dublin 4	Extension of car park to provide 239 no. spaces	GRANT PERMISSION	Committed (Permitted/Under Construction)	The proposed site is approximately 1.09km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Land, Soils, Geology or Hydrogeology during the

Reg. Ref.	Location	Development Description	Decision	Status	Likely Cumulative Effects
					construction or operational phase of the developments.
TA0001	University College Dublin, Belfield, Dublin 4.	10 year permission for 512 student accommodation units (3006 no. bed spaces) including student facility centre, car parking and all associated site works.	GRANT PERMISSION	Committed (Permitted/Under Construction)	The proposed site is approximately 1.09km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Land, Soils, Geology or Hydrogeology during the construction or operational phase of the developments.
ABP315883	'Dunelm', Rydalmount, Milltown Road, Dublin 6	Demolition of structures, construction of Build to Rent apartments comprising of 63 apartments in 2 blocks with all associated site works	GRANT PERMISSION	Committed (Permitted/Under Construction)	The proposed site is approximately 1.23km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Land, Soils, Geology or Hydrogeology during the construction or operational phase of the developments.
ABP305261	Building 5, Dundrum Town Centre, Sandyford Road, Dundrum, Dublin 16	107 no. apartments, cafe and associated site works.	GRANT PERMISSION	Committed (Permitted/Under Construction)	The proposed site is approximately 1.3km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Land, Soils, Geology or Hydrogeology during the construction or operational phase of the developments.
ABP300024	Lands at the former Paper Mills site, bounded by the River Dodder to the East, Clonskeagh Road to the West, Clonskeagh Bridge to the South West, Dublin 6	Increase in apartment units from 96 to 116 with increase in block heights from 3 to 4 storeys with 30 additional parking spaces & additional bicycle spaces & associated site works.	GRANT PERMISSION	Committed (Permitted/Under Construction) Unclear if this has been started on site – hoarding up	The proposed site is approximately 1.63km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Land, Soils, Geology or Hydrogeology during the

Reg. Ref.	Location	Development Description	Decision	Status	Likely Cumulative Effects
					construction or operational phase of the developments.
ABP311439	Site measuring 0.29ha, Bounded by Kilmacud Road Upper to the north, Drummartin Link Road to the west, and Hazelbrook Apartments to the east and south, Dublin 14	Demolition of existing disused agricultural shed structure and the construction of a residential block 3 to 6 storeys consisting of 52 dwelling units	GRANT PERMISSION	Committed (Permitted/Under Construction) Nearly complete but not yet occupied	The proposed site is approximately 1.75km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Land, Soils, Geology or Hydrogeology during the construction or operational phase of the developments.
ABP313048	9/14 and 11C, Milltown Road, Milltown, Dublin 6. The application site consists of the former Murphy and Gunn site (currently Autovision) and the former Saint Joseph's Junior Education Centre site.	Construction of 97 Build to Rent apartments	GRANT PERMISSION	Committed (Permitted/Under Construction)	The proposed site is approximately 1.78km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Land, Soils, Geology or Hydrogeology during the construction or operational phase of the developments.
ABP312539	Cunningham House, Trinity Hall, Dartry, Dublin 6.	Demolition of existing building, construction of 358 no. student bedspace accommodation, 4 no. staff apartments and associated site works.	GRANT PERMISSION	Committed (Permitted/Under Construction)	The proposed site is approximately 1.8km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Land, Soils, Geology or Hydrogeology during the construction or operational phase of the developments.
ABP312170	Marmalade Lane, Wyckham Avenue, Dundrum, Dublin 16.	531 no. Build to Rent apartments, creche and associated site works.	GRANT PERMISSION	Committed (Permitted/Under Construction)	The proposed site is approximately 1.91km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Land, Soils, Geology or Hydrogeology during the

Reg. Ref.	Location	Development Description	Decision	Status	Likely Cumulative Effects
					construction or operational phase of the developments.
ABP309931	24,26 28, Fosters Avenue, Mount Merrion, Blackrock, Co Dublin	Demolition of existing buildings on site and construction of 72 no. apartments, communal open space areas, parking spaces, vehicular, pedestrian and servicing access from Foster's Avenue, ESB substation and switch room, and all associated site works	GRANT PERMISSION	Committed (Permitted/Under Construction)	The proposed site is approximately 1.98km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Land, Soils, Geology or Hydrogeology during the construction or operational phase of the developments.
ABP31293522	0.79 ha at Sommerville House, Dundrum Road, Dublin 14	Demolition of all structures, construction of 111 no. apartments and associated site works	LIVE APPLICATION	Planned	The proposed site is approximately 0.21km away from our proposed development. There is no indication of basements within the development and therefore it is not anticipated that there will be any significant cumulative impacts on the Land, Soils, Geology or Hydrogeology during the construction or operational phase of the developments.
ABP31323522	0.34 hectares comprising the car sales premises currently known as Vector Motors (formerly known as Victor Motors), Goatstown Road, Dublin 14, D14FD23	Demolition of existing building on site, construction of 221 no. student bedspaces and associated site works.	LIVE APPLICATION	Planned	The proposed site is approximately 0.53km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Land, Soils, Geology or Hydrogeology during the construction or operational phase of the developments.
ABP31322022	site 3.5335ha incorporating the old Dundrum Shopping Centre known as Main Dundrum Street Village Centre (D14K3T7)	Demolition of all existing buildings on site, construction of 881 no. apartments, creche and associated site works.	LIVE APPLICATION	Planned	The proposed site is approximately 0.79km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Land, Soils, Geology or Hydrogeology during the

Reg. Ref.	Location	Development Description	Decision	Status	Likely Cumulative Effects
					construction or operational phase of the developments.
ABP316470	Site of approx. 0.24 ha on lands at Frankfort Centre, Dundrum Road, Dublin 1	The construction of 64 no. apartment units in the form of a 5-6 storey apartment blocks, the provision of a ground floor retail/cafe unit, and Public Realm upgrades to Dundrum Road and all other associated site works above and below ground associated with the proposed development. An NIS has been submitted with the application.	LIVE APPLICATION	Planned	The proposed site is approximately 0.37km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Land, Soils, Geology or Hydrogeology during the construction or operational phase of the developments.

9.10 'Do-Nothing' Effect

Under a '*do-nothing*' scenario there would be no change to the soil environment at the application site.

9.11 Difficulties in Compiling the Chapter

No difficulties were encountered in completing this section.

9.12 Conclusion

This chapter of the EIAR has assessed the impacts of the proposed development at the lands at the Central Mental Hospital, Dundrum Road, Dundrum, Dublin 14 on the land, soils, geology and hydrogeology. The existing baseline scenario of the site and surrounds have been reviewed with a desktop study, site walkaround and site investigation (included as appendix 9.1). Based on the proposed development, any potential impacts during both the construction and operational stages on the land, soils, geology and hydrogeology have been reviewed, these are listed in section 9.4 of this chapter. From these potential impacts, a set of mitigation measures are set out to be implemented throughout the project.

As part of the construction process for the foundations for apartment blocks, as well as the general site works, there are risks associated with potential negative impacts on the lands, soils, geology and hydrogeology. The mitigation measures set out in this chapter, along with the measures set out within this EIAR, aims to reduce the effect these impacts will have on the surrounding land, soils, geology and hydrogeology.

There are several proposed building developments in this part of South Dublin. None are in close proximity to the site except the future development of the Central Mental Hospital buildings and immediate surrounds. This is adjacent to the subject site but the nature of the proposed works means that it's cumulative impact is not significant.

9.13 References

Guidelines for the Preparation of Soil, Geology and Hydrogeology Chapters of Environment Impact Statements (Institute of Geologists of Ireland (IGI) 2013);
Guidelines on the Information to be contained in Environmental Impact Assessments Reports (EPA 2022)
Advice Notes on Current Practice in the preparations of Environmental Impact Statements (EPA 2015)
Current & historical Ordnance Survey Maps (1829 – 1842,1837 – 1842 & 1888, 1913),
Aerial photography (1995 & 2000),
The Geology of Ireland, Ed. C. H. Holland, (Dunedin Academic Press, 2001),
Geological maps of the site produced by the GSI,
Quaternary Maps,
Bedrock Mapping,
Groundwater Vulnerability Mapping,
Aquifer Yield Maps.

10.0 HYDROLOGY – SURFACE WATER

10.1 Introduction

AWN Consulting Ltd. (AWN) has carried out this chapter which assesses and evaluates the potential impacts of the development on the hydrological aspects of the site and surrounding area. In assessing likely potential and predicted effects, account is taken of both the importance of the attributes and the predicted scale and duration of the likely effects.

This chapter was prepared by Ana Keeley (BSc), and Teri Hayes (BSc MSc PGeol EurGeol). Ana is an environmental consultant with 2 years of experience in environmental consultancy and engineering geology. Ana is a member of the International Association of Hydrogeologists (Irish Group).

Teri is a Director of EIA and water with over 25 years of experience in water resource management and impact assessment. She has a Masters in Hydrogeology and is a former President of the Irish Group of the Association of Hydrogeologists (IAH) and has provided advisory services on water related environmental and planning issues to both public and private sector bodies. She is qualified as a competent person as recognised by the EPA in relation to contaminated land assessment (IGI Register of competent persons www.igi.ie). Her specialist area of expertise is water resource management eco-hydrogeology, hydrological assessment and environmental impact assessment.

10.2 Methodology

This chapter evaluates the effects, if any, which the development has had or will have on Hydrology as defined in the Environmental Protection Agency (EPA) 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (EPA, 2022). The Draft EPA document entitled 'Advice Notes for Preparing Environmental Impact Statements' (EPA, 2022) is also followed in this hydrological assessment and classification of environmental effects. In addition, the document entitled 'Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' by the National Roads Authority (NRA, 2009) is referenced where the methodology for assessment of impact is appropriate.

The rating of potential environmental effects on the hydrological environment is based on the standard EIAR impact predictions table which takes account of the quality, significance, duration and type of effect characteristic identified (in accordance with impact assessment criteria provided in the EPA Guidelines (2022) publication).

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

The TII criteria for rating the magnitude and significance of impacts and the importance of hydrological attributes at the site during the EIA stage are also relevant in assessing the impact and are presented in Tables 1-3 in Appendix 10.1.

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

- River and stream water quality in the vicinity of the site (where available);
- Surface watercourses near the site and potential impact on surface water quality arising from proposed development related works including any discharge of surface water run-off;
- Localised flooding (potential increase or reduction) and floodplains including benefitting lands and drainage districts (if any); and
- Surface water features within the area of the site.

10.2.1 Sources of Information

Desk-based hydrological information in the vicinity of the site was obtained through accessing databases and other archives where available. Data was sourced from the following:

- Environmental Protection Agency (EPA) – website mapping and database information. Envision water quality monitoring data for watercourses in the area;
- River Basin Management Plan for Ireland 2022-2027.
- The Planning System and Flood Risk Management, Guidelines for Planning Authorities (Department of the Environment, Heritage and Local Government (DoEHLG) and the Office of Public Works (OPW));
- Office of Public Works (OPW) flood mapping data (www.floodmaps.ie)
- South Dublin City Council (2005), Greater Dublin Strategic Drainage Study: Technical Documents of Regional Drainage Policies. Dublin: Dublin City Council;
- 'Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors' (CIRIA 532, 2001);
- National Parks and Wildlife Services (NPWS) – Protected Site Register.

Information on the proposed design is based on the following sources:

- Infrastructure Report, Dundrum Central. BMCE, August 2024;
- Site Specific Flood Risk Assessment, Dundrum Central. BMCE, June 2024;
- Construction & Environmental Management Plan, Dundrum Central. BMCE, June 2024;
- Site Investigation Report, Dundrum Central Development. Site Investigations Ltd, November 2021;
- Various design plans and drawings

10.3 Baseline Environment

The receiving environment is discussed in terms of water and hydrology in the following points.

10.3.1 Site Area Description

The site is located in the north of Dundrum town centre, on lands at the Former Central Mental Hospital, Dundrum Road, Dundrum, Dublin 14.

In terms of the local topography, there is considerable variation in ground levels across the site. In broad terms the main part of the site slopes down gradually from the southwest corner towards the northeast corner, from +45.72m OD down to +38.17m OD. The western portion of the site slopes down towards the Dundrum Road entrance at +38.80m OD. These low points are the furthest locations from the high topography in the south corner at a distance of over 400m away.

10.3.2 Hydrology

The proposed development site lies within the Liffey and Dublin Bay Catchment (Hydrometric Area 09) and Dodder River sub-catchment (WFD name: Dodder_SC_010, Id 09_16) (EPA, 2021).

The Slang River runs from south of Dundrum Village northwards down to the River Dodder and passes c. 70 m west of the western site boundary on the Dundrum Road. The Slang River joins the River Dodder c. 850 m north of the development site. From here the River Dodder flows for approx. 2.0km before discharging into the Liffey Estuary lower transitional waterbody which in turn discharges into Dublin Bay coastal waterbody which includes Special Area of Conservation (SAC)/ proposed Natural Heritage Area (pNHA). There is a hydrological connection between the drainage ditches on site to the Elm Park Stream. An existing sewer connects drainage to the Slang River. Figure 10.1 below presents the site location in relation to the hydrological environment.

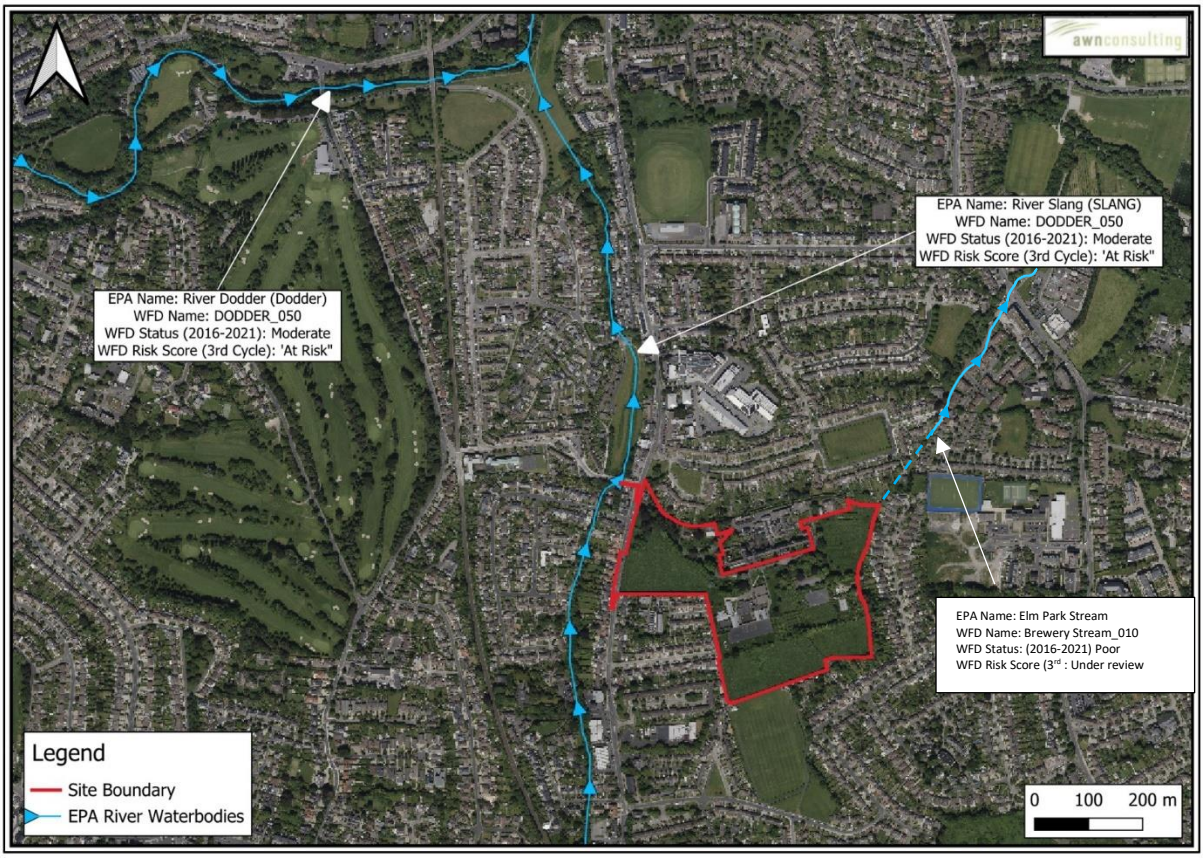


Figure 10.1 Site Location and Hydrological environment EPA

With regard to the local drainage, a drainage ditch runs through the site and northwards along the eastern boundary, as shown in Figure 10.2 below. The existing buildings on site discharging to a combined drainage system on site. This system discharges to the 300mm diameter combined sewer in the Dundrum Road, connecting at the current site entrance.

A 525mm diameter surface water sewer enters the south side of the site from Rosemount Green. This connects into an open drainage ditch which runs west to east across the site along the southern edge of the walled garden and discharges through a grated opening in the boundary wall (location B1 in Figure 10.2 below) where it continues as a drainage ditch running northwards just along and outside of the east boundary wall. This ditch joins the Elm Park Stream in Goatstown c. 220m from the subject proposed development site. The Elm Park Stream is culverted for part of its course and discharges through UCD before emerging in Elm Park Golf Course, from where the watercourse finally discharges to Dublin Bay coastal waterbody just south at Merrion Gates c. 2.8 Km to the northeast of the subject site.

Figure 10.2 Aerial view of the site with water drainage indicated (Source: BMCE, 2024)

As can be seen above (Figure 10.2), there is a connection to the River Slang through surface water drainage on the existing site and to the Elm park stream through a drainage ditch.

According to the Geohive historical maps (25 inches, 1888-1913) the existing surface water sewer mentioned above would have replaced the old Mulvey Park stream which used to drain the area from Taney hill, south of the site, prior to urbanisation.

According to the NPWS (2024) on-line database there are no special protected area on or in the vicinity of the subject site.

10.3.3 Existing Foul Water Service

The foul drainage from the existing buildings on site drains to a combined drainage system on site which discharges to the 300mm diameter combined sewer on the Dundrum Road. The combined sewer drains in a northerly direction towards the Dodder River and eventually discharges into Ringsend WWTP.

10.3.4 Surface Water Quality

The Water Framework Directive (WFD) Directive 2000/60/EC was adopted in 2000 as a single piece of legislation covering rivers, lakes, groundwater and transitional (estuarine) and coastal waters. In addition to protecting said waters, its objectives include the attainment of 'Good Status' in water bodies that are of lesser status at present and retaining 'Good Status' or better where such status exists at present.

The WFD requires 'Good Water Status' for all European waters to be achieved through a system of river basin management planning and extensive monitoring by 2015 or, at the least, by 2027. 'Good status' means both 'Good Ecological Status' and 'Good Chemical Status'. In 2009 the ERBD River Basin Management Plan (RBMP) 2009-2015 was published. In the ERBD RBMP, the impacts of a range of pressures were assessed including diffuse and point pollution, water abstraction and morphological pressures (e.g. water regulation structures). The purpose of this exercise was to identify water bodies at risk of failing to meet the objectives of the WFD by 2015 and include a programme of measures to address and alleviate these pressures by 2015. This was the first River Basin Management planning cycle (2010-2015). The second cycle river basin management plan for Ireland ran between 2018-2021 with the previous management districts merged into one Ireland River Basin District (Ireland RBD). The third cycle river basin management plan for Ireland us currently in place and will run until 2027.

The second-cycle RBMP aimed to build on the progress made during the first cycle. Key measures during the first cycle included the licensing of urban waste-water discharges (with an associated investment in urban waste-water treatment) and the implementation of the Nitrates Action Programme (Good Agricultural Practice Regulations). In more general terms, three key lessons have emerged from the first and second cycles and the public consultation processes. These lessons have been firmly integrated into the development of the third cycle RBMP. Firstly, the structure of multiple RBDs did not prove effective, either in terms of developing the plans efficiently or in terms of implementing those plans. Secondly the lack of specific measures, guidelines and prosecution put in place to improve water quality within the previous plans needed to be restructured. Thirdly, the targets set were too ambitious and were not grounded on a sufficiently developed evidence base. The current cycle RBMP has been developed to address these points.

The strategies and objectives of the WFD in Ireland have influenced a range of national legislation and regulations. These include the following:

- European Communities (Water Policy) Regulations, 2003 (S.I. No. 722 of 2003);
- European Communities (Drinking Water) Regulations 2014 (S.I. 122 of 2014);
- European Communities Environmental Objectives (Surface Waters); Regulations, 2009 (S.I. No. 272 of 2009 as amended SI No. 77 of 2019);
- European Communities Environmental Objectives (Groundwater) Regulations, 2010 (S.I. No. 9 of 2010 S.I. No. 366 of 2016);
- European Communities (Good Agricultural Practice for Protection of Waters) Regulations, 2010 (S.I. No. 610 of 2010);
- European Communities (Technical Specifications for the Chemical Analysis and Monitoring of Water Status) Regulations, 2011 (S.I. No. 489 of 2011);
- Statutory Instrument (SI) No. 293 of 1988 European Communities (Quality of Salmonid Waters) Regulations 1988;
- Local Government (Water Pollution) Acts 1977-1990; and
- SI No. 258 of 1988 Water Quality Standards for Phosphorus Regulations 1998

The Slang River in this area is associated with the WFD surface waterbody Dodder_050. The most recent published status (www.epa.ie – River Waterbody WFD Status 2016-2021) of this waterbody is 'Moderate' and its environmental risk is qualified by the WFD as 'At Risk of not achieving good status'. This condition is due to a moderate biological status (phytobenthos, invertebrate and fish status or potential) and pass dissolved oxygen conditions.

The Elm Park Stream (WFD: BREWERY STREAM_010, EU Code: IE_EA_09B130400) surface waterbody is currently classified by the EPA as having '*Poor*' WFD water quality status (2016-2021 period) and has a WFD risk score (3*rd* Cycle) of under '*Review*'. The main pressures identified on the MAYNE_010 are associated with the presently 'poor' ecological status or potential

The above status relates to data from 1 no. EPA water quality station in the Dodder River located c. 1.9 Km downstream of the subject site ('Footbridge, Beaver Row', refer to Figure 10.3 below).

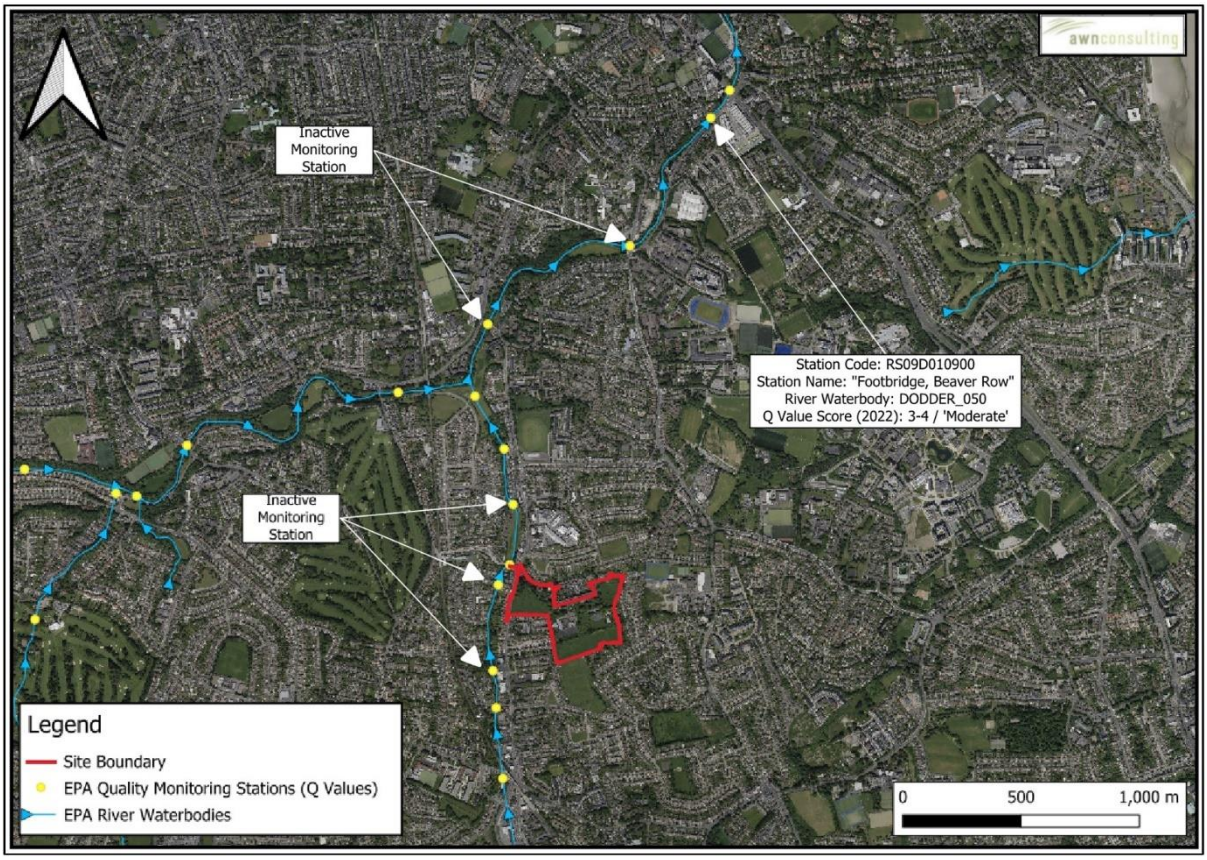


Figure 10.3 EPA Water Quality Stations near of the Subject Site (Source: EPA, 2024)

Q Values are used by the EPA to express biological water quality, based on changes in the macro invertebrate communities of riffle areas brought about by organic pollution. See Table 10.1 below for an explanation of the ratings. Q1 indicates a seriously polluted water body; Q5 indicates unpolluted water of high quality. Q Values for the Dodder River are shown in Table 10.2 below.

Table 10.1 EPA Biological Q Ratings

Quality ratings (Q)	Status	Water quality	Condition
Q5, Q4-5	High	Unpolluted	Satisfactory
Q4	Good	Unpolluted	Satisfactory
Q3-4	Moderate	Slightly polluted	Unsatisfactory
Q3, Q2-3	Poor	Moderately polluted	Unsatisfactory
Q2, Q1-2, Q1	Bad	Seriously polluted	Unsatisfactory

Table 10.2 Q Ratings for Dodder River

RIVER	Station No.	Location	1973	1975	1977	1981	1984	1988	2007	2010	2013	2016	2019	2022
Dodder	RS09D010900	Footbridge, Beaver Row	1-2	3	3	3	2-3	2-3	3	4	4	3-4	3-4	3-4

As it can be seen from Q Ratings above, the Dodder River has recorded a 'Moderate' status for their latest records, which means an 'Slightly Polluted' water quality.

10.3.5 Areas of Conservation

According to the NPWS (2024) on-line database there are no special protected area on or in the vicinity of the subject site. The closest European sites are the South Dublin Bay Special Area of Conservation (SAC) and Proposed Natural Heritage Area (pNHA) and the South Dublin Bay and River Tolka Estuary Special Protection Area (SPA) which are located c. 2.8 Km to the northeast of the subject site.

The Dublin Bay coastal waterbody has a WFD status (2016-2021) of 'Good' and a WFD risk score of 'Not at risk'. The surface water quality data for the Liffey Estuary Lower and Dublin Bay (EPA, 2024) indicate that they are 'Unpolluted'. 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.

10.3.6 Flooding

According to the site specific Flood Risk Assessment carried out by BMCE (2024), the developed site is shown not to be at a significant risk from flooding and to not create a significant risk to adjoining areas or downstream.

The site is located within Flood Zone C (i.e., where the probability of flooding from rivers is less than 0.1% or 1 in 1000 years – probability of fluvial flooding is low risk). There are no reported incidents of flooding from the Dodder River or the internal drainage network above mentioned in this area.

10.3.7 Rating of Importance of Hydrological Attributes

Based on the TII methodology (2009) (See Appendix 8.1), the importance of the hydrological features at this site is rated as 'Low Importance'. The Attribute has a low quality or value on a local scale.

10.4 The Proposed Development

The proposed development on lands at the former Central Mental Hospital, Dundrum Road, Dublin 14 will have a total gross floor area of c. 94,019 sq m (c. 93,941 sq m excluding retained existing buildings), will consist of 934 no. residential units and 4,341 sq m of non-residential uses.

The development also comprises the demolition of existing structures, alterations and partial demolition of the perimeter wall.

The development aspects related to the water/ hydrological component are detailed below. A full development description is included in Chapter 5.0 of this document.

10.4.1 Surface Water Drainage

10.4.1.1 Construction Phase

A method statement will be prepared by the contractor and agreed with Dún Laoghaire-Rathdown County Council prior to commencement of the works, detailing the measures to be taken to ensure that no water run-off from the site occurs during the construction period. Any run-off will be intercepted on site, where the ground falls towards adjoining properties or public roads/footpaths. This will be achieved with open drains or French drains and collected for treatment based on the conditions of a DLRCC and/or Irish Water licence, prior to pumping to the surface sewer network. There is a drainage ditch running through the site (refer to Section 10.3.2 above). Direct uncontrolled run-off into this will not be allowed.

A new surface water sewer will be laid from the site entrance to a manhole adjacent to the River Slang on St. Columbanus' Road. The trench excavation for this drain is 2metres below ground level approx. and no significant groundwater ingress is not expected into the trench during construction. Trench boxing & pumping will be required to control any groundwater ingress into pipe trenches that does occur. Any particular requirements in respect of de-watering (and all other construction management requirements) are subject to agreement by the contractor with Dún Laoghaire-Rathdown County Council.

During excavation works, only limited groundwater ingress is expected into the excavation, given the ground conditions i.e. clay soils. Some de-watering will still be required to remove any groundwater or rainwater accumulations (refer to Chapter 9.0).

Groundwater in the excavations will be pumped out. As noted, it is estimated that the required pumping rate will be low. It is envisaged that the water to be discharged will be clean groundwater as the areas to be excavated are not contaminated (based on site investigation information). It is therefore proposed that the water be discharged into the existing sewer network on the surrounding public roads under a discharge license regulated by Dún Laoghaire-Rathdown County Council / Irish Water, issued under the Water Pollution Act (Section 4 License). Extensive monitoring will be adopted to ensure that the water is of sufficient quality to discharge to the sewers. Silt traps should be used to remove silt and any significant suspended solids prior to discharge from the site in accordance with the requirements of the discharge license.

10.4.1.2 Operational Phase

The proposed surface water drainage system is designed to comply with the 'Greater Dublin Strategic Drainage Study (GDSDS) Regional Drainage Policies Technical Document – Volume 2, New Developments, 2005' and the 'Greater Dublin Regional Code of Practice for Drainage Works, V6.0 2005'. CIRIA Design Manuals C753, C697 and C609 have also been used to design the surface water drainage system within the site.

The development will be split into three catchments. The catchments will be attenuated separately by means of blue roofs and attenuation tanks, which follow approximately the existing site topography and natural drainage routes on site. Catchment A drains to the Slang, via an existing surface water sewer. Catchments B drains to the open drainage ditch on site (B1) or just outside the site (B2). Refer to Figure 10.4 below for details for connection points 'A' , 'B1' and 'B2' and catchments.

Figure 10.4 Proposed Catchment Strategy (Source: BMCE, 2024)

The total area will collect all the surface water drainage into an underground pipe network. The drainage system will use different SuDS measures in the treatment train. Surface materials will consist of, but not limited to permeable paving, intensive and extensive green/blue roofs and podiums, impermeable roofs, bio-retention areas, filter strips, a detention basin, impermeable hardstanding, tree pits and landscaped areas. Refer to the Infrastructure Report (BMCE, 2024) for further details.

The GDSDS requires that flood waters be managed within the site for a 1 in 100-year flood. The surface water from each sub-catchment will flow into an attenuation tank or detention

basin, which has been designed for that drained area. Discharge flow is restricted to the greenfield equivalent runoff for the catchment area.

Basements or under croft car parks are covered by podium slabs and do not receive direct rainfall. There will be limited outflow from these areas. They are drained by a separate system that outfalls to a petrol interceptor buried below the ground floor slab. From there, the car park drainage is pumped to the nearest surface water manhole, in accordance with Irish Water requirements, and is not at risk of any backflow from the surface water system during storm conditions.

10.4.2 Foul Water

The proposed foul drainage system will be designed to take discharges from the new residential units. There is a small amount of commercial/retail space on site. Drainage from any kitchen/canteen facilities will discharge through a grease separator designed. The foul system will connect to the Irish Water network at the existing 300mm combined sewer in the Dundrum Road surface. The combined sewer drains in a northerly direction towards the Dodder River and eventually discharges into Ringsend WWTP. The Total Estimated Wastewater Discharge are as followed (BMCE,2024):

- Total Average Daily Flow= 439.3 cum/day
- Total Average Flow = 5.085 l/s
- Total Peak Flow = 22.884 l/s

A Pre-connection Enquiry application was submitted to Irish Water to confirm capacity in the receiving network and a Confirmation of Feasibility letter was obtained on the 26th of March 2024. Refer to the Infrastructure Report (BMCE, 2024) for further details.

10.4.2 Water Supply

There is an existing 9-inch public watermain in Dundrum Road. The existing buildings on site are serviced from this main. This watermain is to be upgraded to a 355mm diameter HDPE pipe, to Irish Water requirements, to cater for the development. This has been set out in the specific comments in the Irish Water confirmation of feasibility letter of the 26th of March 2024.

10.5 Potential Impacts of the Proposed Project

An analysis of the potential impacts of the Proposed Development on the hydrological environment during the construction and operation is outlined below. Due to the inter-relationship between land, soils, geology and hydrogeology and surface water the following impacts discussed will be considered applicable to Chapter 9.0. Waste Management is also considered an interaction.

10.5.1 Construction Phase

10.5.1.1 Increased Sediments Loading in Run-off

Surface water runoff during the construction phase may contain increased silt levels or become polluted from construction activities. Runoff containing large amounts of silt can cause damage to surface water systems and receiving watercourses. Silt water can arise from dewatering excavations, exposed ground, stockpiles and access roads. Mitigation measures highlighted in Section 10.6 below will be employed to remove the risk to affect the local hydrological environment.

If contaminated soil/water is encountered, it will be required to be removed by a licensed waste contractor. Further soil sampling will be undertaken during pre-development works. The contractor will be required to submit a Construction Waste Management Plan (CWMP) to the local authority for approval which will address all types of material to be disposed of. Site investigation and laboratory analysis carried out in 2021 has not identified any existing contamination.

10.5.1.2 Contamination of Local Water Courses

During construction of the development, there is a risk of accidental pollution incidences from the following sources if not adequately mitigated:

- Spillage or leakage of oils and fuels stored on site;
- Spillage or leakage of oils and fuels from construction machinery or site vehicles;
- Spillage of oil or fuel from refuelling machinery on site; and
- The use of concrete and cement during pad foundation construction.

The mitigation measures incorporated into the design comprise special bunded areas for storage of construction materials as fuels, oils, solvents and paints; refuelling area away from surface water or drains; a mobile double skinned tank for storage of fuel for vehicles; and the installation of silt and sediment barriers at the perimeter of earthworks construction areas to limit transport of erodible soils outside of the site.

10.5.2 Operational Phase

The proposed surface water drainage system is designed to comply with the 'Greater Dublin Strategic Drainage Study (GDSDS) Regional Drainage Policies Technical Document – Volume 2, New Developments, 2005' and the 'Greater Dublin Regional Code of Practice for Drainage

Works, V6.0 2005'. The projected surface water network has been designed to provide sufficient capacity to contain and convey all surface water runoff associated with the 1 in 100 year event to the attenuation basins without any overland flooding. Discharge flow is restricted to the greenfield equivalent runoff for the catchment areas. Refer to the Infrastructure Report (BMCE, 2024) for further details.

The development will be split into three catchments. The catchments will be attenuated separately by means of blue roofs and attenuation tanks, which follow approximately the existing site topography and natural drainage routes on site. Catchment A drains to the Slang, via an existing surface water sewer. Catchments B drains to the open drainage ditch on site (B1) or just outside the site (B2).

In line with GDSDS requirements, flood waters be managed within the site for a 1 in 100-year flood. The surface water from each sub-catchment will flow into an attenuation tank or detention basin, which has been designed for that drained area. Discharge flow is restricted to the greenfield equivalent runoff for the catchment area.

The site will use the existing water supply and foul water network. There will be a total hardstanding area of 9554 m^2, associated with the development area. This will have a minor effect on local recharge to ground, the impact on the overall hydrological regime will be insignificant.

As mentioned above, the total peak flow for wastewater discharge is calculated at 22.884 l/s (BMCE, 2024). The foul discharge from the site will join the public sewer and will be treated at the Irish Water Ringsend Wastewater Treatment Plant (WWTP) prior to subsequent discharge to Dublin Bay. This WWTP is required to operate under an EPA licence (D0034-01) and meet environmental legislative requirements as set out in such licence. It is noted that an application for a new upgrade to this facility is currently in planning.

This plant operates under an EPA licence (D0034-01) and is currently in the process of being upgraded to a PE of 2.4million to meet the increased demand of the Dublin area. The most recent Annual Environmental Report (AER 2023) states there it is not likely to exceed capacity within the next 3 years. These upgrade works have commenced and comprise a number of phases and are ongoing and expected to be fully completed by 2025. The upgrade works will result in treatment of sewage to a higher quality than current, thereby ensuring effluent discharge to Dublin Bay will comply with the Urban Wastewater Treatment Directive by Q4 2023.

The project is being progressed in stages to ensure that the plant continues to treat wastewater to the current treatment levels throughout the delivery of the upgrade. The project comprises three key elements and underpinning these is a substantial programme of ancillary works:

- Provision of additional secondary treatment capacity with nutrient reduction (400,000 population equivalent);
- Upgrade of the 24 existing secondary treatment tanks to provide additional capacity and nutrient reduction, which is essential to protect the nutrient-sensitive Dublin Bay area; and
- Provision of a new phosphorous recovery process.

In February 2018, the work commenced on the first element, the construction of a new 400,000 population equivalent extension at the Ringsend Wastewater Treatment Plant. These works are at an advanced stage with testing and commissioning stages expected to be completed in 2025

The 2019 planning permission (reference: PARTX/0020Sub10) facilitated upgrading works to meet nitrogen and phosphorus standards set out in the licence, which are temporarily exceeded currently. Works on the first of four contracts to retrofit the existing treatment tanks with aerobic granular sludge technology commenced in November 2020. Award of the second contract was completed in in Q3 2023 and the third and fourth contracts are scheduled to be completed by 2025.

The application for the upgrade of the WWTP in 2012 and the revised upgrade in 2018 was supported by a detailed EIAR. As outlined in the EIAR, modelling of water quality in Dublin Bay has shown that the upgrades (which are now currently underway) will result in improved water quality within Dublin Bay. The 2018 EIAR predicts that the improvement in effluent quality achieved by the upgrade will compensate for the increase in flow through the plant. The ABP inspector's report summarises the positive findings of the modelling for the post WWTP upgrade scenario on Dublin Bay water quality in sections 12.3.5 and 12.3.12 of his report and the overall positive impact for human health and the environment in his conclusions in section 12.9.1.

Even without treatment at the Ringsend WWTP, the average effluent discharge, calculated for the proposed development is 5.085l/sec respectively which equates to 0.04% of the of the licensed discharge at Ringsend WWTP [peak hydraulic capacity]), would not have a measurable 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). This assessment is supported by hydrodynamic and chemical modelling within Dublin Bay which has shown that there is significant dilution for contaminants of concern (DIN and MRP) available quite close to the outfall for the treatment plant (Ringsend WWTP 2012 EIS, Ringsend WWTP 2018 EIAR; refer to Section 12.4.22, ABP-301798-18 Inspector's report). The most recent water quality assessment of Dublin Bay WFD Waterbody undertaken by the EPA (Water Quality in 2023: An Indicator Report,) also shows that Dublin Bay on the whole, currently has an 'Unpolluted' water quality status (refer to www.catchments.ie).

With regard to bathing waters in Dublin Bay, as mentioned above the Proposed Development will have no measurable impact on the water quality in any overflow situation apart from a minor contribution of the peak hydraulic capacity at Ringsend WWTP) from foul sewage.

It should be noted that the Ringsend WWTP upgrades has experienced capacity issues during rainfall events and therefore overflows can occur following periods of heavy rainfall. These overflows occur as a result of the impact on treatment capacity during heavy rainfall events due to surges primarily caused by the historical combined drainage system in Dublin. As the Proposed Development will not contribute any additional stormwater drainage to the WWTP, the development will therefore have no measurable impact on the water quality in any overflow situation.

10.6 Mitigation Measures

The design has taken account of the potential impacts of the development on the hydrology environment local to the area where construction is taking place and containment of contaminant sources during operation. Measures have been incorporated in the design to mitigate the potential effects on the hydrology. These are described below.

The site is drained by the public stormwater network. This network ultimately flows in a northerly direction towards the South Dublin Bay which hosts Natura Sites (SPA/SAC/pNHA) and is located c. 2.9 km to the northeast of the site. Thus, the site would have an indirect hydrological connection with the Dublin Bay through the local drainage networks.

As stated above, no impacts are expected on South Dublin Bay SPA/SAC/pNHA, given the potential loading and the distance from source to the Natura 2000 sites. The potential risk is considered to be imperceptible as potential contaminant would be attenuated, diluted and dispersed below statutory guidelines (i.e., S.I. European Communities Environmental Objectives Regulations, 2009 [S.I. No. 272 of 2009 as amended by SI No. 77 of 2022]) within 500 m of the site.

Due to the inter-relationship between soils, geology, hydrogeology and hydrology, the following mitigation measures discussed will be considered applicable to all. Waste Management is also considered as an interaction in some sections.

10.6.1 Construction Phase

An Outline Construction Environmental Management Plan (CEMP) has been prepared by BMCE (2024) for the proposed development and is included with the planning documentation. In advance of work starting on site, the works Contractor will prepare a detailed CEMP. The detailed CEMP will set out the overarching vision of how the construction of the proposed development will be managed in a safe and organised manner by the Contractor. The CEMP will be a live 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 EIA Report and any subsequent planning conditions relevant to the proposed development.

As a minimum, the CEMP will be formulated in accordance with best international practice including but not limited to:

- CIRIA, (2001), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors, (C532) Construction Industry Research and Information Association;
- CIRIA (2002) Control of water pollution from construction sites: guidance for consultants and contractors (SPI56) Construction Industry Research and Information Association
- CIRIA (2005), Environmental Good Practice on Site (C650); Construction Industry Research and Information Association
- BPGCS005, Oil Storage Guidelines;

- Eastern Regional Fisheries Board, (2006), Fisheries Protection Guidelines: Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites;
- CIRIA 697, The SUDS Manual, 2007; and
- UK Pollution Prevention Guidelines (PPG) UK Environment Agency, 2004.

In order to reduce impacts on the hydrological environment, a number of mitigation measures will be adopted as part of the construction works on site.

10.6.1.1 Surface Water Run-off

As there is potential for run-off to enter current stormwater systems and indirectly discharge to a watercourse, mitigations will be put in place to manage run-off during the construction phase.

H_1: Any run-off will be intercepted on site, where the ground falls towards adjoining properties or public roads/footpaths. This will be achieved with open drains or French drains and collected for treatment based on the conditions of a DLRCC and/or Irish Water licence, prior to pumping to the surface sewer network.

H_2: Should any discharge of construction water be required during the construction phase, discharge will be to foul sewer. Pre-treatment and silt reduction measures on site will include a combination of silt fencing, settlement measures (silt traps, 20 m buffer zone between machinery and watercourses/ stormwater sewer/ drainage ditch, refuelling of machinery off site) and hydrocarbon interceptors.

H_3: Any minor ingress of groundwater and collected rainfall in the excavation will be pumped out during construction. It is estimated that the inflow rate of groundwater will be low and limited to localised perched water. It is therefore proposed that the water be discharged via the existing stormwater sewer network. Extensive monitoring will be adopted to ensure that the water is of sufficient quality to discharge to the sewer. The use of slit traps and an oil interceptor (if required) will be adopted if the monitoring indicates the requirements for the same with no silt or contaminated water permitted to discharge to the sewer. There may be localised pumping of surface run-off from the excavations during and after heavy rainfall events to ensure that the excavations are kept relatively dry. Due to the very low permeability of the Dublin Boulder Clay and the relative shallow nature for excavations, infiltration to the underlying aquifer is not anticipated. Based on SI information (Site Investigations Ltd, 2021), it is not anticipated that there will be rock removal required for the proposed single storey basements in the development, for building foundations, for service trenches or for any other works.

H_4: Run-off water containing silt will be contained on site via settlement tanks and treated to ensure adequate silt removal. Silt reduction measures on site will include a combination of silt fencing and settlement measures (silt traps, silt sacks and settlement tanks/ponds).

H_5: The temporary storage of soil will be carefully managed. Stockpiles will be tightly compacted to reduce runoff and graded to aid in runoff collection. This will prevent any potential negative impact on the stormwater drainage and the material will be stored away from any surface water drains. Movement of material will be minimised to reduce the

degradation of soil structure and generation of dust. Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise the potential for water ingress into excavations. Soil from works will be stored away from existing drainage features to remove any potential impact.

H_6: Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the site and the suitable distance of topsoil piles from surface water drains will be maintained.

10.6.1.2 Fuel and Chemical Handling

H_7: To minimise any impact on the underlying subsurface strata from material spillages, all oils, solvents and paints used during construction will be stored within temporary bunded areas. Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be bunded to a volume of 110% of the capacity of the largest tank/container within the bunded area(s) (plus an allowance of 30 mm for rainwater ingress). Drainage from the bunded area(s) shall be diverted for collection and safe disposal.

H_8: Refuelling 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) which will be away from surface water gulleys, the existing open ditch or drains. In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area. All relevant personnel will be fully trained in the use of this equipment. Guidelines such as "Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors" (CIRIA 532, 2001) will be complied with.

H_9: Where feasible all ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to the underlying subsoil. Wash down and washout of concrete transporting vehicles will take place at an appropriate facility offsite.

H_10: In the case of drummed fuel or other chemical which may be used during construction, containers should be stored in a dedicated internally bunded chemical storage cabinet and labelled clearly to allow appropriate remedial action in the event of a spillage.

Emergency response procedures will be outlined in the detailed CEMP. All personnel working on the site will be suitably trained in the implementation of the procedures.

10.6.1.3 Soil Removal and Compaction

H_11: Temporary storage of soil will be carefully managed in such a way as to prevent any potential negative impact on the receiving environment. The material will be stored away from any surface water drains (see Surface Water Run-off section above). Movement of material will be minimised to reduce degradation of soil structure and generation of dust.

H_12: All excavated materials will be visually assessed for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, samples of this

soil will be analysed for the presence of potential contaminants to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted/licensed waste disposal contractor.

H_13: Site investigations carried out at the site in 2021 found no residual contamination on site. Nonetheless, all excavated materials will be visually assessed for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of potential contaminants to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted/licensed waste disposal contractor.

10.6.2 Operational Phase

The proposed development will provide a significant improvement to the local drainage catchment as it is proposed to provide full attenuation in compliance with the requirements of the Greater Dublin Strategic Drainage Study. A number of design measures will be put in place to minimise the likelihood of any spills entering the water environment to include the design of the car park with hydrocarbon interceptors (refer to Section 10.4.1.2 above) . In the event of an accidental leakage of oil from the parking areas, this will be intercepted by the drainage infrastructure proposed.

It is proposed to ultimately discharge surface water from the proposed development, post attenuation and outflow restrictions into the existing local drainage. It will be ensured that compliance with Water Pollution Acts and carrying out post construction inspection of on site drain will be conducted by a project ecologist.

10.7 Residual Impacts

10.7.1 Construction Phase

The implementation of mitigation measures outlined above will ensure that the predicted impacts on the hydrological environment do not occur during the construction phase and that the residual impact will be **short term-imperceptible-neutral**. Following the TII criteria (refer to Appendix 10.1) for rating the magnitude and significance of impacts on the geological and hydrogeological related attributes, the magnitude of impact is considered **negligible**.

10.7.2 Operational Phase

The implementation of mitigation measures outlined above will ensure that the predicted impacts on the hydrological environment do not occur during the operational phase and that the residual impact will be **long term-imperceptible-neutral**. Following the TII criteria (refer to Appendix 10.1) for rating the magnitude and significance of impacts on the geological and hydrogeological related attributes, the magnitude of impact is considered **negligible**. Section 3.2 lists all surrounding development permitted projects identified as relevant to the assessment of the proposed development.

10.8 Monitoring

10.8.1 Construction Phase

During construction phase the following monitoring measures will be considered:

- Regular inspection of surface water run-off and sediments controls e.g. silt traps will be carried during the construction phase.
- Soil sampling to confirm disposal options for excavated soils in order to avoid contaminated run-off.
- Regular inspection of construction/mitigation measures will be undertaken e.g. concrete pouring, refuelling, etc.

10.8.2 Operational Phase

Maintenance of the surface water drainage system, including hydrocarbon interceptors, and foul sewers as per normal urban developments is recommended to minimise any accidental discharges to surface water.

10.9 Reinstatement

In the event that the proposed development is discontinued, there is not likely to be any significant impacts on the hydrological environment at the site.

10.10 Interactions

10.10.1 Land, Soils, Geology & Hydrogeology

During the construction phase, there is an inter-relationship between soils, geology and hydrogeology and surface water due to the potential increasing of sediments loading in run-off as a result of the excavation required to facilitate site levelling and construction of the new foundations. Adherence to the mitigation measures in Chapter 9 and 10 and the requirements of the CEMP, will ensure the effect is ***long-term, imperceptible*** and ***neutral.***

10.10.2 Biodiversity

The potential effects on surface water drainage can involve the Biodiversity component due to a potential hydrological connection between the site and protected habitats. As stated above, no impacts are expected on South Dublin Bay SPA/SAC/pNHA, given the potential loading and the distance from source to the Natura 2000 sites. The potential risk is considered to be imperceptible as potential contaminant would be attenuated, diluted and dispersed below statutory guidelines (i.e., S.I. European Communities Environmental Objectives Regulations, 2022.

In addition, adherence to the mitigation measures in Chapter 24 and the requirements of the CEMP, will ensure the effect is ***long-term, imperceptible*** and ***neutral.***

10.11 Cumulative Impacts

10.11.1 Construction Phase

Contractors for the Proposed Development will be contractually required to operate in compliance with the CEMP which includes the mitigation measures outlined in this EIA report. There are existing residential and commercial developments close by, along with the multiple permissions remaining in place. In a worst-case scenario, multiple developments in the area could be developed concurrently or overlap in the construction phase. Other developments will also have to incorporate measures to protect soil and water quality in compliance with legislative standards for receiving water quality (European Communities Environmental Objectives (Surface Water) Regulations (S.I. 272 of 2009 and S.I. 77 of 2019). As a result, there will be minimal cumulative potential for change in soil quality or the natural hydrological regime. The cumulative impact is considered to be **neutral** and **imperceptible.**

10.11.2 Operational Phase

There are existing residential and commercial developments close by, along with the multiple permissions remaining in place. All developments are required to manage groundwater discharges in accordance with S.I. 272 of 2009 and S.I. 77 of 2019 amendments. As such there will be no cumulative impact to groundwater quality and therefore there will be no cumulative impact on the Surface Waterbody Status. The operation of the proposed development is concluded to have a long-term, imperceptible significance with a neutral impact on water quality.

The aforementioned increase in hardstanding within the area will have a cumulative but minor reduction in recharge to the underlying aquifer. The SuDS measures have been designed to reintroduce water to ground where feasible through bio-retention, tree pits, filter trenches, etc.

Table 10.3: Cumulative effects of current and recently permitted developments

Reg. Ref.	Location	Development Description	Decision	Status	Likely Cumulative Effects
ABP30943021	2.12 ha at Our Lady's Grove, Goatstown Road, Dublin 14	698 no. student bedspace accommodation and associated site works.	GRANT PERMISSION	Committed (Permitted/Under Construction)	The proposed site is approximately 0.26km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Hydrology during the construction or operational phase of the developments.
ABP31128721	c.0.9ha at No. 97A Highfield Park (D14P710), and No. 1 Frankfort Castle (D14 HY03), No. 2 Frankfort Castle (D14DE72) and Frankfort Lodge (D14C9P2), Old Frankfort, Dublin 14	115 no. apartments, creche and associated site works.	GRANT PERMISSION	Committed (Permitted/Under Construction)	The proposed site is approximately 0.39km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Hydrology during the construction or operational phase of the developments.
ABP31182621	Lands at Knockrabo, Mount Anville Road, Goatstown, Dublin 14	227 no. apartments and associated site works.	GRANT PERMISSION	Committed (Permitted/Under Construction)	The proposed site is approximately 1.14km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Hydrology during the construction or operational phase of the developments.
ABP31013821	Mount Saint Mary's and Saint Joseph's, Dundrum Road, Dundrum, Dublin 14	Demolition of existing buildings on site and part of the granite wall along Dundrum Road, excluding Small Hall, construction of 231 no. apartments, childcare facility and associated site works.	GRANT PERMISSION	Committed (Permitted/Under Construction)	The proposed site is approximately 0.95km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Hydrology during the construction or operational phase of the developments.
ABP30768320	Green Acres Convent, Drumahill House and the Long Acre, Upper Kilmacud Road, Dundrum, Dublin 14	Provision of 54 no. additional apartments on previously permitted development of 253 no. apartments under ABP-304469-19, increase in childcare facility and associated site works.	GRANT PERMISSION	Committed (Permitted/Under Construction)	The proposed site is approximately 1.44km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will

Reg. Ref.	Location	Development Description	Decision	Status	Likely Cumulative Effects
					be any significant cumulative impacts on the Hydrology during the construction or operational phase of the developments.
ABP30446919	Greenacres, Longacre and Drumahill House, Upper Kilmacud Road, Dundrum, Dublin 14	253 no. apartments and associated works.	GRANT PERMISSION	Built & occupied.	The proposed site is approximately 1.44km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Hydrology during the construction or operational phase of the developments.
ABP248265 D16A/0818	Green Acres Convent, Kilmacud Road Upper, Dublin 14.	Demolition of the former Green Acres Convent and the construction of 120 no. apartments in 2 blocks ranging in height from 2 to 5 storeys with all associated site works.	GRANT PERMISSION	Committed (Permitted/Under Construction)	The proposed site is approximately 1.45km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Hydrology during the construction or operational phase of the developments.
D20A/0328	University College Dublin, Belfield, Dublin 4	Extension of car park to provide 239 no. spaces	GRANT PERMISSION	Committed (Permitted/Under Construction)	The proposed site is approximately 1.09km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Hydrology during the construction or operational phase of the developments.
TA0001	University College Dublin, Belfield, Dublin 4.	10 year permission for 512 student accommodation units (3006 no. bed spaces) including student facility centre, car parking and all associated site works.	GRANT PERMISSION	Committed (Permitted/Under Construction)	The proposed site is approximately 1.09km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Hydrology during the construction or operational phase of the developments.

Reg. Ref.	Location	Development Description	Decision	Status	Likely Cumulative Effects
ABP315883	'Dunelm', Rydalmount, Milltown Road, Dublin 6	Demolition of structures, construction of Build to Rent apartments comprising of 63 apartments in 2 blocks with all associated site works	GRANT PERMISSION	Committed (Permitted/Under Construction)	The proposed site is approximately 1.23km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Hydrology during the construction or operational phase of the developments.
ABP305261	Building 5, Dundrum Town Centre, Sandyford Road, Dundrum, Dublin 16	107 no. apartments, cafe and associated site works.	GRANT PERMISSION	Committed (Permitted/Under Construction)	The proposed site is approximately 1.3km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Hydrology during the construction or operational phase of the developments.
ABP300024	Lands at the former Paper Mills site, bounded by the River Dodder to the East, Clonskeagh Road to the West, Clonskeagh Bridge to the South West, Dublin 6	Increase in apartment units from 96 to 116 with increase in block heights from 3 to 4 storeys with 30 additional parking spaces & additional bicycle spaces & associated site works.	GRANT PERMISSION	Committed (Permitted/Under Construction) Unclear if this has been started on site – hoarding up	The proposed site is approximately 1.63km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Hydrology during the construction or operational phase of the developments.
ABP311439	Site measuring 0.29ha, Bounded by Kilmacud Road Upper to the north, Drummartin Link Road to the west, and Hazelbrook Apartments to the east and south, Dublin 14	Demolition of existing disused agricultural shed structure and the construction of a residential block 3 to 6 storeys consisting of 52 dwelling units	GRANT PERMISSION	Committed (Permitted/Under Construction) Nearly complete but not yet occupied	The proposed site is approximately 1.75km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Hydrology during the construction or operational phase of the developments.
ABP313048	9/14 and 11C, Milltown Road, Milltown, Dublin 6. The application site consists of the former Murphy and Gunn site (currently Autovision)	Construction of 97 Build to Rent apartments	GRANT PERMISSION	Committed (Permitted/Under Construction)	The proposed site is approximately 1.78km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will

Reg. Ref.	Location	Development Description	Decision	Status	Likely Cumulative Effects
	and the former Saint Joseph's Junior Education Centre site.				be any significant cumulative impacts on the Hydrology during the construction or operational phase of the developments.
ABP312539	Cunningham House, Trinity Hall, Dartry, Dublin 6.	Demolition of existing building, construction of 358 no. student bedspace accommodation, 4 no. staff apartments and associated site works.	GRANT PERMISSION	Committed (Permitted/Under Construction)	The proposed site is approximately 1.8km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Hydrology during the construction or operational phase of the developments.
ABP312170	Marmalade Lane, Wyckham Avenue, Dundrum, Dublin 16.	531 no. Build to Rent apartments, creche and associated site works.	GRANT PERMISSION	Committed (Permitted/Under Construction)	The proposed site is approximately 1.91km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Hydrology during the construction or operational phase of the developments.
ABP309931	24,26 28, Fosters Avenue, Mount Merrion, Blackrock, Co Dublin	Demolition of existing buildings on site and construction of 72 no. apartments, communal open space areas, parking spaces, vehicular, pedestrian and servicing access from Foster's Avenue, ESB substation and switch room, and all associated site works	GRANT PERMISSION	Committed (Permitted/Under Construction)	The proposed site is approximately 1.98km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Hydrology during the construction or operational phase of the developments.
ABP31293522	0.79 ha at Sommerville House, Dundrum Road, Dublin 14	Demolition of all structures, construction of 111 no. apartments and associated site works	LIVE APPLICATION	Planned	The proposed site is approximately 0.21km away from our proposed development. There is no indication of basements within the development and therefore it is not anticipated that there will be any significant cumulative impacts on the Hydrology during the construction or operational phase of the developments.

Reg. Ref.	Location	Development Description	Decision	Status	Likely Cumulative Effects
ABP31323522	0.34 hectares comprising the car sales premises currently known as Vector Motors (formerly known as Victor Motors), Goatstown Road, Dublin 14, D14FD23	Demolition of existing building on site, construction of 221 no. student bedspaces and associated site works.	LIVE APPLICATION	Planned	The proposed site is approximately 0.53km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Hydrology during the construction or operational phase of the developments.
ABP31322022	site 3.5335ha incorporating the old Dundrum Shopping Centre known as Main Dundrum Street Village Centre (D14K3T7)	Demolition of all existing buildings on site, construction of 881 no. apartments, creche and associated site works.	LIVE APPLICATION	Planned	The proposed site is approximately 0.79km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Hydrology during the construction or operational phase of the developments.
ABP316470	Site of approx. 0.24 ha on lands at Frankfort Centre, Dundrum Road, Dublin 1	The construction of 64 no. apartment units in the form of a 5-6 storey apartment blocks, the provision of a ground floor retail/cafe unit, and Public Realm upgrades to Dundrum Road and all other associated site works above and below ground associated with the proposed development. An NIS has been submitted with the application.	LIVE APPLICATION	Planned	The proposed site is approximately 0.37km away from our proposed development. Due to the distance of this site from our proposed site, it is not anticipated that there will be any significant cumulative impacts on the Hydrology during the construction or operational phase of the developments.

10.12 'Do-Nothing' Effect

If the proposed development was not to go ahead (i.e. in the Do-Nothing scenario) there would be no, excavation, construction or operation at this Site. There would, therefore, be a neutral effect on the hydrological environment.

10.13 Difficulties Encountered in Compiling the Chapter

No difficulties were encountered during the development of this chapter.

10.14 References

- Environmental Protection Agency (EPA) – website mapping and database information. Envision water quality monitoring data for watercourses in the area;
- River Basin Management Plan for Ireland 2022-2027.
- The Planning System and Flood Risk Management, Guidelines for Planning Authorities (Department of the Environment, Heritage and Local Government (DoEHLG) and the Office of Public Works (OPW));
- Office of Public Works (OPW) flood mapping data (www.floodmaps.ie)
- South Dublin City Council (2005), Greater Dublin Strategic Drainage Study: Technical Documents of Regional Drainage Policies. Dublin: Dublin City Council;
- 'Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors' (CIRIA 532, 2001);
- National Parks and Wildlife Services (NPWS) – Protected Site Register.
- Infrastructure Report, Dundrum Central. BMCE, January 2024;
- Irish Water (2021). Ringsend Wastewater Treatment Plant Annual Environmental Report 2020.
- Irish Water (2018) Ringsend Wastewater treatment plant Upgrade Project Environmental Impact Assessment Report.
- Inspector's Report – ABP-301798-18. 10-year permission for development of the Ringsend wastewater treatment plant upgrade project including a regional biosolids storage facility.
- Board Order and Report of Inspector – ABP-301798-18. 10-year permission for development of the Ringsend wastewater treatment plant upgrade project including a regional biosolids storage facility.
- Site Specific Flood Risk Assessment, Dundrum Central. BMCE, January 2024;
- Construction & Environmental Management Plan, Dundrum Central. BMCE, January 2024;
- Site Investigation Report, Dundrum Central Development. Site Investigations Ltd, November 2021;

APPENDIX 10.1

NRA/TII Criteria for Rating the Magnitude and Significance of Impacts at EIA Stage National Roads Authority (NRA/ TII, 2009)

Table 1 Criteria for Rating Site Attributes – Estimation of Importance of Hydrological Attributes (NRA)

Importance	Criteria	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' 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.

Table 2 Criteria for Rating Impact Significance at EIS Stage – Estimation of Magnitude of Impact on Hydrological Attribute (NRA)

Magnitude of Impact	Criteria	Typical Examples
Large Adverse	Results in loss of attribute	Loss or extensive change to a waterbody or water dependent habitat. Increase in predicted peak flood level >100mm. Extensive loss of fishery. Calculated risk of serious pollution incident >2% annually. Extensive reduction in amenity value.
Moderate Adverse	Results in impact on integrity of attribute or loss of part of attribute	Increase in predicted peak flood level >50mm. Partial loss of fishery. Calculated risk of serious pollution incident >1% annually. Partial reduction in amenity value.
Small Adverse	Results in minor impact on integrity of attribute or loss of small part of attribute	Increase in predicted peak flood level >10mm. Minor loss of fishery. Calculated risk of serious pollution incident >0.5% annually. Slight reduction in amenity value.
Negligible	Results in an impact on attribute but of insufficient magnitude to affect either use or integrity	Negligible change in predicted peak flood level. Calculated risk of serious pollution incident <0.5% annually.
Minor Beneficial	Results in minor improvement of attribute quality	Reduction in predicted peak flood level >10mm. Calculated reduction in pollution risk of 50% or more where existing risk is <1% annually.
Moderate Beneficial	Results in moderate improvement of attribute quality	Reduction in predicted peak flood level >50mm. Calculated reduction in pollution risk of 50% or more where existing risk is >1% annually.
Major Beneficial	Results in major improvement of attribute quality	Reduction in predicted peak flood level >100mm

Table 3 **Rating of Significant Environmental Impacts at EIS Stage (NRA)**

Importance of Attribute	Magnitude of Importance			
	Negligible	**Small Adverse**	**Moderate Adverse**	**Large Adverse**
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

11 AIR QUALITY

11.1 Introduction

This chapter of the EIAR was prepared to assess the potential significant effects of the proposed development on air quality at the former Central Mental Hospital, Dundrum Road, Dundrum, Dublin 14 and areas of Dundrum Road and St. Columbanus Road, Dublin 14.

It should be read in conjunction with Ch. 18 Traffic and Transportation and the standalone Traffic and Transportation Assessment (ILTP Consulting, 2024) submitted as part of the planning application.

11.1.1 Expertise & Qualifications

This chapter was completed by Aisling Cashell, an Environmental Consultant in the air quality section of AWN Consulting Ltd. She holds a BA and an MAI in Civil, Structural and Environmental Engineering from Trinity College Dublin. She is a member of Engineers Ireland. She has been specialising in the area of air quality, climate and sustainability for 1 year and has prepared air quality and climate assessments for inclusion within EIARs for residential and commercial developments such as Twenties Lane (Planning Application Ref: 22713), Cherrywood T13 (Planning Application Ref: DZ23A/0028), Corballis Donabate LRD (Planning Application Ref: LRD0017/S3), The Paddocks (Planning Application Ref: 2360349), and Dublin Airport Authority.

This chapter was also prepared and reviewed Dr. Jovanna Arndt, a Senior Environmental Consultant in the air quality and climate section of AWN Consulting. She has been specialising in the area of air quality and climate over 7 years and has prepared air quality and climate assessments for inclusion within EIARs for residential developments such as Twenties Lane (Planning Application Ref: 22713), Cherrywood T13 (Planning Application Ref: DZ23A/0028), Corballis Donabate LRD (Planning Application Ref: LRD0017/S3), commercial and industrial developments by Dublin Airport Authority, Zoetis, Ipsen, Merck Millipore, Greener Ideas Limited and Abbvie, as well as renewable energy developments such as Codling Wind Park and the Cúil Na Móna Anaerobic Digestion Facility. She also specialises in assessing air quality impacts using air dispersion modelling of transportation schemes such as BusConnects Dublin, major Highways England Road schemes and major rail infrastructure in the form of High Speed 2 (HS2 in the UK). She has prepared air dispersion modelling assessments of emissions from data centres, energy centres and the chemical industry as part of EPA Industrial Emissions Licences for Microsoft, Greener Ideas Limited, Merck Millipore, Lilly Limerick, Chemifloc, Takeda, Kingspan and Kilshane Energy. She has also provided Air Quality Action Plan (AQAP) and Air Quality Management Area (AQMA) support to several UK councils and assessed the air quality impacts of potential Clean Air Zones in the UK.

11.1.2 The Proposed Project

The proposed development consists of a large-scale residential development on an overall site of approx. 9.7ha at the former Central Mental Hospital, Dundrum Road, Dundrum, Dublin

14 and areas of Dundrum Road and St. Columbanus Road, Dublin 14. The full description of the development is available in Chapter 5 (Description of the Development) of this EIAR.

11.2 Methodology

11.2.1 Relevant Legislation & Guidance

The principal guidance and best practice documents used to inform the assessment of potential impacts on Air Quality is summarised below.

- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning & Local Government, 2018);
- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017);
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (hereafter referred to as the Environmental Protection Agency (EPA) Guidelines) (EPA, 2022);
- Guidance on the Assessment of Dust from Demolition and Construction Version 2.2 (Institute of Air Quality Management (IAQM), 2024);
- A Guide To The Assessment Of Air Quality Impacts On Designated Nature Conservation Sites (Version 1.1) (IAQM, 2020);
- TII Guidance Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106 and TII Road Emissions Model (REM) online calculator tool (TII, 2022); and
- TII Road Emissions Model (REM): Model Development Report – GE-ENV-01107 (TII, 2024).

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, the Department of the Environment, Heritage and Local Government in Ireland (DEHLG, 2004) and the European Parliament and Council of the European Union, 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.

Air quality significance criteria are assessed based on compliance with the appropriate standards or limit values. The applicable standards in Ireland include the Air Quality Standards Regulations 2022, which incorporate European Commission Directive 2008/50/EC, which has set limit values for numerous pollutants with the limit values for NO_2, PM_{10}, and $PM_{2.5}$ being relevant to this assessment. Council Directive 2008/50/EC combines the previous Air Quality Framework Directive (96/62/EC) and its subsequent daughter directives (including 1999/30/EC and 2000/69/EC) and includes ambient limit values relating to $PM_{2.5}$. The applicable limit values for NO_2, PM_{10}, and $PM_{2.5}$ are set out in Table 11.1.

Table 11.1 Ambient Air Quality Standards & TA Luft

Pollutant	Regulation [Note1]	Limit Type	Value
Dust Deposition	TA Luft (German VDI, 2002)	Annual average limit for nuisance dust	350 $mg/m^2/day$
Nitrogen Dioxide	2008/50/EC	Hourly limit for protection of human health - not to be exceeded more than 18 times/year	200 $\mu g/m^3$
		Annual limit for protection of human health	40 $\mu g/m^3$
Particulate Matter (as PM_{10})	2008/50/EC	24-hour limit for protection of human health - not to be exceeded more than 35 times/year	50 $\mu g/m^3$ PM_{10}
		Annual limit for protection of human health	40 $\mu g/m^3$ PM_{10}
Particulate Matter (as $PM_{2.5}$) – Stage 1	2008/50/EC	Annual limit for protection of human health	25 $\mu g/m^3$ $PM_{2.5}$
Particulate Matter (as $PM_{2.5}$) – Stage 2 [Note 2]	2008/50/EC	Annual limit for protection of human health	20 $\mu g/m^3$ $PM_{2.5}$

Note 1 EU 2008/50/EC – Clean Air For Europe (CAFÉ) Directive replaces the previous Air Framework Directive (1996/30/EC) and daughter directives 1999/30/EC and 2000/69/EC

Note 1 Stage 2 indicative limit value for $PM_{2.5}$ to be applied from 1 January 2020 after review by the European Commission

In April 2023, the Government of Ireland published the *Clean Air Strategy for Ireland* (Government of Ireland, 2023), which provides a high-level strategic policy framework needed to reduce air pollution. The strategy commits Ireland to achieving the 2021 WHO Air Quality Guidelines Interim Target 3 (IT3) by 2026, the IT4 targets by 2030 and the final targets by 2040 (shown in Table 11.2). The strategy notes that a significant number of EPA monitoring stations observed air pollution levels in 2021 above the WHO targets; 80% of these stations would fail to meet the final $PM_{2.5}$ target of 5 $\mu g/m^3$ (WHO, 2021). The strategy also acknowledges that "*meeting the WHO targets will be challenging and will require legislative and societal change, especially with regard to both $PM_{2.5}$ and NO_2*". Ireland will revise its air quality legislation in line with the proposed EU revisions to the CAFE Directive, which will set interim 2030 air quality standards and align the EU more closely with the WHO targets. At present, the applicable standards for assessing compliance in relation to air quality are those outlined in Table 11.2.

Table 11.2 WHO Air Quality Guidelines

Pollutant	Regulation	Limit Type	IT3 (2026)	IT4 (2030)	Final Target (2040)
NO_2	WHO Air Quality Guidelines	24-hour limit for protection of human health	50$\mu g/m^3$ NO_2	50$\mu g/m^3$ NO_2	25$\mu g/m^3$ NO_2

Pollutant	Regulation	Limit Type	IT3 (2026)	IT4 (2030)	Final Target (2040)
		Annual limit for protection of human health	30µg/ m^3 NO_2	20µg/ m^3 NO_2	10µg/m^3 NO_2
PM (as PM_{10})		24-hour limit for protection of human health	75µg/ m^3 PM_{10}	50µg/m^3 PM_{10}	45µg/m^3 PM_{10}
		Annual limit for protection of human health	30µg/ m^3 PM_{10}	20µg/ m^3 PM_{10}	15µg/m^3 PM_{10}
PM (as $PM_{2.5}$)		24-hour limit for protection of human health	37.5µg/m^3 $PM_{2.5}$	25µg/m^3 $PM_{2.5}$	15µg/m^3 $PM_{2.5}$
		Annual limit for protection of human health	15µg/m^3 $PM_{2.5}$	10µg/m^3 $PM_{2.5}$	5µg/m^3 $PM_{2.5}$

11.2.1.2 Dust Deposition Guidelines

The concern from a health perspective is focused on particles of dust, which are less than 10 microns, and the EU ambient air quality standards outlined in Section 11.2.1.1 have set ambient air quality limit values for PM_{10} and $PM_{2.5}$.

With regard to larger dust particles that can give rise to nuisance dust, there are no statutory guidelines regarding the maximum dust deposition levels that may be generated during the construction phase of a development in Ireland.

However, guidelines for dust deposition, the German TA-Luft standard for dust deposition (non-hazardous dust) (German VDI, 2002) sets a maximum permissible emission level for dust deposition of 350 mg/m^2/day averaged over a one-year period at any receptors outside the site boundary. The TA-Luft standard has been applied for the purpose of this assessment based on recommendations from the EPA in Ireland in the document titled 'Environmental Management Guidelines - Environmental Management in the Extractive Industry (Non-Scheduled Minerals) (EPA, 2006). The document recommends that the TA-Luft limit of 350 mg/m^2/day be applied to the site boundary of quarries. This limit value can be implemented with regard to dust effects from construction of the proposed development.

11.2.1.3 Air Quality and Traffic Impact Significance Criteria

The TII document *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022) details a methodology for determining air quality impact significance criteria for road schemes which can be applied to any project that causes a change in traffic. The degree of impact is determined based on the percentage change in pollutant concentrations relative to the 'Do Nothing' scenario. The TII significance criteria are outlined in Table 4.9 of *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022) and reproduced in

Table 11.3 below. These criteria have been adopted for the proposed development to predict the effect of NO_2 and PM_{10} emissions as a result of the proposed development.

Table 11.3 Air Quality Significance Criteria

Long Term Average Concentration at Receptor in Assessment Year	% Change in Concentration Relative to Air Quality Limit Value (AQLV)			
	1%	2-5%	6-10%	>10%
75% or less of AQLV	Neutral	Neutral	Slight	Moderate
76 – 94% of AQLV	Neutral	Slight	Moderate	Moderate
95 – 102% of AQLV	Slight	Moderate	Moderate	Substantial
103 – 109% of AQLV	Moderate	Moderate	Substantial	Substantial
110% or more of AQLV	Moderate	Substantial	Substantial	Substantial

Source Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106 (TII, 2022)

11.2.2 Site Surveys/Investigations

No on-site surveys were required for the air quality assessment. The baseline air quality environment was established using available long-term EPA monitoring data for representative locations (see Section 11.3.2).

11.2.3 Construction Phase Methodology

11.2.3.1 Construction Traffic Assessment

Construction phase traffic also has the potential to affect air quality. The TII guidance *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022), states that road links meeting one or more of the following criteria can be defined as being 'affected' by a proposed development and should be included in the local air quality assessment. While the guidance is specific to infrastructure projects the approach can be applied to any development that causes a change in traffic.

- Annual average daily traffic (AADT) changes by 1,000 or more;
- Heavy duty vehicle (HDV) AADT changes by 200 or more;
- Daily average speed change by 10 kph or more;
- Peak hour speed change by 20 kph or more;
- A change in road alignment by 5m or greater.

The construction stage traffic will not change by more 1,000 AADT or 200 HDV AADT and does not meet the above scoping criteria. In addition, there are no proposed changes to the traffic speeds or road alignment. As a result, a detailed air assessment of construction stage traffic emissions has been scoped out from any further assessment as there is no potential for significant impacts to air quality.

11.2.3.2 Construction Dust Assessment

The Institute of Air Quality Management in the UK (IAQM) guidance document *'Guidance on the Assessment of Dust from Demolition and Construction'* (IAQM, 2024) outlines an

assessment method for predicting the effect of dust emissions from construction activities based on the scale and nature of the works and the sensitivity of the area to dust impacts. The IAQM methodology has been applied to the construction phase of this development in order to predict the likely risk of dust impacts in the absence of mitigation measures and to determine the level of site-specific mitigation required. The use of UK guidance is recommended by Transport Infrastructure Ireland in their guidance document *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022).

The major dust generating activities are divided into four types within the IAQM guidance (IAQM, 2024) to reflect their different potential effects. These are:

- Demolition;
- Earthworks;
- Construction; and
- Trackout (transport of dust and dirt from the construction site onto the public road network).

The magnitude of each of the four categories is divided into Large, Medium or Small scale depending on the nature of the activities involved. The magnitude of each activity is combined with the overall sensitivity of the area to determine the risk of dust impacts from site activities. This allows the level of site-specific mitigation to be determined.

11.2.4 Operational Phase Methodology

Operational phase traffic has the potential to affect local air quality as a result of increased vehicle movements associated with the proposed development. The TII scoping criteria detailed in Section 11.2.3.1 were used to determine if any road links are affected by the proposed development and require inclusion in a detailed air quality modelling assessment. The proposed development will result in the operational phase traffic increasing by more than 1,000 AADT on four road links. Therefore, a detailed air quality modelling assessment of operational phase traffic emissions was conducted.

The impact to air quality due to changes in traffic is assessed at sensitive receptors in the vicinity of affected roads. The receptor locations are discussed in further detail within Section 11.2.4.1 and shown graphically in Figure 11.3.

The TII guidance (TII, 2022) states that modelling should be conducted for NO_2, PM_{10} and $PM_{2.5}$ for the Base, Opening and Design Years for both the Do Minimum (Do Nothing) and Do Something scenarios. Modelling of operational NO_2, PM_{10} and $PM_{2.5}$ concentrations has been conducted for the Do Nothing and Do Something scenarios using the TII Road Emissions Model (REM) online calculator tool (TII, 2024).

The following inputs are required for the REM tool: receptor locations, light duty vehicle (LDV) annual average daily traffic movements (AADT), annual average daily heavy duty vehicles (HDV AADT), annual average traffic speeds, road link lengths, road type, project county location and pollutant background concentrations. The *Default* fleet mix option was selected along with the *Intermediate Case* fleet data base selection, as per TII Guidance (TII, 2024). The *Intermediate Case* assumes a linear interpolation between the *Business as Usual* case – where

current trends in vehicle ownership continue and the *Climate Action Plan (CAP)* case – where adoption of low emission light duty vehicles occurs.

Using this input data, the model predicts the road traffic contribution to ambient ground level concentrations at the identified sensitive receptors using generic meteorological data. The TII REM uses county-based Irish fleet composition for different road types, for different European emission standards from pre-Euro to Euro 6/VI with scaling factors to reflect improvements in fuel quality, retrofitting, and technology conversions. The TII REM also includes emission factors for PM_{10} emissions associated with brake and tire wear (TII, 2024). The predicted road contributions are then added to the existing background concentrations to give the predicted ambient concentrations. The ambient concentrations are then compared with the relevant ambient air quality standards to assess the compliance of the proposed development with these ambient air quality standards.

The TII document *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022) states that impacts to sensitive ecology as a result of traffic emissions should be considered. Consideration should be given to designated sites within 2 km of the proposed development; however, a detailed assessment is only required at a local level, where there is a designated site within 200 m of affected road links. There are no European sensitive designated site within 2 km of the proposed development.

The TII guidance (TII, 2022) notes that only sites that are sensitive to nitrogen and acid deposition need to be included in the assessment, it is not necessary to include sites for example that have been designated as a geological feature or water course. There are no designated sites within 200 m of an impacted road link. A detailed assessment of NO_X concentrations and nitrogen deposition has been screened out as there is no potential for significant effects to the designated sites as a result of changes in air quality.

11.2.4.1 Traffic Data used in Modelling Assessment

Traffic flow information was obtained from ILTP Consulting (2024) for the purposes of this assessment. Data for the Base Year 2024 and the Do Nothing and Do Something scenarios for the Opening Year 2027 and Design Year 2042 were provided. In order to assess the full cumulative impact of the development, the traffic data has included specific cumulative developments within the area (see Traffic and Transportation Assessment for further details).

The traffic data are detailed in Table 11.4. Four road links met the TII scoping criteria and were within 200 m of receptors were included in the modelling assessment. Background concentrations have been included as per Section 11.3 of this chapter based on available EPA background monitoring data (EPA, 2024).

Table 11.4 Traffic Data Used in Air & Climate Modelling Assessments

Road Name	Speed (kph)	Base Year 2024	Opening Year 2027		Design Year 2042	
			Do Nothing	Do Something	Do Nothing	Do Something
		LDV AADT (HDV AADT)	LDV AADT (HDV AADT)	LDV AADT (HDV AADT)	LDV AADT (HDV AADT)	LDV AADT (HDV AADT)
R177 North of Access (Link 3)	50	13756 (425)	14900 (461)	16217 (502)	14900 (461)	16217 (502)
R117 South of Access and Highfield (Link 4)	50	13730 (425)	14873 (460)	16189 (501)	14873 (460)	16189 (501)
R117 South of Rosemount (Link 5)	50	15273 (472)	16543 (512)	17830 (551)	16543 (512)	17830 (551)
Proposed Access (Link 9)	50	0 (0)	0 (0)	3062 (95)	0 (0)	3062 (95)

11.3 Baseline Environment

11.3.1 Meteorological Data

A key factor in assessing temporal and spatial variations in air quality is the prevailing meteorological conditions. Depending on wind speed and direction, individual receptors may experience very significant variations in pollutant levels under the same source strength (i.e. traffic levels) (WHO, 2006). Wind is of key importance in dispersing air pollutants 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 Dublin Airport meteorological station, which is located approximately 20 km south of the site. Dublin Airport meteorological data has been examined to identify the prevailing wind direction and average wind speeds over a five-year period (see Figure 11.2). For data collated during five representative years (2019 – 2023), the predominant wind direction is westerly to south-westerly with a mean wind speed of 5.4 m/s over the 30-year period 1991–- 2020 (Met Éireann, 2024).

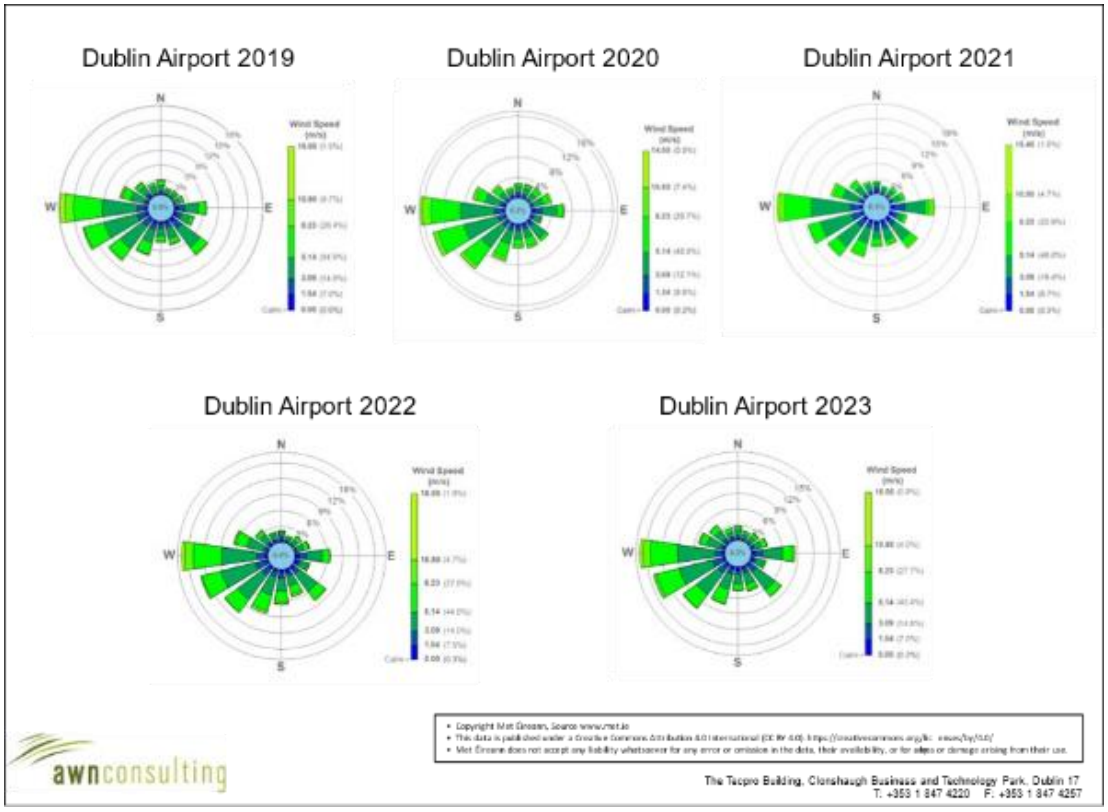


Figure 11.1 Windrose 2019-2023 (Source: Met Éireann, 2024)

11.3.2 Baseline Air Quality

Air quality monitoring programs have been undertaken in recent years by the EPA. The most recent annual report on air quality in Ireland is "*Air Quality In Ireland 2022"* (EPA, 2023). 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, 2023).

As part of the implementation of the Framework Directive on Air Quality (1996/62/EC, four air quality zones have been defined in Ireland for air quality management and assessment purposes (EPA, 2022). Dublin is defined as Zone A and Cork as Zone B. Zone C is composed of 23 towns with a population of greater than 15,000. The remainder of the country, which represents rural Ireland but also includes all towns with a population of less than 15,000, is defined as Zone D.

In terms of air monitoring and assessment, the proposed development site is within Zone A (EPA, 2023). 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.). Data for 2020 has been included for indicative purposes only, it has not been used in determining background pollutant levels as the data is not considered representative due to the COVID-19 restrictions that were in place at the time.

11.3.2.1 NO_2

Long-term NO_2 monitoring was carried out at the Zone A suburban and urban background locations of Dún Laoghaire, Rathmines, Winetavern Street, Dublin Port and Ringsend which are considered representative of the area of the proposed development for the period 2018 – 2022 (EPA, 2023). Long-term average concentrations measured at all locations were significantly lower than the annual average limit value of 40 µg/m^3. Sufficient data is available for Dún Laoghaire, Rathmines, Winetavern Street and Ringsend to observe the long-term trend over the period 2018 – 2022, with annual average results ranging from 16 – 29 µg/m^3 (Table 11.5). A reasonable estimate of the background NO_2 concentration for the region of the proposed development is 19 µg/m^3, as derived from the average of these long-term trends.

Table 11.5 Trends in Air Quality – Nitrogen Dioxide (NO_2)

Station	Averaging Period [Note 1]	Year				
		2018	2019	2020	2021	2022
Dún Laoghaire	Annual Mean NO_2 (µg/m^3)	19	15	13	16	16
Rathmines	Annual Mean NO_2 (µg/m^3)	20	22	13	14	14
Winetavern Street	Annual Mean NO_2 (µg/m^3)	29	28	15	18	19
Dublin Port	Annual Mean NO_2 (µg/m^3)	-	-	23	27	27
Ringsend	Annual Mean NO_2 (µg/m^3)	27	24	18	19	19

Note 1 Annual average limit value - 40 µg/m^3 (EU Council Directive 2008/50/EC & S.I. No. 739 of 2022). 1-hour limit value - 200 µg/m^3 (EU Council Directive 2008/50/EC & S.I. No. 739 of 2022).

11.3.2.2 PM_{10}

Long-term PM_{10} monitoring was carried out at the Zone A suburban background, suburban traffic, urban background and urban traffic locations of Dún Laoghaire, Marino, St. Anne's Park, Rathmines, Winetavern Street, Dublin Port, Pearse Street and Ringsend which are considered representative of the area of the proposed development for the period 2018 – 2022 (EPA, 2023).

The PM_{10} annual average in 2022 for Dún Laoghaire, Marino, St. Anne's Park, Rathmines, Winetavern Street, Dublin Port, Pearse Street and Ringsend ranged from 12 µg/m^3 to 18 µg/m^3. Therefore, long-term average concentrations measured at all locations were significantly lower than the annual average limit value of 40 µg/m^3. In addition, there were at most 12 exceedances (in Ringsend) of the 24-hour limit value of 50 µg/m^3 in 2019, albeit 35 exceedances are permitted per year (EPA, 2023). Sufficient data is available for Dún Laoghaire, Marino, St. Anne's Park, Rathmines, Winetavern Street and Ringsend to observe the long-term trend over the period 2018 – 2022, with annual average results ranging from 11 – 20 µg/m^3 (Table 11.6). A reasonable estimate of the background PM_{10} concentration, for the region of the proposed development is 14 µg/m^3, as derived from the average of these long-term trends.

Table 11.6 Trends in Air Quality – PM_{10}

Station	Averaging Period [Note 1]	Year				
		2018	2019	2020	2021	2022
Dún Laoghaire	Annual Mean PM_{10} (µg/m^3)	13	12	12	11	12
	24-hr Mean > 50 µg/m^3 (days)	0	2	0	0	1
Marino	Annual Mean PM_{10} (µg/m^3)	12	14	13	12	14
	24-hr Mean > 50 µg/m^3 (days)	0	4	0	0	3
St. Anne's Park	Annual Mean PM_{10} (µg/m^3)	11	12	11	11	13
	24-hr Mean > 50 µg/m^3 (days)	0	1	0	0	1
Rathmines	Annual Mean PM_{10} (µg/m^3)	15	15	11	12	15
	24-hr Mean > 50 µg/m^3 (days)	2	9	2	0	4
Winetavern Street	Annual Mean PM_{10} (µg/m^3)	14	15	13	12	14
	24-hr Mean > 50 µg/m^3 (days)	1	9	0	0	1
Dublin Port	Annual Mean PM_{10} (µg/m^3)	-	-	20	20	18
	24-hr Mean > 50 µg/m^3 (days)	-	-	7	9	5
Pearse Street	Annual Mean PM_{10} (µg/m^3)	-	-	-	-	16
	24-hr Mean > 50 µg/m^3 (days)	-	-	-	-	2
Ringsend	Annual Mean PM_{10} (µg/m^3)	20	19	17	16	16
	24-hr Mean > 50 µg/m^3 (days)	3	12	8	6	11

Note1 Annual average limit value - 40 µg/m^3 (EU Council Directive 2008/50/EC & S.I. No. 739 of 2022). Daily limit value - 50 µg/m^3 (EU Council Directive 2008/50/EC & S.I. No. 739 of 2022).

11.3.2.3 $PM_{2.5}$

Long-term $PM_{2.5}$ monitoring was carried out at the Zone A suburban background, suburban traffic, urban background and urban traffic locations of Dun Laoghaire, Marino, St. Anne's Park, Rathmines, Dublin Port, Pearse Street and Ringsend which are considered representative of the area of the proposed development for the period 2018 – 2022 (EPA, 2023).

The $PM_{2.5}$ annual average in 2022 for suburban background, suburban traffic, urban background and urban traffic locations Dun Laoghaire, Marino, St. Anne's Park, Rathmines, Dublin Port, Pearse Street and Ringsend ranged from 7.5 µg/m^3 to 8.9 µg/m^3. Therefore long-term average concentrations measured at all locations were significantly lower than the annual average limit value of 25 µg/m^3. Sufficient data is available for Marino, St. Anne's Park, Rathmines and Ringsend to observe the long-term trend over the period 2018 – 2022, with annual average results ranging from 6 – 10 µg/m^3 (Table 11.7). A reasonable estimate of the background $PM_{2.5}$ concentration, for the region of the proposed development is 8 µg/m^3, as derived from the average of these long-term trends.

Table 11.7 Trends in Air Quality – $PM_{2.5}$

Station	Averaging Period [Note 1]	Year				
		2018	2019	2020	2021	2022
Dun Laoghaire	Annual Mean $PM_{2.5}$ ($\mu g/m^3$)	-	10.0	8.0	7.5	7.8
Marino	Annual Mean $PM_{2.5}$ ($\mu g/m^3$)	6.0	9.0	8.0	7.9	8.9
St. Anne's Park	Annual Mean $PM_{2.5}$ ($\mu g/m^3$)	7.0	8.0	7.0	6.9	7.8
Rathmines	Annual Mean $PM_{2.5}$ ($\mu g/m^3$)	9.0	8.0	8.0	9.3	7.5
Dublin Port	Annual Mean $PM_{2.5}$ ($\mu g/m^3$)	-	-	9.0	8.8	8.3
Pearse Street	Annual Mean $PM_{2.5}$ ($\mu g/m^3$)	-	-	8.0	8.4	7.8
Ringsend	Annual Mean $PM_{2.5}$ ($\mu g/m^3$)	8.0	10.0	8.0	8.2	7.7

Note1 Annual average limit value - 25 $\mu g/m^3$ (EU Council Directive 2008/50/EC & S.I. No. 739 of 2022). Daily limit value - 50 µg/m3 (EU Council Directive 2008/50/EC & S.I. No. 739 of 2022).

11.3.2.4 Summary

Based on the above information the air quality in Zone A locations, such as the Dundrum area, is generally good, with concentrations of the key pollutants generally well below the relevant limit values. However, the EPA have indicated that road transport emissions are contributing to increased levels of NO_2 with the potential for breaches in the annual NO_2 limit value in future years at locations within urban centres and roadside locations. In addition, burning of solid fuels for home heating is contributing to increased levels of particulate matter (PM_{10} and $PM_{2.5}$). The EPA predict that exceedances in the particulate matter limit values are likely in future years if burning of solid fuels for residential heating continues (EPA, 2024).

The current background concentrations have been used in the operational phase air quality assessment for both the Opening Year and Design Year as a conservative approach in order to predict pollutant concentrations in future years. This is in line with the TII methodology (TII, 2022).

11.3.3 Sensitivity of the Receiving Environment

11.3.3.1 Construction Phase

In line with the UK Institute of Air Quality Management (IAQM) guidance document '*Guidance on the Assessment of Dust from Demolition and Construction'* (IAQM, 2024) prior to assessing the impact of dust from a proposed development the sensitivity of the area must first be assessed as outlined below. Both receptor sensitivity and proximity to proposed works areas are taken into consideration. For the purposes of this assessment, high sensitivity receptors

are regarded as residential properties where people are likely to spend the majority of their time, as well as schools and hospitals.

In terms of receptor sensitivity to dust soiling, there are approximately 30 high sensitivity residential properties within 20m of the site boundary (see Figure 11.2). Therefore, the overall sensitivity of the area to dust soiling impacts is considered **high** based on the IAQM criteria outlined in Table 11.8.

Table 11.8 Sensitivity of the Area to Dust Soiling Effects on People and Property

Receptor Sensitivity	**Number of Receptors**	**Distance from Source (m)**			
		<20	**<50**	**<100**	**<250**
High	>100	High	High	Medium	Low
	10-100	**High**	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Source (IAQM, 2024) Guidance on the Assessment of Dust from Demolition and Construction

In addition to sensitivity to dust soiling, the IAQM guidelines also outline the assessment criteria for determining the sensitivity of the area to human health effects. The criteria take into consideration the current annual mean PM_{10} concentration, receptor sensitivity based on type (residential receptors are classified as high sensitivity) and the number of receptors affected within various distance bands from the construction works. A conservative estimate of the current annual mean PM_{10} concentration in the vicinity of the proposed development is 14 µg/m^3 and there are approximately 30 no. high sensitivity receptor within 20m of the proposed development boundary (see Figure 11.3). Based on the IAQM criteria outlined in Table 11.9, the worst-case sensitivity of the area to human health is considered **low**.

Table 11.9 Sensitivity of the Area to Dust Related Human Health Impacts

Receptor Sensitivity	Annual Mean PM_{10} Concentration	Number of Receptors	Distance from Source (m)				
			<20	<50	<100	<200	<250
High	< 24 µg/m^3	>100	Medium	Low	Low	Low	Low
		10-100	**Low**	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	< 24 µg/m^3	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low	< 24 µg/m^3	>1	Low	Low	Low	Low	Low

Source Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2024)

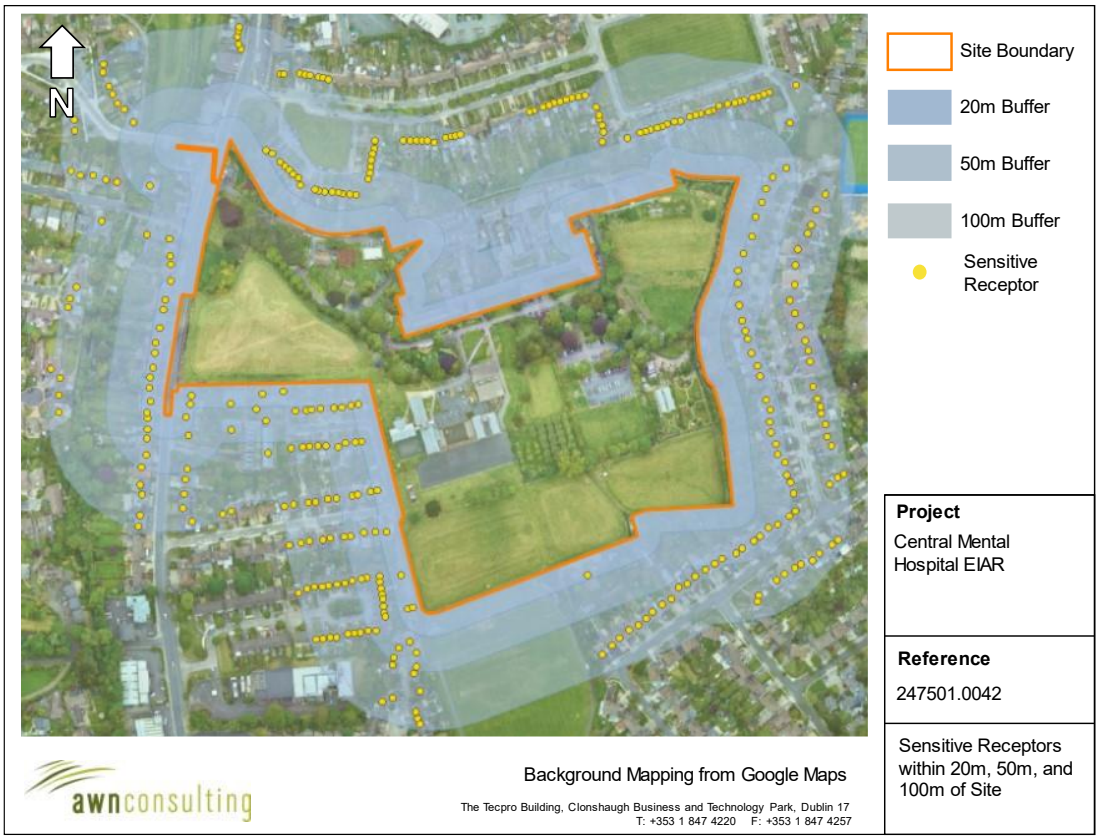


Figure 11.2 Sensitive Receptors within 20m, 50m and 100m of Site Boundary

The IAQM guidelines also outline the assessment criteria for determining the sensitivity of the area to dust-related ecological effects. Dust emissions can coat vegetation leading to a reduction in the photosynthesising ability of the plant as well as other effects. The guidance states that dust impacts to vegetation can occur up to 50m from the site and 50m from site access roads, up to 500m for the site entrance. The sensitivity of the area is determined based on the distance to the source, the designation of the site, (European, National or local designation) and the potential dust sensitivity of the ecologically important species present.

High sensitivity ecological receptors are sites with European or National designation with particularly dust sensitive species present. There are no designated sites within 50m of the proposed development which is the area of potential impact as per IAQM guidelines (IAQM, 2024).

11.3.3.2 Operational Phase

The impact to air quality as a result of changes in traffic is assessed at sensitive receptors in the vicinity of affected roads. The TII guidance (TII, 2022) states a proportionate number of representative receptors which are located in areas which will experience the highest concentrations or greatest improvements as a result of the proposed development are to be included in the modelling. The TII criteria state that receptors within 200 m of affected road links should be assessed; roads which are greater than 200 m from receptors will not affect pollutant concentrations at that receptor. The TII guidance (TII, 2022) defines sensitive receptor for the purposes of modelling annual mean pollutant concentrations as: residential housing, schools, hospitals, care homes and short term-accommodation such as hotels, i.e. locations where members of the public are likely to be regularly present for 24 hours. A total of 3 no. high sensitivity residential receptors (Rec1, Rec2, Rec3) were included in the modelling assessment. Figure 11.3 shows the location of sensitive receptors used in the operational phase air quality assessment.

Figure 11.3 Approximate Location of Receptors used in Local Air Quality Modelling Assessment

11.4 Potential Impacts of the Proposed Project

11.4.1 Construction Phase

11.4.1.1 Construction Dust Assessment

The greatest potential impact on air quality during the construction phase of the proposed development is from construction dust emissions and the potential for nuisance dust. While construction dust tends to be deposited within 250 m of a construction site, the majority of the deposition occurs within the first 50 m. The extent of any dust generation depends on the nature of the dust (soils, peat, sands, gravels, silts etc.) and the nature of the construction activity. In addition, the potential for dust dispersion and deposition depends on local meteorological factors such as rainfall, wind speed and wind direction. A review of Dublin Airport meteorological data indicates that the prevailing wind direction is westerly to south-westerly and wind speeds are generally moderate in nature (see Section 11.3.1). 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 meteorological station indicates that on average 200 days per year have rainfall over 0.2 mm (Met Éireann, 2024) and it can be determined that 54% of the time dust generation will be reduced.

In order to determine the level of dust mitigation required during the proposed works, the potential dust emission magnitude for each dust generating activity needs to be taken into account, in conjunction with the previously established sensitivity of the area (see Section 11.3.3). As per Section 11.2.3, the major dust generating activities are divided into four types within the IAQM guidance to reflect their different potential impacts. These are:

- Demolition;
- Earthworks;
- Construction; and
- Trackout (transport of dust and dirt from the construction site onto the public road network).

11.4.1.2 Demolition

There is demolition associated with the proposed development, comprising of the demolition of the existing structures. Dust emission magnitude from demolition can be classified as small, medium, or large based on the definitions from the IAQM guidance as transcribed below:

- **Large** Total building volume >75,000 m^3 potentially dusty construction material (e.g. concrete), on-site crushing and screening, demolition activities >12 m above ground level;
- **Medium** Total building volume 12,000 m^3 – 75,000 m^3 potentially dusty construction material, demolition activities 6-12 m above ground level; and
- **Small** Total building volume <12,000 m^3 construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <6 m above ground, demolition during wetter months.

The dust emission magnitude for the proposed demolition activities can be classified as **small** as the total building volume to be demolished will be less than 12,000 m^3. The sensitivity of the area, as determined in Section 11.3.3, is combined with the dust emission magnitude for each dust generating activity to define the risk of dust impacts in the absence of mitigation. As outlined in Table 11.10 and Table 11.11, combining the small dust emission magnitude with a high sensitivity to dust soiling and low sensitivity to human health impacts results in a low risk of dust soiling impacts and a negligible risk of dust-related human health impacts. This is as a result of the proposed demolition activities in the absence of mitigation.

Table 11.10 Criteria for Rating of Risk of Dust Impacts - Demolition (IAQM, 2024)

Sensitivity of Area	**Dust Emission Magnitude**		
	Large	**Medium**	**Small**
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 11.11 Risk of Dust Impacts – Demolition

Receptor	**Receptor Sensitivity**	**Dust Emission Magnitude – Construction**	**Risk of Dust-Related Impacts**
Dust Soiling	High	Small	Low Risk
Human Health	Low		Negligible

11.4.1.2.1 Earthworks

Earthworks primarily involve excavating material, loading and unloading of materials, tipping and stockpiling activities. Activities such as levelling the site and landscaping works are also considered under this category. The dust emission magnitude from earthworks can be classified as small, medium or large based on the definitions from the IAQM guidance as transcribed below:

- **Large** Total site area > 110,000m^2, potentially dusty soil type (e.g. clay which will be prone to suspension when dry due to small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds > 6m in height;
- **Medium** Total site area 18,000m^2 – 110,000m^2, moderately dusty soil type (e.g. silt), 5 - 10 heavy earth moving vehicles active at any one time, formation of bunds 3m – 6m in height;
- **Small** Total site area < 18,000m^2, soil type with large grain size (e.g. sand), < 5 heavy earth moving vehicles active at any one time, formation of bunds < 3m in height.

The dust emission magnitude for the proposed earthwork activities can be classified as **medium** as the total site area is between 18,000m^2 and 110,000m^2. The sensitivity of the area, as determined in Section 11.3.3, is combined with the dust emission magnitude for each dust generating activity to define the risk of dust impacts in the absence of mitigation. As outlined in Table 11.12 and Table 11.13, combining the medium dust emission magnitude with a high

sensitivity to dust soiling and low sensitivity to human health impacts results in a medium risk of dust soiling impacts and a low risk of dust-related human health impacts. This is as a result of the proposed earthworks activities in the absence of mitigation.

Table 11.12 Criteria for Rating Risk of Dust Impacts – Earthworks (IAQM, 2024)

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 11.13 Risk of Dust Impacts – Earthworks

Receptor	Receptor Sensitivity	Dust Emission Magnitude – Earthworks	Risk of Dust-Related Impacts
Dust Soiling	High	Medium	Medium Risk
Human Health	Low		Low Risk

11.4.1.2.2 Construction

Dust emission magnitude from construction can be classified as small, medium or large based on the definitions from the IAQM guidance as transcribed below:

- **Large** Total building volume > 75,000 m^3, on-site concrete batching, sandblasting;
- **Medium** Total building volume 12,000m^3 – 75,000 m^3, potentially dusty construction material (e.g. concrete), on-site concrete batching;
- **Small** Total building volume < 12,000m^3, construction material with low potential for dust release (e.g. metal cladding or timber).

The dust emission magnitude for the proposed construction activities can be classified as **large** as the total building volume is more than 75,000 m^3. As outlined in Table 11.14 and

Table **11.15**, combining the large dust emission magnitude with a high sensitivity to dust soiling and low sensitivity to human health impacts results in a high risk of dust soiling impacts and a low risk of dust-related human health impacts. This is as a result of the proposed construction activities in the absence of mitigation.

Table 11.14 Criteria for Rating of Risk of Dust Impacts – Construction (IAQM, 2024)

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 11.15 Risk of Dust Impacts – Construction

Receptor	Receptor Sensitivity	Dust Emission Magnitude – Construction	Risk of Dust-Related Impacts
Dust Soiling	High	Large	High Risk
Human Health	Low		Low Risk

11.4.1.3 Trackout

Factors which determine the dust emission magnitude are vehicle size, vehicle speed, number of vehicles, road surface material and duration of movement. Dust emission magnitude from trackout can be classified as small, medium or large based on the definitions from the IAQM guidance as transcribed below:

- **Large** > 50 HGV (> 3.5 t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length > 100 m;
- **Medium** 20 - 50 HGV (> 3.5 t) outward movements in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50 - 100 m;
- **Small** < 20 HGV (> 3.5 t) outward movements in any one day, surface material with low potential for dust release, unpaved road length < 50 m.

The dust emission magnitude for the proposed trackout can be classified as **large**, as at worst-case peak periods there will be more than 50 outward HGV movements per day. As outlined in Table 11.16 and Table 11.17, combining the large dust emission magnitude with a high sensitivity to dust soiling and low sensitivity to human health impacts results in an overall high risk of dust soiling impacts and a low risk of dust-related human health impacts. This is as a result of the proposed trackout activities in the absence of mitigation.

Table 11.16 Criteria for Rating of Risk of Dust Impacts – Trackout (IAQM, 2024)

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 11.17 Risk of Dust Impacts – Trackout

Receptor	Receptor Sensitivity	Dust Emission Magnitude – Trackout	Risk of Dust-Related Impacts
Dust Soiling	High	Large	High Risk
Human Health	Low		Low Risk

11.4.1.3.1 Summary of Dust Emission Risks

The risk of dust impacts as a result of the proposed development are summarised in Table 11.18 for each activity. The magnitude of risk determined is used to prescribe the level of site-specific mitigation required for each activity in order to prevent significant impacts occurring.

There is at most a high risk of dust soiling and at most a low risk human health impacts associated with the proposed works. Best practice dust mitigation measures will be implemented to ensure there are no significant impacts at nearby sensitive receptors. In the absence of mitigation, dust impacts are predicted to be ***direct, short-term, negative*** and ***slight***, which is overall not significant in EIA terms.

Table 11.18 Summary of Dust Impact Risk used to Define Site-Specific Mitigation

Potential Impact	**Dust Emission Risk**			
	Demolition	**Earthworks**	**Construction**	**Trackout**
Dust Emission Magnitude	Small	Medium	Large	Large
Dust Soiling Risk	Low Risk	Medium Risk	High Risk	High Risk
Human Health Risk	Negligible	Low Risk	Low Risk	Low Risk

11.4.1.3.2 Construction Traffic Assessment

There is also the potential for traffic emissions to affect air quality in the short-term over the construction phase, particularly due to the increase in HGVs accessing the site. The construction stage traffic has been reviewed and a detailed air quality assessment has been scoped out as none of the road links affected by the proposed development satisfy the TII scoping assessment criteria in Section 11.2.3.

It can be determined that the construction stage traffic will have a ***direct, short-term, negative*** and ***imperceptible*** impact on air quality, which is overall not significant in EIA terms.

11.4.2 Operational Phase

11.4.2.1 Operational Phase Traffic Assessment

The potential effects of the proposed development has been assessed by modelling emissions from the traffic generated as a result of the development using the TII Road Emissions Model (TII, 2024). The traffic data includes the Do Nothing and Do Something scenarios. The impact of NO_2, PM_{10} and $PM_{2.5}$ emissions for the modelled Opening Year and Design Year was predicted at the nearest sensitive receptors to the development. This assessment allows the significance of the development, with respect to both relative and absolute impacts, to be determined.

The TII guidance PE-ENV-01106 (TII, 2022) details a methodology for determining air quality impact significance criteria for TII road schemes and infrastructure projects. However, this significance criteria can be applied to any development that causes a change in traffic. The degree of impact is determined based on both the absolute and relative effects of the proposed development. Results are compared against the 'Do-Nothing' scenario, which

assumes that the proposed development is not in place in future years, to determine the degree of impact.

11.4.2.1.1 NO_2

The results of the assessment of the effects of the proposed development on NO_2 in the Opening Year 2027 and Design Year 2042 are shown in Table 11.19. The annual average concentration is in compliance with the limit value at the worst-case receptors in the year 2027 and 2042. Concentrations of NO_2 are at most 57% of the annual limit value in 2027 and 52% of the annual limit value in 2042. In addition, the TII guidance (TII, 2022) states that the hourly limit value for NO_2 of 200 µg/m^3 is unlikely to be exceeded at roadside locations unless the annual mean is above 60 µg/m^3. As predicted NO_2 concentrations are significantly below 60 µg/m^3. It can be concluded that the short-term NO_2 limit value will be complied with at all receptor locations.

The effects of the proposed development on annual mean NO_2 concentrations can be assessed relative to 'Do Nothing' levels. NO_2 concentrations at the receptors assessed will increase as a result of the proposed development when compared with the Do-Nothing scenario. There will be at most an increase of 0.65 µg/m^3 at receptor Rec2, which is a 1.63% change when compared with the ambient air quality limit value of 40 µg/m^3. Where the predicted annual mean concentrations in the Opening Year without the proposed scheme are less than 75% of the air quality standard (see Table 11.1) and there is a less than 5% change in concentrations compared with the annual mean ambient air quality standard, then, the impact is considered neutral as per the TII significance criteria (see Table 11.3). Therefore, the effect of the proposed development on NO_2 concentrations according to the TII guidance (TII, 2022) is neutral**.**

Table 11.19 Predicted Annual Mean NO_2 Concentrations (µg/m^3)

Receptor	Impact Opening Year						
	DM	% of AQLV	DS	% of AQLV	DS-DM	% Change of AQLV	Description
Rec1	22.1	55%	22.2	55%	0.10	0.25%	Neutral
Rec2	22.1	55%	22.8	57%	0.65	1.63%	Neutral
Rec3	21.3	53%	21.3	53%	0.08	0.20%	Neutral
Receptor	**Impact Design Year**						
	DM	**% of AQLV**	**DS**	**% of AQLV**	**DS-DM**	**% Change of AQLV**	**Description**
Rec1	20.4	51%	20.4	51%	0.05	0.12%	Neutral
Rec2	20.4	51%	20.7	52%	0.29	0.72%	Neutral
Rec3	20.0	50%	20.0	50%	0.04	0.10%	Neutral

11.4.2.1.2 PM_{10}

In relation to changes in PM_{10} concentrations as a result of the proposed development, the results of the assessment can be seen in Table 11.20 for the Opening Year 2027 and Design Year 2042. The annual average concentration is in compliance with the limit value at the worst-case receptors in the year 2027 and 2042. Concentrations of PM_{10} are at most 44% of

the annual limit value in 2027 and 44% of the annual limit value in 2042. In addition, the proposed development will not result in any exceedances of the daily PM_{10} limit value of 50 µg/m^3. The effects of the proposed development on annual mean PM_{10} concentrations can be assessed relative to 'Do Nothing' levels. PM_{10} concentrations at the receptors assessed will increase as a result of the proposed development when compared with the Do-Nothing scenario. There will be at most an increase of 0.65 µg/m^3 at receptor Rec2, which is a 1.63% increase when compared with the ambient air quality limit value of 40 µg/m^3. As with NO_2, where the predicted annual mean concentrations in the Opening Year without the proposed scheme are less than 75% of the air quality standard (see Table 11.1) and there is a less than 5% change in concentrations compared with the annual mean ambient air quality standard, then, the impact is considered neutral as per the TII significance criteria (see Table 11.3). Therefore, the impact of the proposed development on PM_{10} concentrations according to the TII guidance (TII, 2022) is neutral.

Table 11.20 Predicted Annual Mean PM_{10} Concentrations (µg/m^3)

Receptor	Impact Opening Year						
	DM	% of AQLV	DS	% of AQLV	DS-DM	% Change of AQLV	Description
Rec1	17.1	43%	17.2	43%	0.09	0.23%	Neutral
Rec2	17.1	43%	17.8	44%	0.65	1.63%	Neutral
Rec3	16.2	41%	16.3	41%	0.07	0.18%	Neutral
Receptor	**Impact Design Year**						
	DM	**% of AQLV**	**DS**	**% of AQLV**	**DS-DM**	**% Change of AQLV**	**Description**
Rec1	17.0	43%	17.1	43%	0.09	0.23%	Neutral
Rec2	17.0	43%	17.7	44%	0.64	1.60%	Neutral
Rec3	16.2	40%	16.3	41%	0.08	0.20%	Neutral

11.4.2.1.3 $PM_{2.5}$

In relation to changes in $PM_{2.5}$ concentrations as a result of the proposed development, the results of the assessment can be seen in

Table **11.21** for the modelled Opening Year 2027 and Design Year 2042. The annual average concentration is in compliance with the limit value at the worst-case receptors in the year 2027 and 2042. Concentrations of $PM_{2.5}$ are at most 44% of the annual limit value in 2027 and 44% in 2042. The effect of the proposed development on annual mean $PM_{2.5}$ concentrations can be assessed relative to 'Do Nothing' levels. $PM_{2.5}$ concentrations at the receptors assessed will increase as a result of the proposed development when compared with the Do-Nothing scenario. There will be at most an increase of 0.36 µg/m^3 at receptor Rec2, which is a 0.90% change when compared with the ambient air quality limit value of 25 µg/m^3. As with NO_2, where the predicted annual mean concentrations in the Opening Year without the proposed scheme are less than 75% of the air quality standard (see Table 11.1) and there is a less than 5% change in concentrations compared with the annual mean ambient air quality standard, then, the impact is considered neutral as per the TII significance criteria (see Table 11.3).

Therefore, the impact of the proposed development on $PM_{2.5}$ concentrations according to the TII guidance (TII, 2022) is neutral.

Table 11.21 Predicted Annual Mean $PM_{2.5}$ Concentrations (µg/m³)

Receptor	Impact Opening Year						
	DM	% of AQLV	DS	% of AQLV	DS-DM	% Change of AQLV	Description
Rec1	10.7	43%	10.8	43%	0.05	0.13%	Neutral
Rec2	10.7	43%	11.1	44%	0.36	0.90%	Neutral
Rec3	10.3	41%	10.3	41%	0.04	0.10%	Neutral
Receptor	**Impact Design Year**						
	DM	**% of AQLV**	**DS**	**% of AQLV**	**DS-DM**	**% Change of AQLV**	**Description**
Rec1	10.6	43%	10.7	43%	0.05	0.12%	Neutral
Rec2	10.7	43%	11.0	44%	0.34	0.85%	Neutral
Rec3	10.2	41%	10.2	41%	0.04	0.10%	Neutral

Overall, the TII significance criteria have identified neutral impacts due to increases in NO_2, PM_{10} and $PM_{2.5}$ annual mean concentrations which are less than 5% of the annual mean ambient air quality standards (and the annual mean concentrations are less than 75% of the air quality standard). This equates to a potential effect of the proposed development on ambient air quality, and human health, in the operational stage according to the EPA guidelines (EPA, 2022) which is considered ***direct, long-term, negative*** and ***not significant***.

11.5 Mitigation Measures

11.5.1 Construction Phase Mitigation

The proposed development has been assessed as having a high risk of dust soiling impacts and a low risk of dust related human health impacts during the construction phase as a result of demolition, earthworks, construction and trackout activities (see Section 11.3.3). Therefore, the following dust mitigation measures shall be implemented during the construction phase of the proposed development. These measures are appropriate for sites with a high risk of dust impacts and aim to ensure that no significant nuisance occurs at nearby sensitive receptors. The mitigation measures draw on best practice guidance from Ireland, *Air Quality Monitoring and Noise Control Unit's Good Practice Guide for Construction and Demolition* (DCC, 2018), the UK, *Guidance on the Assessment of Dust from Demolition and Construction Version 2.2* (IAQM, 2024), *Controlling Particles, Vapours & Noise Pollution from Construction Sites* (BRE, 2003), *Planning Advice Note PAN50 Annex B: Controlling The Environmental Effects Of Surface Mineral Workings Annex B: The Control of Dust at Surface Mineral Workings* (The Scottish Office, 1996), *Controlling the Environmental Effects of Recycled and Secondary Aggregates Production Good Practice Guidance* (ODPM, 2002)) and the USA, *Fugitive Dust Technical Information Document for the Best Available Control Measures* (USEPA, 1997). These measures will be incorporated into the overall Construction Environmental Management Plan (CEMP) prepared for the site. The CEMP details the commitments and mitigation measures to be implemented by the developer and their appointed contractors for

the construction of the proposed development. The measures are divided into different categories for different activities.

A_1: Communications

- Prior to construction works commencing on site, develop and implement a stakeholder communications plan that includes community engagement. Community engagement includes explaining the nature and duration of the works to local residents and businesses.
- The name and contact details of a person to contact regarding air quality and dust issues shall be displayed on the site boundary, this notice board should also include head/regional office contact details.

A_2: Site Management

- During working hours, dust control methods will be monitored as appropriate, depending on the prevailing meteorological conditions. Dry and windy conditions are favourable to dust suspension; therefore, mitigations must be implemented if undertaking dust generating activities during these weather conditions.
- A complaints register will be kept on site detailing all telephone calls and letters of complaint received in connection with dust nuisance or air quality concerns, together with details of any remedial actions carried out. The complaints log will be made available to the local authority when asked.
- Any exceptional incidents that cause dust and/or air emissions, either on- or off-site, and the action taken to resolve the situation will be recorded in the log book.
- Regular liaison meetings will be held with other high risk construction sites within 250 m of the site boundary where feasible, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.

A_3: Preparing and Maintaining the Site

- The site layout will be planned so that machinery and dust causing activities are located away from receptors, as far as is possible.
- solid screens or barriers will be erected around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- site runoff of water or mud will be avoided.
- site fencing, barriers and scaffolding will be kept clean using wet methods.
- materials that have a potential to produce dust from site will be removed as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
- stockpiles will be covered, seeded or fenced to prevent wind whipping.

A_4: Operating Vehicles / Machinery and Sustainable Travel

- all vehicles engines will be switched off when stationary - no idling vehicles.

- the use of diesel or petrol powered generators will be avoided and mains electricity or battery powered equipment used where practicable.
- a maximum-speed-limit of 15 kph will be imposed and signposted on 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).
- a Construction Logistics Plan will be produced to manage the sustainable delivery of goods and materials.
- a Travel Plan will be implemented that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)

A_5: Operations

- Only 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 will be used
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- enclosed chutes and conveyors and covered skips will be used
- drop heights will be minimised 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.

A_6: Waste Management

- No bonfires or burning of waste materials.

A_7: Measures Specific to Demolition

- Prior to demolition blocks will be soft striped inside buildings (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).
- During the demolition process, water suppression will be used, preferably with a hand-held spray. Only the use of cutting, grinding or sawing equipment fitted or used in conjunction with a suitable dust suppression technique such as water sprays/local extraction should be used.
- Drop heights from conveyors, loading shovels, hoppers and other loading equipment will be minimised, if necessary fine water sprays will be employed.
- explosive blasting will be avoided, using appropriate manual or mechanical alternatives.

A_8: Measures Specific to Earthworks

- earthworks and exposed areas/soil stockpiles will be re-vegetated to stabilise surfaces as soon as practicable.
- Hessian, mulches or trackifiers will be used where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- the cover in small areas will only be removed 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.

A_9: Measures Specific to Construction

- 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.

A_10: Measures Specific to Trackout

- A speed restriction of 15 kph will be applied as an effective control measure for dust for on-site vehicles.
- dry sweeping of large areas will be avoided.
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
- on-site haul routes will be inspected for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- all inspections of haul routes and any subsequent action in a site will be recorded in log book.
- hard surfaced haul routes will be installed, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
- a wheel washing system will be implemented (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 will be located at least 10 m from receptors where possible.

A_11: Monitoring

- daily on-site and off-site inspections will be undertaken, where receptors (including roads) are nearby, to monitor dust, record inspection results in the site inspection log. This will include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary, with cleaning to be provided if

necessary. regular site inspections will be carried out to monitor compliance with the CEMP, record inspection results, and make an inspection log available to the local authority when asked.

- the frequency of site inspections will be increased by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
- dust deposition monitoring locations will be agreed with the relevant environmental management official within Dún Laoghaire-Rathdown County Council. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. Refer Section 11.7.1 for more detail on this monitoring.

11.5.2 Operational Phase Mitigation

There is no mitigation required for the operational phase of the development as effects on air quality are predicted to be ***direct, long-term, negative*** and ***not significant***.

11.6 Residual Impacts

11.6.1 Construction Phase

In order to minimise dust emissions during construction, a series of mitigation measures have been prepared. Once the dust minimisation measures outlined in Section 11.5.1 are implemented, the effect of the proposed development in terms of dust soiling will be ***direct, short-term, negative*** and ***not significant***.

A detailed air quality assessment of the construction stage traffic has been scoped out (as per Section 11.2.3.1) and it can be determined that the construction stage traffic will have a ***direct, short-term, negative*** and ***imperceptible*** impact on air quality.

11.6.2 Operational Phase

Dispersion modelling of traffic emissions at sensitive receptors in proximity to impacted road links during the operational phase indicate pollutant emissions will be in compliance with the relevant air quality standards. Therefore, the operational phase impact to air quality as a result of increased traffic is ***direct, long-term, negative*** and ***not significant***.

11.7 Monitoring

11.7.1 Construction Phase

Monitoring of construction dust deposition at nearby sensitive receptors during the construction phase of the proposed development will be carried out to ensure mitigation measures are working satisfactorily. This will be done 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. Dust deposition monitoring will be carried out on a monthly basis (between 28 - 32 days) for at least one month (ideally three months) in order to capture baseline conditions pre enabling works, as well as for the duration of the enabling works and construction period.

An independent contractor will be appointed to carry out this monitoring. The TA Luft limit value is 350 mg/m^2/day during the monitoring period of 30 days (+/- 2 days).

Following the laboratory analysis of the monthly monitoring samples (typically 15 day turnaround), results will be reported on a monthly basis. If requested by Dún Laoghaire-Rathdown County Council this monitoring report will be made available. If dust deposition rates exceed 350 mg/m^2/day, Dún Laoghaire-Rathdown County Council will be notified of any exceedance within 24 hours. In the event of an exceedance the procedures, site activities and appropriate application of dust mitigation measures will be reviewed in consultation with Dún Laoghaire-Rathdown County Council and improved to achieve a level below 350 mg/m^2/day in future monitoring.

11.7.2 Operational Phase

There is no monitoring recommended for the operational phase of the development as effects on air quality are predicted to be not significant.

11.8 Reinstatement

Not applicable to air quality.

11.9 Interactions

11.9.1 Population and Human Health

Air quality does not have a significant number of interactions with other topics. The most significant interactions are between population and human health (Ch.07 Population & Human Health) and air quality. An adverse impact due to air quality in either the construction or operational phase has the potential to cause health and dust nuisance issues. The mitigation measures that will be put in place by the proposed development will ensure that the effects of the proposed development complies with all ambient air quality legislative limits. Therefore, the predicted effect is ***direct, short-term, negative*** and ***not significant*** with respect to population and human health during the construction phase and ***direct, long-term, negative*** and ***not significan*****t** during the operational phase.

11.9.2 Traffic and Transportation

Interactions between air quality and traffic (Ch.18 Traffic & Transportation) can be significant. With increased traffic movements and reduced engine efficiency, i.e. due to congestion, the emissions of vehicles increase. The effects of the proposed development on air quality are assessed by reviewing the change in annual average daily traffic on roads close to the site. In this assessment, the effects of the interactions between traffic and air quality are considered to be ***direct, long-term, negative*** and ***not significant*****.**

11.9.3 Climate

Air quality and climate have interactions due to the emissions from the burning of fossil fuels during the construction and operational phases generating both air quality and climate effects. Air quality modelling outputs are utilised within Chapter 12 (Ch. 12 Climate). There is

no impact on climate due to air quality; however, the sources of impacts on air quality and climate are strongly linked.

11.9.4 Land, Soils and Geology

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, soils and geology (Ch. 09 Land, Soils, Geology & Hydrogeology).

11.9.5 Biodiversity

There is the potential for interactions between air quality and biodiversity (Ch. 08 Biodiversity). Dust generation can occur during extended dry weather periods as a result of construction traffic. Dust suppression measures (e.g. dampening down) will be implemented as necessary during dry periods and vehicle wheel washes will be installed, for example. The works involve stripping of topsoil and excavations, which will remove some vegetation such as trees and scrub. It will also generate dust and potentially effect on the air quality in the locality. However, the generation of dust will be temporary during construction phase and is not anticipated to have a significant effect on biodiversity. Once the mitigation measures outlined within Section 11.5 are implemented dust related effects are predicted to be ***direct, short-term, negative*** and ***not significant***, which is overall not significant in EIA terms.

11.10 Cumulative Impacts

11.10.1 Construction Phase

According to the IAQM guidance (IAQM, 2024) should the construction phase of the proposed development coincide with the construction phase of any other development within 500m then there is the potential for cumulative construction dust impacts. A review of relevant planning applications and projects listed in Chapter 3 of the EIAR within 500 m of the site was conducted in order to identify sites with the potential for cumulative impacts. There were 2 no. sites identified which may have coinciding construction phases with that of the proposed development, these include:

- Colbeam Limited Ref: ABP30943021;
- Pembroke Partnership Limited Ref: ABP31128721.

The proposed development has been assessed as having at most a high risk of dust soiling and a low risk of human health impacts during the construction phase. A number of mitigation measures have been proposed in order to ensure significant dust impacts do not occur. However, provided the mitigation measures outlined in Section 11.5, are implemented throughout the construction phase of the proposed development significant cumulative dust impacts are not predicted. Impacts are predicted to be ***direct, short-term, negative*** and ***not significant***.

11.10.2 Operational Phase

The cumulative impact is included within the operational stage impact for the proposed development, which has assessed operational road traffic emissions generated by the proposed development and committed developments. The significance of the effect on air quality due to the cumulative operational phase impact of the proposed development will be ***direct, long-term, negative*** and ***not significant.***

11.11 The 'Do Nothing' Effect

Under the 'Do Nothing' scenario the proposed development will not be constructed, no construction works associated with the proposed development will take place and the previously identified effects of fugitive dust and particulate matter emissions and emissions from equipment and machinery will not occur. As the site is zoned for development, in the absence of the proposed development it is likely that a development of a similar nature would be constructed in the future in line with national policy and the development plan objectives. Therefore, the construction and operational phase impacts outlined in this assessment are likely to occur in the future even in the absence of the proposed development.

11.12 Difficulties Encountered in Compiling the Chapter

There were no difficulties encountered in compiling this assessment.

11.13 Risk to Human Health

Dust emissions from the construction phase of the proposed development have the potential to affect human health through the release of PM_{10} and $PM_{2.5}$ emissions. As per Section 11.3.3, the surrounding area is of low sensitivity to dust related human health impacts. It was determined that there is an overall low risk of dust related human health effects as a result of the construction phase of the proposed development.

Best practice mitigation measures are proposed for the construction phase of the proposed development which will focus on the pro-active control of dust and other air pollutants to minimise generation of emissions at source. The mitigation measures that will be put in place during construction of the proposed development will ensure that the impact of the development complies with all EU ambient air quality legislative limit values which are based on the protection of human health. Therefore, the residual effect of the construction phase of the proposed development is likely to be ***direct, short-term, negative*** and ***not significant*** with respect to human health.

Traffic related air emissions have the potential to affect air quality which can affect human health. As the operational phase assessment has shown that emissions of air pollutants are significantly below the ambient air quality standards which are based on the protection of human health. Therefore, the effects on human health are ***direct, long-term, negative*** and ***not significant***.

11.14 Risk of Major Accidents or Disasters

There are no likely risks of major accidents and disasters in relation to air quality associated with the proposed development and the masterplan development due to the nature and scale of the development. The proposed development is residential in nature and will not require large scale quantities of hazardous materials or fuels.

11.15 References

BRE (2003) Controlling Particles, Vapours & Noise Pollution from Construction Sites

Department of Housing, Planning & Local Government (DHPLG) (2018) Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment

Department of the Environment Heritage and Local Government (DEHLG) (2004) Quarries and Ancillary Activities, Guidelines for Planning Authorities

Dublin City Council (DCC) (2018) Air Quality Monitoring and Noise Control Unit's Good Practice Guide for Construction and Demolition

Environmental Protection Agency (2006) Environmental Management Guidelines - Environmental Management in the Extractive Industry (Non-Scheduled Minerals)

Environmental Protection Agency (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports

Environmental Protection Agency (2023) Air Quality Monitoring Report 2022 (& previous annual reports)

European Commission (2017) Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report

German VDI (2002) Technical Guidelines on Air Quality Control – TA Luft

Government of Ireland (2023) Clean Air Strategy for Ireland

Institute of Air Quality Management (IAQM) (2020) A Guide To The Assessment Of Air Quality Impacts On Designated Nature Conservation Sites (Version 1.1)

Institute of Air Quality Management (IAQM) (2024) Guidance on the Assessment of Dust from Demolition and Construction (Version 2.2)

Met Éireann (2024) Met Éireann website: https://www.met.ie/

The Scottish Office (1996) Planning Advice Note PAN50 Annex B: Controlling The Environmental Effects Of Surface Mineral Workings Annex B: The Control of Dust at Surface Mineral Workings

Transport Infrastructure Ireland (2022) Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106

Transport Infrastructure Ireland (2024) TII Road Emissions Model (REM): Model Development Report – GE-ENV-01107

UK Office of Deputy Prime Minister (ODPM) (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)

World Health Organisation (2021) Air Quality Guidelines 2021

12.0 CLIMATE

12.1 Introduction

This chapter of the EIAR was prepared to assess the likely significant effects on climate of the proposed development at the former Central Mental Hospital, Dundrum Road, Dundrum, Dublin 14 and areas of Dundrum Road and St. Columbanus Road, Dublin 14.

It should be read in conjunction with Ch. 11 Air Quality, Ch. 18 Traffic and Transportation and the Traffic and Transportation Assessment (ILTP, 2024), Ch. 19 Material Assets – Waste, the Energy & Sustainability Report (EDC Engineering, 2024) and Flood Risk Assessment (Barrett Mahony Consulting Engineers, 2024) submitted with the planning application.

12.1.1 Expertise & Qualifications

This chapter was completed by Aisling Cashell, an Environmental Consultant in the air quality section of AWN Consulting Ltd. She holds a BA and an MAI in Civil, Structural and Environmental Engineering from Trinity College Dublin. She is a member of Engineers Ireland. She has been specialising in the area of air quality, climate and sustainability for 1 year and has prepared air quality and climate assessments for inclusion within EIARs for residential and commercial developments such as Twenties Lane (Planning Application Ref: 22713), Cherrywood T13 (Planning Application Ref: DZ23A/0028), Corballis Donabate LRD (Planning Application Ref: LRD0017/S3), The Paddocks (Planning Application Ref: 2360349), and Dublin Airport Authority.

This chapter was also prepared and reviewed by Dr. Jovanna Arndt, a Senior Environmental Consultant in the Air Quality & Climate section of AWN Consulting. She has been specialising in the area of air quality and climate for over 7 years and has prepared air quality and climate assessments for inclusion within EIARs for residential developments such as Twenties Lane (Planning Application Ref: 22713), Cherrywood T13 (Planning Application Ref: DZ23A/0028), Corballis Donabate LRD (Planning Application Ref: LRD0017/S3), commercial and industrial developments by Dublin Airport Authority, Zoetis, Ipsen, Merck Millipore, Greener Ideas Limited and Abbvie, as well as renewable energy developments such as Codling Wind Park and the Cúil Na Móna Anaerobic Digestion Facility. She also specialises in assessing air quality impacts using air dispersion modelling of transportation schemes such as BusConnects Dublin, major Highways England Road schemes and major rail infrastructure in the form of High Speed 2 (HS2 in the UK). She has prepared air dispersion modelling assessments of emissions from data centres, energy centres and the chemical industry as part of EPA Industrial Emissions Licences for Microsoft, Greener Ideas Limited, Merck Millipore, Lilly Limerick, Chemifloc, Takeda, Kingspan and Kilshane Energy. She has also provided Air Quality Action Plan (AQAP) and Air Quality Management Area (AQMA) support to several UK councils and assessed the air quality impacts of potential Clean Air Zones in the UK.

12.1.2 The Proposed Project

The proposed development consists of a large-scale residential development on an overall site of approx. 9.7ha at the former Central Mental Hospital, Dundrum Road, Dundrum, Dublin

14 and areas of Dundrum Road and St. Columbanus Road, Dublin 14. The full description of the development is available in Chapter 5 (Description of the Development) of this EIAR.

12.1.2.1 Aspects Relevant to this Assessment

During the construction phase engine emissions from site vehicles and machinery have the potential to impact climate through the release of CO_2 and to a lesser extent, other greenhouse gases (GHGs). Embodied carbon of materials used in the construction of the development along with site activities will impact climate. Impacts to climate are assessed against Ireland's obligations under the EU 2030 GHG targets and sectoral emissions ceilings.

Engine emissions from vehicles accessing the site have the potential to impact climate during the operational phase of the development through the release of CO_2. Energy use of the development has also been considered. Operational phase impacts will be long-term in duration. In addition, the vulnerability of the proposed development in relation to future climate change must be considered during the operational phase.

The climate assessment is divided into two distinct sections – a greenhouse gas assessment (GHGA) and a climate change risk assessment (CCRA).

- Greenhouse Gas Emissions Assessment (GHGA) – Quantifies the GHG emissions from a project over its lifetime. The assessment compares these emissions to relevant carbon budgets, targets and policy to contextualise magnitude; and
- Climate Change Risk Assessment (CCRA) – Identifies the impact of a changing climate on a project and receiving environment. The assessment considers a projects vulnerability to climate change and identifies adaptation measures to increase project resilience.

12.2 Methodology

12.2.1 Relevant Legislation, Policy & Guidance

The assessment of potential impacts on climate has been prepared taking the relevant legislation, policy and guidance as described in the following sections into consideration.

12.2.1.1 Legislation

In 2015, the Climate Action and Low Carbon Development Act 2015 (No. 46 of 2015) (Government of Ireland, 2015) was enacted (the 2015 Climate 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 2015 Climate Act as the *"National Transition Objective"*. The 2015 Climate Act made provision for a national low carbon transition and mitigation plan (now known as a Climate Action Plan), and a national adaptation framework. In addition, the 2015 Climate Act provided for the establishment of the Climate Change Advisory Council with the function to advise and make recommendations on the preparation of the national mitigation and adaptation plans and compliance with existing climate obligations.

The first Climate Action Plan (CAP) was published by the Irish Government in June 2019 (Government of Ireland, 2019). The Climate Action Plan 2019 (CAP19) 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. CAP19 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 current Climate Action Plan is CAP24, published in December 2023 (DECC, 2024).

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 published the Climate Action and Low Carbon Development (Amendment) Act 2021 (hereafter referred to as the 2021 Climate Act) in March 2021 (Government of Ireland, 2021). The 2021 Climate Act was signed into Law on the 23rd July 2021, giving statutory effect to the core objectives stated within the first Climate Action Plan.

The purpose of the 2021 Climate Act is to provide for the approval of plans *"to reduce the extent of further global warming, pursue and achieve, by no later than the end of the year 2050, the transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy"*. This is known as the *"national climate objective"*, which supersedes the 2015 Climate Act *"national transition objective"*. The 2021 Climate Act will also *"provide for carbon budgets and a decarbonisation target range for certain sectors of the economy"*. The 2021 Climate Act defines the carbon budget as *"the total amount of greenhouse gas emissions that are permitted during the budget period"*.

In relation to carbon budgets, the 2021 Climate) Act states "*A carbon budget, consistent with furthering the achievement of the national climate objective, shall be proposed by the Climate Change Advisory Council, finalised by the Minister and approved by the Government for the period of 5 years commencing on the 1 January 2021 and ending on 31 December 2025 and for each subsequent period of 5 years (in this Act referred to as a 'budget period')*". The carbon budget is to be produced for 3 sequential budget periods, as shown in Table 12.1. The carbon budget can be revised where new obligations are imposed under the law of the European Union or international agreements or where there are significant developments in scientific knowledge in relation to climate change. In relation to the sectoral emissions ceiling, the Minister for the Environment, Climate and Communications (the Minister for the Environment) shall prepare and submit to government the maximum amount of GHG emissions that are permitted in different sectors of the economy during a budget period and different ceilings may apply to different sectors. The sectorial emission ceilings for 2030 were published in the Climate Action Plan 2024 (CAP24) (DECC, 2024) and are shown in Table 12.2. Industry and Buildings (Residential) have a 35% and 40% reduction requirement respectively and a 2030 emission ceiling of 4 Mt CO_2e[1].

[1] Mt CO_2e denotes million tonnes carbon dioxide equivalent.

Table 12.1 5-Year Carbon Budgets 2021-2025, 2026-2030 and 2031-2025 (DECC, 2024)

Budget Period	Carbon Budget	Reduction Required
2021-2025	295 Mt CO_2e	Reduction in emissions of 4.8% per annum for the first budget period.
2026-2030	200 Mt CO_2e	Reduction in emissions of 8.3% per annum for the second budget period.
2031-2035	151 Mt CO_2e	Reduction in emissions of 3.5% per annum for the third provisional budget.

Table 12.2 Sectoral Emission Ceilings 2030 (DECC, 2024)

Sector	Baseline ($MtCO_2e$)	Carbon Budgets ($MtCO_2e$)		2030 Emissions ($MtCO_2e$)	Indicative Emissions % Reduction in Final Year of 2025- 2030 Period (Compared to 2018)
	2018	2021-2025	2026-2030		
Electricity	10	40	20	3	75
Transport	12	54	37	6	50
Built Environment - Residential	7	29	23	4	40
Built Environment - Commercial	2	7	5	1	45
Industry	7	30	24	4	35
Agriculture	23	106	96	17.25	25
Other (F-gases, waste, petroleum refining)	2	9	8	1	50
Land Use, Land-use Change and Forestry (LULUCF)	5	Reflecting the continued volatility for LULUCF baseline emissions to 2030 and beyond, CAP24 puts in place ambitious activity targets for the sector reflecting an EU-type approach.			
Total	**68**				
Unallocated Savings	-	-	26	-5.25	-
Legally Binding Carbon Budgets and 2030 Emission Reduction Targets	**-**	**295**	**200**	**-**	**51**

12.2.1.2 Policy

In December 2023 the current Climate Action Plan, CAP24, was published (DECC, 2024). CAP24 builds on the progress of CAP23, which first published carbon budgets and sectoral emissions ceilings, and it aims to implement the required changes to achieve a 51% reduction in carbon emissions by 2030 and 2050 net zero goal. CAP24 has six vital high impact sectors where the biggest savings can be made: renewable energy, energy efficiency of buildings, transport, sustainable farming, sustainable business and change of land-use. CAP24 states that the decarbonisation of Ireland's manufacturing industry is key for Ireland's economy and future

competitiveness. There is a target to reduce the embodied carbon in construction materials by 10% for materials produced and used in Ireland by 2025 and by at least 30% for materials produced and used in Ireland by 2030. CAP24 states that these reductions can be brought about by product substitution for construction materials and reduction of clinker content in cement. Cement and other high embodied carbon construction elements can be reduced by the adoption of the methods set out in the Construction Industry Federation 2021 report *Modern Methods of Construction*. In order to ensure economic growth can continue alongside a reduction in emissions, the IDA Ireland will also seek to attract businesses to invest in decarbonisation technologies.

In April 2023 the Government published its *Long-Term Strategy on Greenhouse Gas Emissions Reductions* (DECC, 2023). This strategy provides a long-term plan on how Ireland will transition towards net carbon zero by 2050, achieving the interim targets set out in the Climate Action Plan.

The Dún Laoghaire-Rathdown County Council (DLRCC) Climate Action Plan 2024-2029 (DLRCC & Codema, 2024) outlines DLRCC's goals to mitigate GHG emissions and plans to prepare for and adapt to climate change. The DLRCC Climate Action Plan states that DLRCC aims to reduce car dependency by encouraging modal shifts from cars to active travel and more sustainable modes, including public transport and cycling. Similar to DECC, DLRCC states that it wishes to work with the relevant transportation bodies to introduce measures to achieve modal shifts.

The Dún Laoghaire-Rathdown Climate Action Plan highlights the risks that climate change poses to infrastructure, individuals, communities, and business sectors (such as agriculture, tourism and transport), with risks mainly associated with extreme weather events. The Dún Laoghaire-Rathdown Climate Action Plan notes that extreme temperature and flooding and erosion (pluvial, fluvial coastal, etc) have the greatest future risk when both the likelihood and consequence are accounted for. Increases in extreme rainfall and flooding and will cause an inundation of residential properties, damages to commercial buildings and premises, and disruption of transport networks.

12.2.1.3 Guidance

The assessment of potential impacts on climate has been prepared in accordance with the most relevant principal guidance and best practice documents as follows:

- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning & Local Government, 2018);
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022);
- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017);
- GE-GEN-01101: Guide to the Implementation of Sustainability for Transport Infrastructure Ireland Projects (TII, 2023);
- PE-ENV-01104: Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document (TII, 2022a);

- PE-ENV-01105: Climate Assessment Standard for Proposed National Roads (TII, 2022b);
- GE-ENV-01106: TII Carbon Assessment Tool for Road and Light Rail Projects and User Guidance Document (TII, 2022c);
- Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment (European Commission, 2013);
- 2030 Climate and Energy Policy Framework (European Commission, 2014);
- Technical guidance on the Climate Proofing of Infrastructure in the Period 2021-2027 (European Commission, 2021a).
- 2030 EU Climate Target Plan (European Commission, 2021b);
- Climate Action and Low Carbon Development (Amendment) Act 2021 (the 2021 Climate Act) (No. 32 of 2021) (Government of Ireland, 2021).
- Climate Action Plan 2024 (DECC, 2024);
- Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (hereafter referred to as the IEMA 2020 EIA Guide) (IEMA, 2020a);
- GHG Management Hierarchy (hereafter referred to as the IEMA 2020 GHG Management Hierarchy) (IEMA, 2020b);
- Assessing Greenhouse Gas Emissions and Evaluating their Significance (Institute of Environmental Management & Assessment (IEMA), 2022);
- Environmental Impact Assessment Guide to: Assessing GHG Emissions and Evaluating their Significance (hereafter referred to as the IEMA GHG Guidance) (IEMA, 2022); and
- UK Design Manual for Roads and Bridges (DMRB) Volume 11 Environmental Assessment, Section 3 Environmental Assessment Techniques, Part 14 LA 114 Climate (Highways England, 2021).

12.2.2 Site Surveys/Investigations

No surveys were required as part of the climate assessment.

12.2.3 Greenhouse Gas Assessment

As per the EU guidance document *Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment* (European Commission, 2013) the climate baseline is first established with reference to EPA data on annual GHG emissions (see Section 12.3).

12.2.3.1 Construction Phase

PE-ENV-01104 (TII, 2022a) recommends the calculation of the construction stage GHG emissions, including embodied carbon, using the TII Online Carbon Tool (TII, 2022c). Embodied carbon refers to the sum of the carbon needed to produce a good or service. It incorporates the energy needed in the mining or processing of raw materials, the manufacturing of products and the delivery of these products to site.

The TII Online Carbon Tool (TII, 2022c) has been commissioned by TII to assess GHG emissions associated with road or rail projects in Ireland. The TII Carbon Tool (TII, 2022c) uses emission factors from recognised sources including the Civil Engineering Standard Method of Measurement (CESSM) Carbon and Price Book database (CESSM, 2013), which can be applied

to a variety of developments, not just road or rail. The use of the TII carbon tool is considered appropriate as the material types and construction activities employed by the proposed development are accounted for in the tool. The carbon emissions are calculated by multiplying the emission factor by the quantity of the material that will be used over the entire construction / maintenance phase. The outputs are expressed in terms of tCO_2e (tonnes of carbon dioxide equivalent).

The use of the TII Carbon Tool was not considered suitable for the building elements of the proposed development. As the TII Carbon Tool was developed for road and infrastructure projects, the material types within the tool are specific to these types of developments. These material types are not fully appropriate for assessing the embodied carbon associated with the construction of buildings. Therefore, the carbon impact of the buildings was carried out using an alternative tool; the Carbon Designer for Ireland tool.

The Irish Green Building Council in partnership with One Click LCA Ltd. have developed the Carbon Designer for Ireland tool (One Click LCA Ltd., 2023) for use on Irish specific building projects. The Carbon Designer tool is promoted by the EPA and the Land Development Agency. OneClickLCA is certified to EN 15978, EN 15978, ISO 21931–1 & ISO 21929, and data requirements of ISO 14040 & EN 15804, and is LEED, BREEAM and PAS 2080 aligned. It allows users to assess the carbon impact of buildings at an early stage using typical default materials and values. Inputs to the tool include the gross floor area and number of stories above ground level along with the building frame type. Once the baseline is established using generic data, the tool allows for optioneering and optimization of the carbon impact. It highlights the key areas within the building with the highest carbon impact and provides options for lower carbon intensive materials. The Carbon Designer for Ireland tool has been used to assess the embodied carbon impact of the proposed development.

Reasonable conservative estimates based on professional experience of similar developments have been used in this assessment where necessary to provide an estimate of the GHGs associated with the proposed development.

Information on the material quantities, site clearance activities, land clearance, excavations, fuel usage during construction, waste quantities and construction traffic (material, staff and waste transport) were provided by the design team for input into the TII carbon tool and are also discussed in Chapter 18 - Traffic and Transportation and Chapter 19 - Material Assets Waste. This information was used to determine an estimate of the GHG emissions associated with the development.

Embodied carbon is carbon dioxide emitted during the manufacture, transport and construction of building materials, together with site activities. As part of the proposed development, construction stage embodied GHG emissions have been calculated under the following headings within the TII Carbon Tool (TII, 2022c) where applicable:

- Pre-Construction;
- Embodied Carbon of Materials;
- Construction Activities;
- Construction Waste; and

- Maintenance.

Pre-construction includes land-use changes and site clearance activities which includes demolition of existing structures and alterations and partial demolition of the perimeter wall. There are no significant land-use changes associated with the proposed development.

Transport GHG emissions associated with delivery of materials to site and removal of waste materials off site were included in the calculator. In addition, construction worker travel to site was also included within the calculations. The exact location of all facilities to be used is not known at this stage, therefore an approximate radius from the site was used for the purposes of this assessment. Where specific locations were known the exact transport distance was included within the calculations.

12.2.3.2 Operational Phase

12.2.3.3 Operational Traffic Emissions

Emissions from road traffic associated with the proposed development have the potential to emit carbon dioxide (CO_2) which will impact climate.

The Highways England DMRB guidance document in relation to climate impact assessments *LA 114 Climate* (Highways England, 2021) contains the following scoping criteria to determine whether a detailed climate assessment is required for a proposed project during the operational stage. If any of the road links impacted by the proposed development meet or exceed the below criteria, then further assessment is required.

- A change of more than 10% in AADT;
- A change of more than 10% to the number of heavy duty vehicles; and
- A change in daily average speed of more than 20 km/hr.

There are four road links that will experience a change of over 10% in the AADT during the operational phase as a result of the proposed development. As a result a detailed assessment of traffic related carbon dioxide (CO_2) emissions was conducted.

PE-ENV-01104 (TII, 2022a) states that road traffic related emissions information should be obtained from an Air Quality Practitioner to show future user emissions during operation without the development in place. The Air Quality Practitioner calculated the traffic related emissions through the use of the TII REM tool (TII, 2022c) which includes detailed fleet predictions for age, fuel technology, engine size and weight based on available national forecasts. The output is provided in terms of CO_2e for the Base Year 2024, Opening Year 2027 and Design Year 2042. Both the Do Nothing and Do Something scenarios are quantified in order to determine the degree of change in emissions as a result of the proposed development.

Traffic data was obtained from ILTP Consulting for the purpose of this assessment. Inputs include light duty vehicle (LDV) annual average daily traffic movements (AADT), annual average daily heavy duty vehicles (HDV AADT), annual average traffic speeds, road link lengths, road type and project county location. In order to assess the full cumulative impact

of the development, the traffic data has included specific cumulative developments within the area (see Traffic and Transportation Assessment prepared by ILTP Consulting and submitted with this planning application for further details).

The traffic data is detailed in Table 12.3. Only road links that met the DRMB scoping criteria were included in the modelling assessment. Inputs include light duty vehicle (LDV) annual average daily traffic movements (AADT), annual average daily heavy duty vehicles (HDV AADT), annual average traffic speeds, road link lengths, road type and project county location. See Chapter 11 Air Quality and Chapter 18 Traffic & Transportation for further details on the traffic data.

Table 12.3 Traffic Data used in Operational Phase Climate Assessment

Link	Location	Speed (k/h)	2024	Do Minimum 2027	Do Something 2027	Do Minimum 2042	Do Something 2042
			LDV AADT (HDV AADT)	LDV AADT (HDV AADT)	LDV AADT (HDV AADT)	LDV AADT (HDV AADT)	LDV AADT (HDV AADT)
3	R177 North of Access	50	13756 (425)	14900 (461)	16217 (502)	14900 (461)	16217 (502)
4	R117 South of Access and Highfield	50	13730 (425)	14873 (460)	16189 (501)	14873 (460)	16189 (501)
5	R117 South of Rosemount	50	15273 (472)	16543 (512)	17830 (551)	16543 (512)	17830 (551)
9	Proposed Access	50	0 (0)	0 (0)	3062 (95)	0 (0)	3062 (95)

12.2.3.4 Operational Phase Energy Use

The EU Guidance (European Commission, 2013) also states indirect GHG emissions as a result of a development must be considered, which includes emissions associated with energy usage. An Energy Statement was prepared by EDC Engineering in relation to the proposed development and is submitted separately with this planning application. The report outlines a number of measures which have been incorporated into the overall design of the development which will have the benefit of reducing the impact to climate where possible during operation. Information on some of the measures in relation to operational energy usage and sustainability measures has been supplied to inform the climate assessment.

12.2.3.5 Significance Criteria for GHGA

The Transport Infrastructure Ireland (TII) guidance document entitled *PE-ENV-01104 Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document* (TII 2022a) outlines a recommended approach for determining the significance of both the construction and operational phases of a development.

The significance of GHG effects set out in PE-ENV-01104 (TII, 2022a) is based on IEMA guidance (IEMA, 2022) which is broadly consistent with the terminology contained within Figure 3.4 of the EPA's (2022) *'Guidelines on the information to be contained in Environmental Impact Assessment Reports'.*

The 2022 IEMA Guidance (IEMA, 2022) sets out the following principles for significance:

- When evaluating significance, all new GHG emissions contribute to a negative environmental impact. However, some projects will replace existing development or baseline activity that has a higher GHG profile. Therefore, the significance of a project's emissions should be based on its net impact over its lifetime, which may be positive, negative or negligible;
- Where GHG emissions cannot be avoided, the goal of the EIA process should be to reduce the project's residual emissions at all stages; and
- Where GHG emissions remain significant, but cannot be further reduced, approaches to compensate the project's remaining emissions should be considered.

The criteria for determining the significance of effects are a two-stage process that involves defining the magnitude of the impacts and the sensitivity of the receptors (i.e. Ireland's National GHG targets). In relation to climate, there is no project specific assessment criteria, but the project will be assessed against the recommended IEMA significance determination. This takes account of any embedded or committed mitigation measures that form part of the design which should be considered.

TII (TII, 2022a) states that professional judgement must be taken into account when contextualising and assessing the significance of a project's GHG impact. In line with IEMA Guidance (IEMA, 2022), TII state that the crux of assessing significance is "*not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero*[2] *by 2050*".

Significance is determined using the criteria outlined in Table 12.4 (derived from Table 6.7 of PE-ENV-01104 (TII, 2022a) along with consideration of the following two factors:

- The extent to which the trajectory of GHG emissions from the project aligns with Ireland's GHG trajectory to net zero by 2050; and
- The level of mitigation taking place.

[2] Net Zero: "*When anthropogenic emissions of greenhouse gases to the atmosphere are balanced by anthropogenic removals over a specified period.*" Net zero is achieved where emissions are first educed in line with a 'science-based' trajectory with any residual emissions neutralised through offsets.

Table 12.4 GHGA Significance Criteria

Effects	Significance Level	Description
Significant Adverse	Major Adverse	The project's GHG impacts are not mitigated. The project has not complied with do-minimum standards set through regulation, nor provided reductions required by local or national policies; and No meaningful absolute contribution to Ireland's trajectory towards net zero.
	Moderate Adverse	The project's GHG impacts are partially mitigated. The project has partially complied with do-minimum standards set through regulation, and have not fully complied with local or national policies; and Falls short of full contribution to Ireland's trajectory towards net zero.
Not Significant	Minor Adverse	The project's GHG impacts are mitigated through 'good practice' measures. The project has complied with existing and emerging policy requirements; and Fully in line to achieve Ireland's trajectory towards net zero.
	Negligible	The project's GHG impacts are mitigated beyond design standards. The project has gone well beyond existing and emerging policy requirements; and Well 'ahead of the curve' for Ireland's trajectory towards net zero.
Beneficial	Beneficial	The project's net GHG impacts are below zero and it causes a reduction in atmosphere GHG concentration. The project has gone well beyond existing and emerging policy requirements; and Well 'ahead of the curve' for Ireland's trajectory towards net zero, provides a positive climate impact.

Ireland's carbon budgets can also be used to contextualise the magnitude of GHG emissions from the proposed development (TII, 2022a). The approach is based on comparing the net proposed development GHG emissions to the relevant carbon budgets (DECC, 2024). With the publication of the Climate Action Act in 2021 and CAP24, sectoral carbon budgets have been published for comparison with the net GHG emissions from the proposed development over its lifespan. The relevant sector budgets are the Industry Buildings (Residential) sector, Transport sector, Electricity sector and Waste sector. The Industry and Buildings (Residential) sectors each emitted approximately 7 Mt CO_2e in 2018 and have a ceiling of 4 Mt CO_2e in 2030 which is a 35% and 40% reduction respectively over this period (see Table 12.2). The Transport sector emitted approximately 12 MtCO_2e in 2018 and has a ceiling of 6 Mt CO_2e in 2030 which is a 50% reduction over this period.

12.2.4 Climate Change Risk Assessment

The assessment involves determining the vulnerability of the proposed development to climate change. This involves an analysis of the sensitivity and exposure of the development to climate hazards which together provide a measure of vulnerability.

PE-ENV-01104 (TII, 2022a) states that the CCRA is guided by the principles set out in the overarching best practice guidance documents:

- Technical guidance on the climate proofing of Infrastructure in the Period 2021-2027 (European Commission, 2021a); and
- The Institute of Environmental Management and Assessment, Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (2nd Edition) (IEMA, 2020).

The baseline environment information provided in Section 12.3, future climate change modelling and input from other experts working on the proposed development (i.e. hydrologists) should be used in order to assess the likelihood of a climate risk.

First an initial screening CCRA based on the operational phase is carried out, according to the TII guidance PE-ENV-01104. This is carried out by determining the sensitivity of proposed development assets (i.e. receptors) and their exposure to climate change hazards.

The proposed development asset categories must be assigned a level of sensitivity to climate hazards. PE-ENV-01104 (TII, 2022a) provides the below list of asset categories and climate hazards to be considered. The asset categories will vary for development type and need to be determined on a development by development basis.

- **Asset Categories** Pavements; drainage; structures; utilities; landscaping; signs, light posts, buildings, and fences.
- **Climate Hazards** Flooding (coastal, pluvial, fluvial); extreme heat; extreme cold; wildfire; drought; extreme wind; lightning and hail; landslides; fog.

The sensitivity is based on a High, Medium or Low rating with a score of 1 to 3 assigned as per the criteria below.

- **High Sensitivity** The climate hazard will or is likely to have a major impact on the asset category. This is a sensitivity score of 3.
- **Medium Sensitivity** It is possible or likely the climate hazard will have a moderate impact on the asset category. This is a sensitivity score of 2**.**
- **Low Sensitivity** It is possible the climate hazard will have a low or negligible impact on the asset category. This is a sensitivity score of 1.

Once the sensitivities have been identified the exposure analysis is undertaken. The exposure analysis involves determining the level of exposure of each climate hazard at the project location irrespective of the project type for example: flooding could be a risk if the project location is next to a river in a floodplain. Exposure is assigned a level of High, Medium or Low as per the below criteria.

- **High Exposure** It is almost certain or likely this climate hazard will occur at the project location i.e. might arise once to several times per year. This is an exposure score of 3.
- **Medium Exposure** It is possible this climate hazard will occur at the project location i.e. might arise a number of times in a decade. This is an exposure score of 2.
- **Low Exposure** It is unlikely or rare this climate hazard will occur at the project location i.e. might arise a number of times in a generation or in a lifetime. This is an exposure score of 1.

Once the sensitivity and exposure are categorised, a vulnerability analysis is conducted by multiplying the sensitivity and exposure to calculate the vulnerability.

12.2.4.1 Significance Criteria for CCRA

The CCRA involves an initial screening assessment to determine the vulnerability of the proposed development to various climate hazards. The vulnerability is determined by combining the sensitivity and the exposure of the proposed development to various climate hazards. The vulnerability assessment takes any proposed mitigation into account.

Vulnerability = Sensitivity x Exposure

Table 12.5 details the vulnerability matrix; vulnerabilities are scored on a high, medium and low scale. A risk that is low or medium is classed as non-significant, while a high or extreme risk is classed as a significant risk.

TII guidance (TII, 2022a) and the EU technical guidance (European Commission, 2021a) note that if all vulnerabilities are ranked as low in a justified manner, no detailed climate risk assessment may be needed. The impact from climate change on a development would therefore be considered not significant.

Where residual medium or high vulnerabilities exist the assessment may need to be progressed to a detailed climate change risk assessment and further mitigation implemented to reduce risks. An assessment of construction phase CCRA impacts is only required according to the TII guidance (TII, 2022a) if a detailed CCRA is required.

Table 12.5 Vulnerability Matrix

		Exposure		
		High (3)	**Medium (2)**	**Low (1)**
Sensitivity	High (3)	9 - High	6 – High	3 - Medium
	Medium (2)	6 - High	4 – Medium	2 - Low
	Low (1)	3 - Medium	2 – Low	1 - Low

The screening CCRA, detailed in Section 12.4.2, did not identify any residual medium or high risks to the proposed development as a result of climate change. Therefore, a detailed CCRA for the construction and operational phase were scoped out.

While a CCRA for the construction phase was not required, best practice mitigation against climate hazards is still recommended in Section 12.5.1.

12.3 Baseline Environment

PE-ENV-01104 (TII, 2022c) states that a baseline climate scenario should identify, consistent with the study area for the project, GHG emissions without the project for both the current and future baseline.

Ireland declared a climate and biodiversity emergency in May 2019 and in November 2019 there was European Parliament approval of a resolution declaring a climate and environment emergency in Europe. This, in addition to Ireland's current failure to meet its EU binding targets under Regulation 2018/842 (European Union, 2018) results in changes in GHG emissions either beneficial or adverse being of more significance than previously considered prior to these declarations.

12.3.1 Current GHGA Baseline

Data published in May 2024 (EPA, 2024) indicates that Ireland exceeded (without the use of flexibilities) its 2022 annual limit set under EU's Effort Sharing Decision (ESD) (EU 2018/842) by 3.54 Mt CO_2e. When the available flexibilities are taken into account, Ireland is in compliance with the 2022 ESR limit with an emissions surplus of 1.05 Mt CO_2e (EPA, 2024). The sectoral breakdown of 2023 GHG emissions is shown in Table 12.6. The sector with the highest emissions in 2023 was agriculture at 36% of the total, followed by transport at 19%. For 2023 total national emissions (excluding LULUCF) were estimated to be 57.4 Mt CO_2e as shown in Table 12.6 (EPA, 2024).

Table 12.6 Total National GHG Emissions in 2023 (EPA, 2024)

Sector	2022 Emissions (Mt CO_2e)	2023 Emissions (Mt CO_2e)	% Total 2023 (including LULUCF)	% Change from 2022 to 2023
Agriculture	23.357	22.997	36%	-1.5%
Transport	11.751	11.782	19%	0.3%
Energy Industries	10.078	7.513	12%	-25.5%
Residential	5.787	5.793	9%	0.1%
Manufacturing Combustion	4.302	4.167	7%	-3.1%
Industrial Processes	2.288	2.179	3%	-4.8%
F-Gases	0.741	0.728	1%	-1.8%
Commercial/Public Services	1.422	1.386	2%	-2.5%
Waste [Note 1]	0.878	0.849	1%	-3.3%
LULUFC	3.983	5.614	9%	40.9%
National total excluding LULUFC	**60.605**	**57.394**	**91%**	**-5.3%**
National total including LULUFC	**64.588**	**63.008**	**100%**	**-2.4%**

Note 1 Waste includes emissions from solid waste disposal on land, solid waste treatment (composting and anaerobic digestion), wastewater treatment, waste incineration and open burning of waste.

12.3.2 Future GHGA Baseline

The future baseline with respect to the GHGA can be considered in relation to the future climate targets which the assessment results will be compared against. In line with TII (TII, 2022c) and IEMA Guidance (IEMA, 2022) the future baseline is a trajectory towards net zero by 2050, *"whether it [the project] contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050"*.

The future baseline will be determined by Ireland meeting its targets set out in the CAP24, and future CAPs, alongside binding 2030 EU targets. In order to meet the commitments under the Paris Agreement, the European Union (EU) enacted *'Regulation (EU) 2018/842 on binding annual GHG emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No. 525/2013'* (hereafter referred to as the Regulation) (European Union, 2018). The Regulation aims to deliver, collectively by the EU in the most cost-effective manner possible, reductions in GHG emissions from the Emission Trading Scheme (ETS) and non-ETS sectors amounting to 43% and 30%, respectively, by 2030 compared to 2005. The Regulation was amended in April 2023 and Ireland must now limit its greenhouse gas emissions by at least 42% by 2030. The ETS is an EU-wide scheme which regulates the GHG emissions of larger industrial emitters including electricity generation, cement manufacturing and heavy industry. The non-ETS sector includes all domestic GHG emitters which do not fall under the ETS scheme and includes GHG emissions from transport, residential and commercial buildings and agriculture.

12.3.3 Current CCRA Baseline

The region of the proposed development has a temperate, oceanic climate, resulting in mild winters and cool summers. The Met Éireann weather station at Dublin Airport is the nearest weather and climate monitoring station to the proposed development with meteorological data recorded for the 30-year period from 1991 to 2020. The historical regional weather data for Dublin Airport Metrological station is representative of the current climate in the region of the proposed development. The data for the 30-year period from 1991 to 2020 (Met Éireann, 2023a) indicates that the wettest months at Dublin Airport Metrological Station were November and December, and the driest month on average was June. July was the warmest month with a mean temperature of 15.4 Celsius. January was the coldest month with a mean temperature of 5.2 Celsius.

Met Éireann's 2023 Climate Statement (Met Éireann, 2023a) states 2023's average shaded air temperature in Ireland is provisionally 11.20 °C, which is 1.65°C above the 1961-1990 long-term average. Previous to this 2022 was the warmest year on record, however 2023 was 0.38 °C warmer (see Figure 12.1).

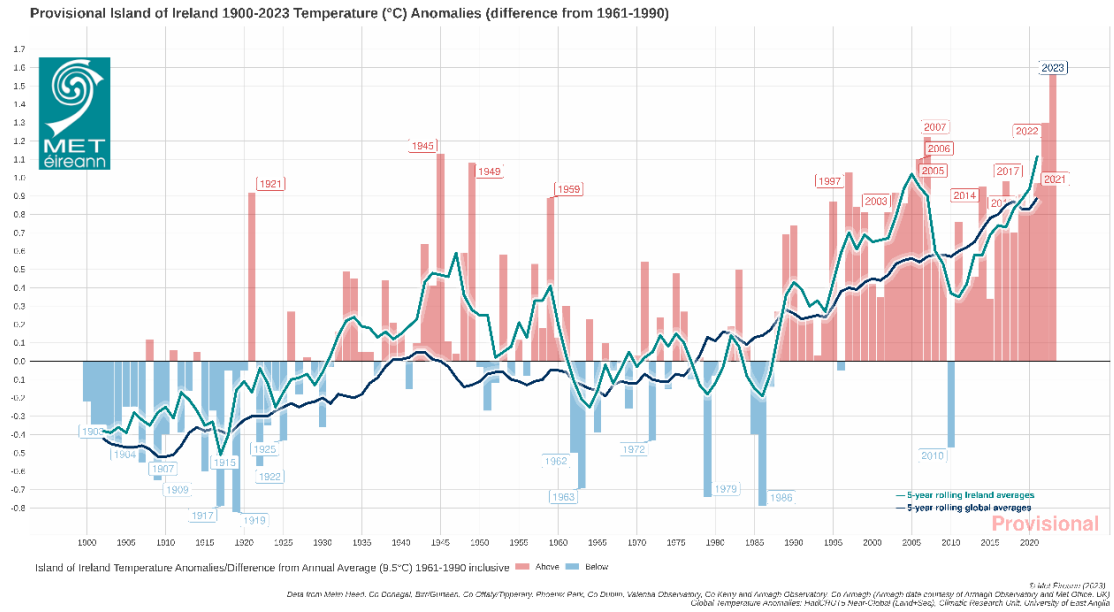


Figure 12.1 1900-2023 Temperature (°C) Temperature Anomalies (Differences from 1961-1990)

The year 2023 also had above average rainfall, this included the warmest June on record and the wettest March and July on record. Record high sea surface temperatures (SST) were recorded since April 2023 which included a severe marine heatwave[3] to the west of Ireland during June 2023. This marine heatwave contributed to the record rainfall in July.

Recent weather patterns and records of extreme weather events recorded by Met Éireann have been reviewed. Considering the extraordinary 2023 data, Met Éireann states that the latest Irish climate change projections indicate further warming in the future, including warmer winters. The record temperatures means the likelihood of extreme weather events occurring has increased. This will result in longer dry periods and heavy rainfall events. Storm surges and coastal flooding due to sea level rise. Compound events, where coastal surges and extreme rainfall events occur simultaneously will also increase. Met Éireann has high confidence in maximum rainfall rates increasing but not in how the frequency or intensity of storms will change with climate change.

12.3.4 Future CCRA Baseline

Impacts as a result of climate change will evolve with a changing future baseline. Changes have the potential to include increases in global temperatures and increases in the number of rainfall days per year. Therefore, it is expected that the baseline climate will evolve over time and consideration is needed with respect to this within the design of the proposed development.

Ireland has seen increases in the annual rainfall in the north and west of the country, with small increases or decreases in the south and east including in the region where the proposed development will be located (EPA, 2021b). The EPA have compiled a list of potential adverse

[3] https://www.met.ie/marine-heat-wave-2023-a-warning-for-the-future

impacts as a result of climate change including the following which are potentially of relevance to the proposed development (EPA, 2021a):

- More intense storms and rainfall events;
- Increased likelihood and magnitude of river and coastal flooding;
- Water shortages in summer in the east;
- Adverse impacts on water quality; and
- Changes in distribution of plant and animal species.

The EPA's *State of the Irish Environment Report (Chapter 2: Climate Change)* (EPA, 2020a) noted that projections show that full implementation of additional policies and measures, outlined in CAP21, will result in a reduction in Ireland's total GHG emissions by up to 25 per cent by 2030 compared with 2020 levels. Climate change is not only a future issue in Ireland, as a warming of approximately 0.8°C since 1900 has already occurred. The EPA state that it is critically important for the public sector to show leadership and decarbonise all public transport across bus and rail networks to the lowest carbon alternatives. The report (EPA, 2020a) underlines that the next decade needs to be one of major developments and advances in relation to Ireland's response to climate change in order to achieve these targets and that Ireland must accelerate the rate at which it implements GHG emission reductions. The report states that mid-century mean annual temperatures in Ireland are projected to increase by between 1.0°C and 1.6°C (subject to the emissions trajectory). In addition, heat events are expected to increase by mid-century (EPA, 2020a). While individual storms are predicted to have more severe winds, the average wind speed has the potential to decrease (EPA, 2020a).

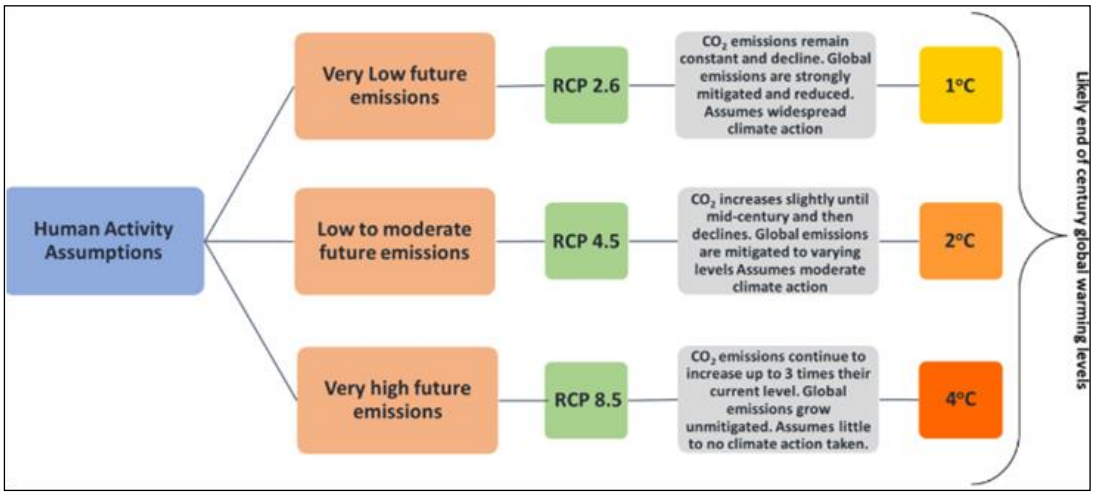
TII's Guidance document PE-ENV-01104 (TII, 2022c) states that for future climate change a moderate to high Representative Concentration Pathways (RCP) should be adopted. RPC4.5 is considered moderate while RPC8.5 is considered high. Representative Concentration Pathways (RCPs) describe different 21st century pathways of GHG emissions depending on the level of climate mitigation action undertaken.

Future climate predictions undertaken by the EPA have been published in *'Research 339: High-resolution Climate Projections for Ireland – A Multi-model Ensemble Approach'* (EPA, 2020b). The future climate was simulated under both Representative Concentration Pathway 4.5 (RCP4.5) (medium-low) and RCP8.5 (high) scenarios. This study indicates that by the middle of this century (2041–2060), mid-century mean annual temperatures are projected to increase by 1 to 1.2°C and 1.3 to 1.6°C for the RCP4.5 and RCP8.5 scenarios, respectively, with the largest increases in the east. Warming will be enhanced at the extremes (i.e. hot days and cold nights), with summer daytime and winter night-time temperatures projected to increase by 1 to 2.4°C. There is a projected substantial decrease of approximately 50%, for the number of frost and ice days. Summer heatwave events are expected to occur more frequently, with the largest increases in the south. In addition, precipitation is expected to become more variable, with substantial projected increases in the occurrence of both dry periods and heavy precipitation events. Climate change also has the potential to impact future energy supply which will rely on renewables such as wind and hydroelectric power. Wind turbines need a specific range of wind speeds to operate within and droughts or low ground water levels may impact hydroelectric energy generating sites. More frequent storms have the potential to

damage the communication networks requiring additional investment to create resilience within the network.

The EPA's *Critical Infrastructure Vulnerability to Climate Change* report (EPA, 2021b) assesses the future performance of Irelands critical infrastructure when climate is considered. With respect to road infrastructure, fluvial flooding and coastal inundation/coastal flooding are considered the key climate change risks with snowstorm and landslides being medium risks. Extreme winds and heatwaves/droughts are considered low risk to road infrastructure. One of the key outputs of the research was a framework that will provide quantitative risk-based decision support for climate change impacts and climate change adaptation analysis for infrastructure.

National Framework for Climate Services (NFCS) was founded in June 2022 to streamline the provision of climate services in Ireland and is led by Met Éireann. The aim of the NFCS is to enable the co-production, delivery and use of accurate, actionable and accessible climate information and tools to support climate resilience planning and decision making. In addition to the NFCS, further work has been ongoing into climate projects in Ireland through research under the TRANSLATE project. TRANSLATE (Met Éireann, 2023b) has been led by climate researchers from University of Galway – Irish Centre for High End Computing (ICHEC), and University College Cork – SFI Research Centre for Energy, Climate and Marine (MaREI), supported by Met Éireann climatologists. TRANSLATE's outputs are produced using a selection of internationally reviewed and accepted models from both CORDEX and CMIP5. Representative Concentration Pathways (RCPs) provide a broad range of possible futures based on assumptions of human activity. The modelled scenarios include for "*least*" (RCP2.6), "*more*" (RCP4.5) or "*most*" (RCP8.5) climate change, see Figure 12.2.

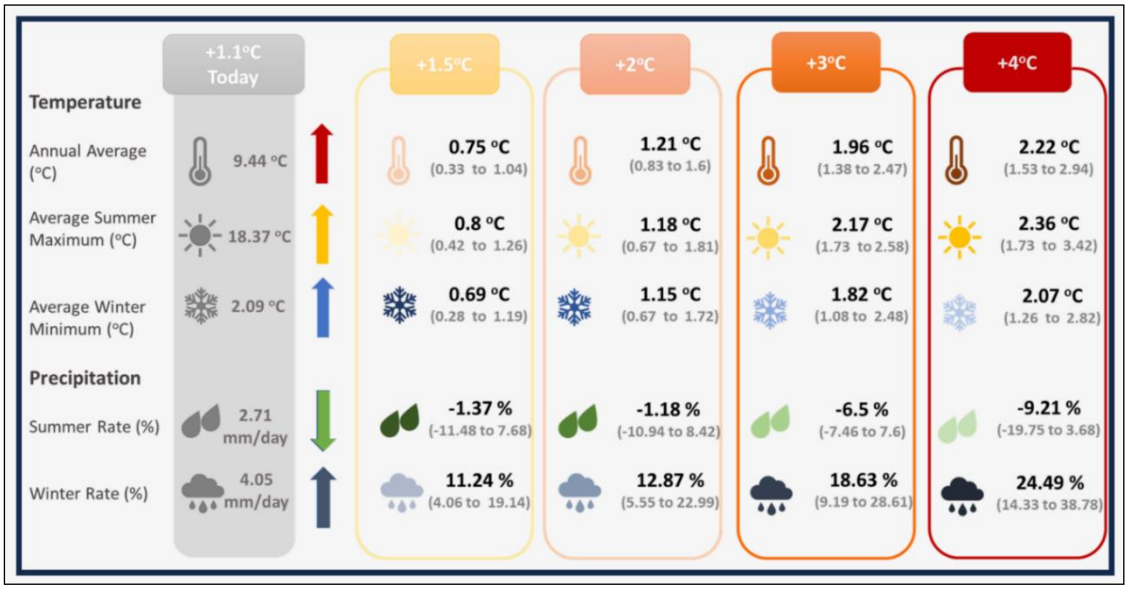


Source TRANSLATE Project Story Map (Met Éireann, 2023b)

Figure 12.2 Representative Concentration Pathways Associated Emission Levels

TRANSLATE (Met Éireann, 2023b) provides the first standardised and bias-corrected national climate projections for Ireland to aid climate risk decision making across multiple sectors (for example, transport, energy, water), by providing information on how Ireland's climate could change as global temperatures increase to 1.5˚C ,2˚C, 2.5˚C, 3˚C or 4˚C (see Figure 12.3).

Projections broadly agree with previous projections for Ireland. Ireland's climate is dominated by the Atlantic Meridional Overturning Circulation (AMOC), a large system of ocean currents – including the Gulf Stream – characterised by a northward flow of warm water and a southward flow of cold water. Due to the AMOC, Ireland does not suffer from the extremes of temperature experienced by other countries at a similar latitude. Recent studies have projected that the AMOC could decline by 30 – 40 % by 2100, resulting in cooler North Atlantic Sea surface temperatures (SST)s (Met Éireann, 2023b). Met Éireann projects that Ireland will nevertheless continue to warm, although the AMOC cooling influence may lead to reduced warming compared with continental Europe. AMOC weakening is also expected to lead to additional sea level rise around Ireland. With climate change Ireland's temperature and rainfall will undergo more and more significant changes e.g. on average summer temperature could increase by more than 2°C, summer rainfall could decrease by 9% while winter rainfall could increase by 24%. Future projects also include a 10-fold increase in the frequency of summer nights (values > 15°C) by the end of the century, a decrease in the frequency of cold winter nights and an increase in the number of heatwaves. A heatwave in Ireland is defined as a period of 5 consecutive days where the daily maximum temperature is greater than 25°C.



Source TRANSLATE Project Story Map (Met Éireann, 2023b)

Figure 12.3 Change of Climate Variables for Ireland for Different Global Warming Thresholds

12.4 Potential Impacts of the Proposed Project

12.4.1 Greenhouse Gas Assessment

12.4.1.1 Construction Phase

Embodied carbon is carbon dioxide emitted during the manufacture, transport and construction of building materials, together with site activities. The most significant proportion of carbon emissions tends to occur during the construction phase because of embodied carbon in construction materials and emissions from construction activities. Therefore, the assessment has included the construction phase embodied carbon for the

purposes of the EIAR. The assessment is broken down into the following stages as per Section 12.2.3.1:

- Product stage (A1 – A3);
- Transportation to site (A4);
- Site operations (construction activities) (A5); and
- Material replacement & refurbishment (B4 – B5).

The construction phase embodied carbon emissions comprise stages A1 – A5 and include the construction materials, the transport of the materials to site and the construction activities or site operations. Ongoing material refurbishment and replacement throughout the lifetime of the development is included within category B4 – B5, these are default values based on the typical maintenance requirements for the chosen material types over the assumed 50 year lifetime. Figure 12.4 shows the embodied carbon for the proposed development per life-cycle stage with both the output from the OneClick tool and TII Carbon Tool assessments included.

Construction materials make up the majority of carbon emissions for the proposed development making up approx. 73% of the total construction phase embodied carbon emissions across the different buildings and the relevant infrastructure. The external walls as well as the beams, floors and roofs are the areas with the highest carbon impact, based on the general default values and assumptions made for the carbon calculations. Transportation to site, site operations and material replacement make up the remainder of the construction embodied carbon emissions.

The carbon assessment has highlighted the areas where the highest embodied carbon emissions occur, specifically as a result of building materials. The carbon emissions have been calculated based on standard default materials for the various building types within the OneClick tool as detailed material information was not available at this stage in the project. Additionally, the average material types within the TII Carbon Tool were used for the purposes of this assessment in the absence of more detailed information.

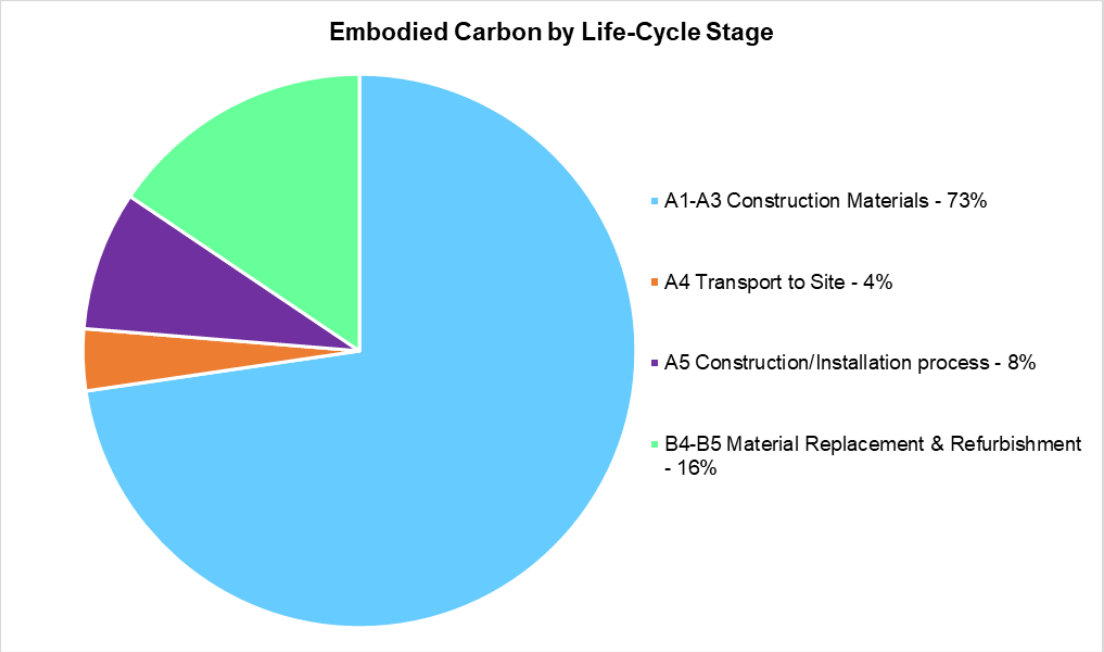


Figure 12.4 Embodied Carbon by Life-Cycle Stage

It has been calculated that the total construction phase embodied carbon (including maintenance and replacement of materials over the development lifetime) will be 44,455 tonnes CO_2e (see Table 12.7). The GHG emissions from the development as a total cannot be compared against one specific sector 2030 carbon budget, therefore the emissions are broken down into different assessment categories and must be compared separately to the relevant sectoral emissions budget which are detailed in Table 12.8. The relevant sectoral emissions for the proposed development comparison include the Industry Buildings (Residential) sector, Transport sector, Electricity sector and Waste sector. The predicted emissions for the proposed development are annualised over the assumed 50 year lifespan and then compared to the relevant sector 2030 carbon budgets. Annualising the full carbon emissions over the lifetime of the development allows for appropriate comparison with annual GHG targets.

Table 12.7 GHG Assessment Results

Stage	GHG Assessment Category	Predicted GHG Emissions (tCO_2e)	Relevant Sector for Carbon Budget Comparison	Annualised GHG Emissions as % of Relevant Carbon Budget
A1-A3	Materials	32,312	Industry	0.02%
A4	Material Transport	1,602	Transport	0.0005%
A5	Clearance and demolition	4.3	Industry	0.000002%
A5	Excavation	82	Industry	0.00004%
A5	Plant Use	2,401	Electricity	0.002%
A5	Construction Worker Travel to Site	472	Transport	0.0002%

Stage	GHG Assessment Category	Predicted GHG Emissions (tCO_2e)	Relevant Sector for Carbon Budget Comparison	Annualised GHG Emissions as % of Relevant Carbon Budget
A5	Construction Waste Disposal	312	Waste	0.0006%
A5	Construction Waste Transport	350	Transport	0.0001%
B4-B5	Maintenance Material	6,920	Industry	0.003%
Total		**44,455 tCO_2e**		

Note 1 Project lifespan assumed 50 years for calculation purposes in line with best practice guidance

The predicted GHG emissions (as shown in Table 12.8) can be averaged over the full lifespan of the proposed development to give the predicted annual emissions to allow for direct comparison with national annual emissions and targets.

In Table 12.8, GHG emissions have been compared against the carbon budget for the electricity, transport, industry and waste sectors in 2030 (DECC, 2024), against Ireland's total GHG emissions in 2023 and against Ireland's EU 2030 target of a 30% reduction in non-ETS sector emissions based on 2005 levels (33 Mt CO_2e) (set out in Regulation EU 2018/842 of the European Parliament and of the Council).

The estimated total GHG emissions, when annualised over the 50-year proposed development lifespan, are equivalent to 0.0015% of Ireland's total GHG emissions in 2022 and 0.003% of Ireland's non-ETS 2030 emissions target. The estimated GHG emissions associated with energy use during the construction phase are equivalent to 0.002% of the 2030 Electricity budget, while the total GHG emissions associated with transport-related activities are 0.0008% of the 2030 Transport budget, construction waste GHG emissions are 0.0006% of the Waste budget and industry-related activities are 0.04% of the 2030 Industry budget (DECC, 2024).

Table 12.8 Estimated GHG Emissions Relative to Sectoral Budgets and GHG Baseline

Target/Sectoral Budget (tCO_2e)		Sector Annualised Proposed Development GHG Emissions	Annualised Proposed Development GHG Emissions as % of Relevant Target/Budget
Ireland's 2022 Total GHG Emissions (existing baseline)	60,605,000	Total GHG Emissions	0.0015%
Non-ETS 2030 Target	33,000,000	Total GHG Emissions	0.003%
2030 Sectoral Budget (Industry Sector)	4,000,000	Total Industry Emissions	0.04%
2030 Sectoral Budget (Transport Sector)	6,000,000	Total Transport Emissions	0.0008%
2030 Sectoral Budget (Electricity Sector)	3,000,000	Total Electricity Emissions	0.002%

Target/Sectoral Budget (tCO_2e)		Sector Annualised Proposed Development GHG Emissions	Annualised Proposed Development GHG Emissions as % of Relevant Target/Budget
2030 Sectoral Budget (Waste Sector)	1,000,000	Total Waste Emissions	0.0006%

12.4.1.2 Operational Phase

Ongoing maintenance of the proposed development materials has been accounted for within Section 12.4.1.1 above. The following section outlines the impact of operational energy use on GHG emissions.

Operational Energy Usage

The proposed development has been designed to reduce the impact to climate where possible. A number of measures have been incorporated into the design to ensure the operational phase emissions are minimised. These are outlined fully within the *Energy & Sustainability Report* (EDC Engineering, 2024), in relation to the proposed development and submitted with this application. The primary elements with respect to reducing climate impacts and optimising energy usage are summarised in Section 12.5.2.

Operational Traffic Emissions

There is the potential for increased traffic volumes to impact climate during the operational phase. To provide for a worst-case assessment and to assess potential cumulative impacts, the traffic data has included specific cumulative developments within the area (see Traffic & Transportation Assessment (ILTP, 2024) for further details).

The predicted concentrations of CO_2e for the future years of 2027 and 2042 are detailed in Table 12.9. These are significantly less than Ireland's national 2027 and 2030 targets set out under EU legislation (targets beyond 2030 are not available) and the 2030 sectoral emissions ceilings. It is predicted that in 2027 the proposed development will increase CO_2 emissions by 96 tonnes CO_2e. This equates to 0.0003% of the 2027 national emission ceiling or 0.002% of the 2030 Transport sector emissions ceiling (see Table 12.2). Similarly low increases in CO_2 emissions are predicted to occur in 2042 with emissions increasing by 76 tonnes CO_2e. This equates to 0.0002% of the 2030 national emission ceiling or 0.001% of the 2030 Transport sector emissions ceiling (see Table 12.2).

In addition, electric vehicle parking and charging infrastructure will be provided as part of the parking requirements at the proposed development which will promote the use of more sustainable methods of transport. The proposed development complies with DLRCC or other guidelines applicable in terms of car space provision and EV spaces and infrastructure, as well as bike parking.

Table 12.9 Traffic Emissions GHG Impact Assessment

Year	Scenario	CO_2e (tonnes/annum)
2027	Do Minimum	820
	Do Something	916
2042	Do Minimum	648
	Do Something	723
Increment Change in 2027		96
National Emission Ceiling 2027 (Tonnes) Note 1		**36,747,342**
Impact in 2027 (as % of National Emissions Ceiling)		0.0003%
Transport Sector 2030 Emission Ceiling		**6,000,000**
Impact in 2027 (as % of Transport Sector Emissions Ceiling)		0.002%
Increment Change in 2042		76
National Emission Ceiling 2030 (Tonnes) Note 1		**33,381,312**
Impact in 2042 (as % of National Emissions Ceiling)		0.0002%
Impact in 2042 (as % of Transport Sector Emissions Ceiling)		0.001%

Note 1 Target under Commission Implementing Decision (EU) 2020/2126 of 16 December 2020 on setting out the annual emission allocations of the Member States for the period from 2021 to 2030 pursuant to Regulation (EU) 2018/842 of the European Parliament and of the Council.

12.4.1.3 GHGA Significance of Effects

The TII guidance states that the following two factors should be considered when determining significance:

- The extent to which the trajectory of GHG emissions from the project aligns with Ireland's GHG trajectory to net zero by 2050; and
- The level of mitigation taking place.

The level of mitigation described in Section 12.5 has been taken into account when determining the significance of the proposed development's GHG emissions. According to the TII significance criteria described in Section 12.2.3.4 and Table 12.4 the significance of the GHG emissions during the construction and operational phase is minor adverse**.**

In accordance with the EPA guidelines (EPA, 2022), the above significance equates to a significance of effect of GHG emissions during the construction and operational phase which is ***direct, long-term, negative*** and ***slight***, which is overall ***not significant*** in EIA terms.

12.4.2 Climate Change Risk Assessment

12.4.2.1 Construction Phase

A detailed CCRA of the construction phase has been scoped out, using the principles discussed in Section 12.2.4 and detailed in Section 12.4.2.2. There are no predicted residual medium or high risk vulnerabilities to climate change hazards; therefore, a detailed CCRA is not required (TII,

2022a). However, consideration has been given to the proposed development's vulnerability to the following climate change hazards with best practice mitigation measures proposed in Section 12.5:

- Flood Risk due to increased precipitation, and intense periods of rainfall. This includes fluvial and pluvial flooding. The Flood Risk Assessment (SSFRA) carried out for the proposed development by Barrett Mahony Consulting Engineers concluded that the site is considered to be within Flood Zone C which indicates that coastal, fluvial or pluvial flooding is not a significant risk at the project location. However, best practice mitigation measures are to be implemented as per Section 12.5;
- Increased temperatures potentially causing drought, wildfires and prolonged periods of hot weather;
- Reduced temperatures resulting in ice or snow; and
- Major Storm Damage – including wind damage.

12.4.2.2 Operational Phase

In order to determine the vulnerability of the proposed development to climate change the sensitivity and exposure of the development to various climate hazards must first be determined. The following climate hazards have been considered in the context of the proposed development: flooding (coastal, pluvial, fluvial), extreme heat, extreme cold, wildfire, drought, extreme wind, lightning, hail, landslides and fog.

The sensitivity of the proposed development to the above climate hazards is assessed irrespective of the project location. Table 12.10 details the sensitivity of the proposed development on a scale of high (3), medium (2) and low (1). Once the sensitivity has been established the exposure of the proposed development to each of the climate hazards is determined, this is the likelihood of the climate hazard occurring at the project location and is also scored on a scale of high (3), medium (2) and low (1). The product of the sensitivity and exposure is then used to determine the overall vulnerability of the proposed development to each of the climate hazards as per Table 12.5. The results of the vulnerability assessment are detailed in Table 12.10.

Table 12.10 Climate Change Vulnerability Assessment

Climate Hazard	Sensitivity	Exposure	Vulnerability
Flooding (Coastal, Pluvial, Fluvial)	1 (Low)	2 (Medium)	2 (Low)
Extreme Heat	1 (Low)	2 (Medium)	2 (Low)
Extreme Cold	1 (Low)	2 (Medium)	2 (Low)
Wildfire	1 (Low)	1 (Low)	1 (Low)
Drought	1 (Low)	1 (Low)	1 (Low)
Extreme Wind	1 (Low)	1 (Low)	1 (Low)
Lightning & Hail	1 (Low)	1 (Low)	1 (Low)
Landslides	1 (Low)	1 (Low)	1 (Low)
Fog	1 (Low)	1 (Low)	1 (Low)

The sensitivity and exposure of the area was determined with reference to a online tools (Think Hazard! (GFDRR, 2023) and the Landslide Susceptibility Mapping (GSI, 2024) and with input from the various discipline specialists on the project team (Barret Mahony Consulting Engineers). It was concluded that the proposed development does not have any significant vulnerabilities to the identified climate hazards as described in the below sections. All vulnerabilities are classified as low. There are no residual medium or high risk vulnerabilities to climate change hazards and therefore a detailed CCRA is not required (TII, 2022a).

Flooding

A Site Specific Flood Risk Assessment (SSFRA) for the proposed development was undertaken by Barrett Mahony Consulting Engineers, and is submitted with this planning application. The SSFRA concluded that the site is considered to be within Flood Zone C which indicates that coastal, fluvial or pluvial flooding is not a risk at the project location. As detailed in Section 3.3. of the SSFRA, the drainage for the development has been designed to allow for a 20% increase in rainfall in future years as a result of climate change and is in line with the *"Medium Risk"* RCP4.5 scenario (2021-2050). Therefore, the sensitivity to pluvial flooding has been categorised as 2 (Medium) as the design mitigates the medium risk future scenario. Appropriate SUDS measure have been incorporated into the design of the proposed development, with bioretention areas, a detention basin, tree pits, permeable paving, blue and green roofs and attenuation tanks, and limiting the discharge flow using Hydro brake flow control. The site slopes downhill and rainwater on impermeable surfaces from any surcharging manhole will be channelled along kerbed edges to break outs in the kerb and into existing attenuation tanks or other SuDS features. Overland flows are therefore contained within the site in a controlled manner without risk to the residential buildings on site. Therefore, the risk of flooding at the proposed development is overall considered low.

Extreme Wind, Fog, Lightning & Hail

In relation to extreme winds, the buildings has been designed to the appropriate standards to adequately account for the relevant wind loadings and lightning protection. Hail and fog are not predicted to significantly affect the buildings due to their design.

Wildfires

In relation to wildfires, the Think Hazard! tool developed by the Global Facility for Disaster Reduction and Recovery (GFDRR, 2023), indicates that the wildfire hazard is classified as low for the Dublin area. This means that there is between a 4% to 10% chance of experiencing weather that could support a problematic wildfire in the project area that may cause disruptions and low but tangible risk of life and property loss in any given year. Future climate modelling indicates that there could be an increase in the weather conditions which are favourable to fire conditions, these include increases in temperature and prolonged dry periods. However, due to the project location in a suburban area the risk of wildfire is significantly lessened and it can be concluded that the proposed development is of low vulnerability to wildfires.

Landslides

Landslide susceptibility mapping developed by Geological Survey Ireland (GSI, 2024) indicates that the proposed development location is within an area that has a low susceptibility to landslides and there are no recorded historical landslide events at the project location. It can be concluded that the occurrence of landslides is a low risk to the proposed development site.

Extreme Temperatures (Heat & Cold) & Drought

In relation to extreme temperatures, both extreme heat and extreme cold, these have the potential to impact the building materials and some related infrastructure. However, the building materials selected at the detailed design stage will be of high quality and durability. The heating and cooling of the building will be able to respond to instances of extreme temperature. Therefore, extreme temperatures are not considered a significant risk.

In relation to drought, planting material for the proposed development landscaping is typical of the locality and is generally tolerant of climatic zones which experience variable warmer and cooler conditions. An existing hedgerow system with established young/semi-mature trees will be retained and its presence is indicative of tolerance of the drier conditions County Dublin experiences (relative to the remainder of Ireland). Therefore the sensitivity to drought is considered low and the vulnerability is also low.

Summary

Overall, the proposed development has at most low vulnerabilities to the identified climate hazards as per the methodology in Section 12.2.4. Therefore, no detailed CCRA is required for the purposes of this EIA.

12.4.2.3 CCRA Significance of Effects

With design mitigation in place as referenced above, there are no significant risks to the proposed development as a result of climate change. In accordance with the EPA Guidelines (EPA, 2022), the significance of effect of the impacts to the proposed development as a result of climate change are ***direct, long-term, negative*** and ***imperceptible***, which is overall ***not significant*** in EIA terms***.***

12.5 Mitigation Measures

12.5.1 Construction Phase Mitigation

Embodied carbon of materials and construction activities will be the primary source of climate impacts during the construction phase, based on the assessment with reference to information provided by the design team. During the construction phase the following best practice measures (which are also included in the CEMP) shall be implemented on site to prevent significant GHG emissions and reduce impacts to climate:

C_1: Creating a demolition and construction program which allows for sufficient time to determine reuse and recycling opportunities for demolition wastes;

C_2: Appointing a suitably competent demolition contractor who will undertake a pre-demolition audit detailing resource recovery best practice and identify materials/building components that can be reused/recycled;

C_3: Materials will be reused on site where possible;
C_4: Prevention of on-site or delivery vehicles from leaving engines idling, even over short periods;
C_5: Ensure all plant and machinery are well maintained and inspected regularly;
C_6: Minimising waste of materials due to poor timing or over ordering on site will aid to minimise the embodied carbon footprint of the site;
C_7: Waste materials will be re-used on site where possible and where re-use is not possible on-site they will be sent off-site for recycling, re-use or recovery;
C_8: Material choices and quantities will be reviewed during detailed design, to identify and implement lower embodied carbon options where feasible.
C_9: Sourcing materials locally where possible to reduce transport related CO_2 emissions; and
C_10: The project shall review and determine compliance with the requirements set out in the EU Taxonomy Regulation (Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088 (Text with EEA relevance)) in relation to circular economy. This is specific to reuse, recycling and material recovery of demolition and construction wastes.

Specific measures are proposed to reduce GHG emissions during the construction phase:

C_11: Based on the waste volumes and disposal methods presented in Ch. 19 Material Assets – Waste, an estimated total of approx. 12,686 tonnes of excavated material generated during the construction phase of the development site can be reused. This will be further refined at detailed design and construction stage. This material re-use represents GHG savings of 53.4 tCO_2e; and
C_12: Other materials such as concrete, bricks, tiles and ceramics, metals and timber may be diverted from waste processing by recycling or disposal in landfill, and can instead be reused on-site. This will reduce the associated CO_2 by approximately 20.6 tonnes.

In terms of impact on the proposed development due to climate change, during construction the Contractor will be required to mitigate against the effects of extreme rainfall/flooding through site risk assessments and method statements. The Contractor will also be required to mitigate against the effects of extreme wind/storms, temperature extremes through site risk assessments and method statements. All materials used during construction will be accompanied by certified datasheets which will set out the limiting operating temperatures. Temperatures can affect the performance of some materials, and this will require consideration during construction. During construction, the Contractor will be required to mitigate against the effects of fog, lighting and hail through site risk assessments and method statements.

12.5.2 Operational Phase Mitigation

As per the *Energy & Sustainability Report* (EDC Engineering, 2024) (submitted under separate cover with this planning application) the development will be a Nearly Zero Energy Building (NZEB) in accordance with the Building Regulations Technical Guidance Document L 2021 and the relevant sustainability policies within the Dún Laoghaire-Rathdown County Development

Plan 2022-2028. The report details a number of measures that have been incorporated into the design of the proposed development to reduce the impact on climate wherever possible. Such measures included in the proposed development to reduce the impact to climate from energy usage are that the residential units are designed to:

C_13: Achieve a minimum Building Energy Ratio (BER) of A2 (25-50 kwh/m^2/yr with CO_2 emissions <10 kg CO_2/m^2 per year).;
C_14: Achieve air permeability performance of 3 m^3/m^2/hr @ 50 Pa;
C_15: Ensure thermal bridging details are designed to achieve thermal bridging factors of 0.08W/m^2K;
C_16: Achieve Energy Performance Coefficient (EPC) < 0.30;
C_17: Achieve Carbon Performance Coefficient (CPC) < 0.35;
C_18: Meet or exceed minimum U-Value standards identified in Part L 2022 Dwellings;
C_19: Utilise a combination of low energy strategies such as air to water heat pumps, a continuous whole-house ventilation system and solar photovoltaic energy will be decided and implemented to achieve A2 BER Rating;
C_20: Provide an appropriate combination of technologies to ensure energy consumption is in line with Part L 2022 Dwellings requirements;
C_21: Ensure that the use of natural daylight is maximised to reduce the need for artificial lighting;
C_22: Ensure that where artificial lighting is required this will be in the form of energy efficient light fittings within in the dwellings and common areas, with latter being on dusk-dawn profiles;
C_23: Optimise Solar gains to reduce space heating demands during the winter months, whilst limiting summertime solar gains to reduce space cooling demands;
C_24: Use natural/passive ventilation in circulation areas, car parks and other common areas to remove the need for mechanical ventilation;
C_25: Ensure all in-curtilage parking spaces will be capable of being fitted with EV charging points. All off-curtilage spaces will be ducted for EV charging, with 10% fitted out from the outset;
C_26: Provide high quality secure short-term and long-term bicycle parking facilities and the connectivity of onsite pedestrian and cycle infrastructure has been incorporated into the design of the proposed development; and
C_27: Maximises connectivity to existing and proposed public transport bus and luas services, providing sustainable alternative to private vehicles.

The above measures will assist in optimising the energy consumed by the proposed development and will also have the benefit of reducing the impact to climate during the operational phase of the proposed development.

Some measures have been incorporated into the design of the proposed development to mitigate the impacts of future climate change. For example, adequate attenuation and drainage as discussed in Section 12.5.1 have been incorporated to avoid potential flooding impacts due to increased rainfall events in future years. These measures have been considered when assessing the vulnerability of the proposed development to climate.

12.6 Residual Impacts

The impact to climate as a result of a proposed development must be assessed as a whole for all phases. The proposed development will result in some impacts to climate through the release of GHGs. TII state that the crux of assessing significance is "*not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050*". The proposed development has proposed some best practice mitigation measures specified in Section 12.5 and is committing to reducing climate impacts where feasible. As per the assessment criteria in Table 12.4 the residual impact of the proposed development in relation to GHG emissions is considered ***direct, long-term, negative*** and ***slight***, which is overall ***not significant*** in EIA terms.

In relation to climate change vulnerability, it has been assessed that there are no significant risks to the proposed development as a result of climate change. The residual effect of climate change on the proposed development is considered ***direct, long-term, negative*** and ***imperceptible***, which is overall ***not significant*** in EIA terms.

12.7 Monitoring

It is considered that in light of this assessment, there is no requirement for monitoring during the construction and operational phases and so no monitoring is proposed.

12.8 Reinstatement

Not applicable to climate.

12.9 Interactions

Climate has the potential to interact with a number of other environmental attributes.

12.9.1 Land, Soils, Geology and Hydrology

The impact of flood risk has been assessed and the surface water drainage network will be designed to cater for increased rainfall in future years as a result of climate change. The effect of the interactions between climate and land, soils, geology and hydrology (Ch.9) are ***direct, short-term, negative*** and ***imperceptible*** during the construction phase and ***direct, long-term, negative*** and ***imperceptible*** during the operational phase, which is overall ***not significant*** in EIA terms.

12.9.2 Air Quality

Air quality (Ch.11) and climate have interactions due to the emissions from the burning of fossil fuels during the construction and operational phases generating both air quality and climate impacts. Air quality modelling outputs are utilised within the Climate Chapter. There is no impact on climate due to air quality; however, the sources of impacts on air quality and climate are strongly linked.

12.9.3 Traffic and Transportation

During the construction and operational phases, there is the potential for interactions between climate and traffic (for more information see Ch.18 Traffic and Transportation). Vehicles accessing the site will result in emissions of CO_2, a greenhouse gas. The effects of the proposed development on air quality are assessed by reviewing the change in annual average daily traffic on roads close to the site. In this assessment, the effects of the interactions between traffic and climate are considered to be ***direct, short-term, negative*** and ***not significant*** during the construction phase and ***direct, long-term, negative*** and ***not significant*** during the operational phase, which is overall ***not significant*** in EIA terms.

12.9.4 Waste

Waste (Ch.19) management measures will be put in place to minimise the amount of waste entering landfill, which has higher associated embodied carbon emissions than other waste management such as recycling. The effect of the interactions between waste and climate are considered to be ***direct, short-term, negative*** and ***not significant*** during the construction phase and ***direct, long-term, negative*** and ***not significant*** during the operational phase, which is overall ***not significant*** in EIA terms.

12.10 Cumulative Effects

With respect to the requirement for a cumulative assessment PE-ENV-01104 (TII, 2022a) states that "*the identified receptor for GHG Assessment is the global climate and impacts on the receptor from a project are not geographically constrained, the normal approach for cumulative assessment in EIA is not considered applicable.*".

By presenting the GHG impact of a project in the context of its alignment to Ireland's trajectory of net zero and any sectoral carbon budgets, this assessment has demonstrated the potential for the proposed development to affect Ireland's ability to meet its national carbon reduction target. Therefore, the assessment approach is considered to be inherently cumulative. The cumulative impact of the proposed development in relation to GHG emissions is considered ***direct, long-term, negative*** and ***slight***, which is overall ***not significant*** in EIA terms.

12.11 The 'Do Nothing' Effect

Under the Do Nothing Scenario construction works associated with the proposed development will not take place. Impacts from increased traffic volumes and associated emissions from the proposed development will also not occur. The climate baseline will continue to develop in line with the identified trends (see Section 12.3).

12.12 Difficulties Encountered

There were no difficulties encountered in compiling this assessment.

12.13 References

Barrett Mahony Consulting Engineers (2024) Flood Risk Assessment

Standard Method of Measurement (CESSM) (2013) Carbon and Price Book database

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Government of Ireland (2022) Climate Action Plan 2023

The Greenhouse Gas Protocol (2004) A Corporate Accounting and Reporting Standard, Revised Edition

Highways England (2021) UK Design Manual for Roads and Bridges (DMRB) Volume 11 Environmental Assessment, Section 3 Environmental Assessment Techniques, Part 14 LA 114 Climate

ILTP (2024) Traffic and Transportation Assessment

Institute of Environmental Management & Assessment (IEMA) (2020a) EIA Guide to: Climate Change Resilience and Adaptation

Institute of Environmental Management & Assessment (IEMA) (2020b) GHG Management Hierarchy

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Met Éireann (2023a) 2023 Climate Statement

Met Éireann (2023b) TRANSLATE: One Climate Resource for Ireland. [Online] Available at: https://www.met.ie/science/translate

One Click LCA Ltd. (2023) Carbon Designer for Ireland Tool

Science Based Targets initiative (SBTi) (2024a) Science Based Targets initiative - About Us. [Online] Available at: https://sciencebasedtargets.org/about-us

Science Based Targets initiative (SBTi) (2024b) Science Based Targets Dashboard (beta). [Online] Available at: https://sciencebasedtargets.org/target-dashboardTransport Infrastructure Ireland (TII) (2023) GE-GEN-01101: Guide to the Implementation of Sustainability for TII Projects

Transport Infrastructure Ireland (TII) (2022a) PE-ENV-01104: Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document

Transport Infrastructure Ireland (TII) (2022b) PE-ENV-01105: Climate Assessment Standard for Proposed National Roads

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13.0 NOISE AND VIBRATION

13.1 Introduction

The following chapter presents an assessment of the impacts of the proposed mixed-use development on lands at the Former Central Mental Hospital, Dundrum Road, Dundrum, Dublin 14, in terms of noise and vibration in the local environment.

The principal objectives of the noise and vibration assessment will be to specify appropriate threshold values and mitigation measures to ensure that the effect on the environment is minimised. The assessment for noise and vibration is based on the most up to date applicable guidance and assessment documents available both nationally and internationally.

The noise and vibration assessment has been prepared by Abe Scheele (AWN Consulting, Acoustic Consultant) holds a City and Guilds Level 1 and 2 in Sound Engineering and City and Guilds Music Technology and has completed the Institute of Acoustics (IOA) Diploma in Acoustics and Noise Control. Abe has been working in the field of acoustics since 2016. He is experienced in environmental, building and architectural acoustics. He has knowledge of surveying, computer modelling, impact assessment of environmental noise and architectural acoustic assessments for various sectors including, industrial, commercial, and residential.

This Chapter was reviewed by Leo Williams (AWN Consulting, Senior Acoustic Consultant) who holds a BAI and MAI in Mechanical & Manufacturing Engineering, a Diploma in Acoustics and Noise Control and is a Member of the Institute of Acoustics. Leo has specialised in acoustics since 2014 and has extensive knowledge in the field of environmental noise and vibration impact assessment and noise modelling.

Noise and vibration will be considered in terms of two aspects. The first is the outward effect of the development (i.e. the potential effect of the buildings and commercial activities on existing sensitive receptors in the study area), and the second is the inward effect of the existing noise and vibration sources on the development itself. A full project description is included in Chapter 5 of this Environmental Impact Assessment Report (EIAR).

13.2 Methodology

The study has been undertaken using the following methodology:

- A review of the most applicable standards and guidelines has been conducted in order to set a range of acceptable noise and vibration criteria for the construction and operational phases of the proposed development;
- A desk-top assessment of the expected baseline noise environment has been carried out based on available noise mapping, and historical noise monitoring in the wider area of the development site has been reviewed, in order to characterise the receiving noise environment;
- Predictive calculations have been performed to estimate the likely noise emissions during the construction phase of the proposed development at the nearest noise sensitive locations (NSLs) to the site;
- Predictive calculations have been performed to assess the potential impacts associated with the operation of the development at the most NSLs surrounding the development site;

- An assessment has been completed of potential cumulative impacts that may arise as a result of the proposed development and other existing or proposed plans and projects;
- A schedule of mitigation measures has been proposed, where relevant, to control the noise and vibration emissions associated with both the construction and operational phases of the proposed development; and
- The inward effect of noise from the surrounding environment into the proposed residential buildings has also been assessed to determine the requirements for additional noise mitigation to ensure a suitable internal noise environment for residential amenity.

13.2.1 Construction Phase

13.2.1.1 Criteria for Assessing Construction Noise Impacts

There is no published statutory Irish guidance relating to the maximum permissible noise level that may be generated during the construction phases of a project. Local authorities normally control construction activities by imposing limits on the hours of operation and consider noise limits at their discretion.

In the absence of specific noise limits, appropriate criteria relating to permissible construction noise levels for a development of this scale may be found in the British Standard BS 5228 – 1: 2009+A1:2014: Code of practice for noise and vibration control on construction and open sites – Noise.

The approach adopted here calls for the designation of a NSL into a specific category (A, B or C) based on exiting ambient noise levels in the absence of construction noise. This then sets a threshold noise value that, if exceeded at this location, indicates a potential significant noise impact is associated with the construction activities.

This document sets out guidance on permissible noise levels relative to the existing noise environment. Table 3.1 sets out the values which, when exceeded, signify a potential significant effect at the façades of residential receptors, as recommended by BS 5228-1:2009+A1:2014.

Table 3.1: Example thresholds of potential significant effect at dwelling

Assessment category and threshold value period (L_{Aeq})	Threshold value, in decibels (dB)		
	Category A[1]	Category B[2]	Category C[3]
Night-time (23:00 to 07:00hrs)	45	50	55
Evenings and weekends[4]	55	60	65
Daytime (07:00 - 19:00) and Saturdays (07:00 – 13:00hrs)	65	70	75

[1] Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are less than these values.
[2] Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are the same as category A values.
[3] Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than category A values.
[4] 19:00 – 23:00 weekdays, 13:00 – 23:00 Saturdays and 07:00 – 23:00 Sundays.

It should be noted that this assessment method is only valid for residential properties, and if applied to commercial premises without consideration of other factors, may result in an excessively onerous thresholds being set.

Fixed Limits

BS 5228-1:2009+A1:2014 gives several examples of acceptable limits for construction or demolition noise, the most simplistic being based upon the exceedance of fixed noise limits. For example, paragraph E.2 states: -

> *"Noise from construction and demolition sites should not exceed the level at which conversation in the nearest building would be difficult with the windows shut."*

Paragraph E.2 goes on to state: -

> *"Noise levels, between say 07.00 and 19.00 hours, outside the nearest window of the occupied room closest to the site boundary should not exceed: -*
>
> *70 decibels (dBA) in rural, suburban areas away from main road traffic and industrial noise;*
> *75 decibels (dBA) in urban areas near main roads in heavy industrial areas".*

Proposed Threshold Levels for Noise

Taking into account the proposed documents outlined above and making reference to the baseline noise environment monitored around the development site (see Section 13.3), BS 5228-1:2009+A1:2014 has been used to inform the assessment approach for construction noise, in line with the ABC method.

Interpretation of the Construction Noise Levels (CNL)

In order to assist with interpretation of CNL, Table 13.2 includes guidance as to the likely magnitude of impact associated with construction activities, relative to the threshold value. This guidance is taken from Table 3.16 of *DMRB: Noise and Vibration* (UKHA 2020) and adapted to include the EPA EIAR Guidelines.

Table 13.2: Interpretation of CNL at dwelling

Impact Guidelines for Noise Impact Assessment Significance (Adapted from DMRB)	CNL per Period	EPA EIAR Guidelines	Determination
Negligible	Below or equal to baseline noise level	Not Significant	Depending on range of CNL and baseline noise level
Minor	Above baseline and below or equal to CNL	Slight to Moderate	
Moderate	Above CNL and below or equal to CNL +5 dB	Moderate to Significant	
Major	Above CNL +5 dB	Significant to Very Significant	

The adapted DMRB guidance outlined will be used to assess the predicted construction noise levels at NSLs and comment on the likely impacts during the construction stages.

Construction Vehicular Traffic

In order to assist with interpretation of construction traffic noise, Table 3.3 includes guidance as to the likely magnitude of impact associated with changes in traffic noise levels along an existing road. This guidance is taken from Table 3.17 of *DMRB: Noise and Vibration* (UKHA 2020).

Table 3.3: Likely effect associated with change in traffic noise level – construction noise (DMRB 2020)

Increase in Traffic Noise Level (dB)	Magnitude of Impact	Duration
<1.0	Negligible	>10 days/nights over 15 consecutive day/nights & >40 days over 6 consecutive months
1.0 – 2.9	Minor	
3 – 4.9	Moderate	
<5.0	Major	

The DMRB guidance outlined will be used to assess the predicted increases in traffic levels on public roads associated with the proposed development and comment on the likely impacts during the construction stage.

13.2.1.2 Criteria for Assessing Construction Vibration Impacts

Vibration standards come in two varieties: those dealing with human comfort and those dealing with cosmetic or structural damage to buildings. For the purpose of the proposed development, the range of relevant criteria used for surface construction works for both building protection and human comfort are expressed in terms of Peak Particle Velocity (PPV) in mm/s.

Peak Particle Velocity (PPV)

PPV is commonly used to assess the structural response of buildings to vibration. Reference to the following documents has been made for the purposes of this assessment in order to discuss appropriate PPV limit values: -

- British Standard BS 7385: 1993: *Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration*, and;
- British Standard BS 5228: 2009 +A1 2014: *Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration* (BS5228-2).

BS7385 and BS5228-2:2009+A1:2014 advise that, for soundly constructed residential properties and similar structures that are generally in good repair, a threshold for minor or cosmetic (i.e. non-structural) damage should be taken as a peak component particle velocity (in frequency range of predominant pulse) of 15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz and 50 mm/s at 40 Hz and above for transient vibration. Where the dynamic loading caused by continuous vibration is such as to give rise to dynamic magnification due to resonance,

especially at the lower frequencies where lower guide values apply, then the guide values in Table B.2 of BS5228-2:2009+A1:2014 might need to be reduced by up to 50%. On a cautious basis, therefore, continuous vibration limits are set as 50% of those for transient vibration across all frequency ranges.

The documents note that minor structural damage can occur at vibration magnitudes that are greater than twice those presented in Table 13.4. Major damage to a building structure is possible at vibration magnitudes greater than four times the values set out in the Table. It should be noted that these values refer to the vibration at base of the building.

Table 13.4 sets out the limits as they apply to vibration frequencies below 4 Hz, where the most conservative limits are required. At higher frequencies, the limit values for transient vibration within Table B.2 of BS5228-2:2009+A1:2014 will apply, with similar reductions applied for continuous vibration and those for protected structures. External to the SHD application area there are three buildings which are protected buildings, namely the main hospital building, the chapel and the infirmary building.

Table 13.4: Recommended construction vibration thresholds for buildings

Structure Type	Allowable vibration (in terms of PPV) at closest part of sensitive property to source of vibration, at frequency of ≤4 Hz	
	Transient vibration	Continuous vibration
Reinforced or framed structures. Industrial and heavy commercial buildings	50 mm/s	25 mm/s
Unreinforced or light framed structures. Residential or light commercial-type buildings	15 mm/s	7.5 mm/s
Protected and Historic Buildings[5]	6 – 15 mm/s	3 – 7.5 mm/s
Identified Potentially Vulnerable Structures and Buildings with Low Vibration Threshold	3 mm/s	

As per BS5228-2:2009+A1:2014, below a frequency of 4 Hz where a high displacement is associated with a relatively low component PPV, a maximum displacement of 0.6 mm (zero to peak) should be used.

Human Perception

People are sensitive to vibration stimuli at levels orders of magnitude below those which have the potential to cause any cosmetic damage to buildings. There are no current standards that provide guidance on typical ranges of human response to vibration in terms of PPV for continuous or intermittent vibration sources.

BS5228-2:2009+A1:2014 provides a useful guide relating to the assessment of human response to vibration in terms of PPV. Whilst the guide values are used to compare typical human response to construction works, they tend to relate closely to general levels of vibration perception from other general sources.

[5] The relevant threshold value to be determined on a case by case basis. Where sufficient structural information is unavailable at the time of assessment, the lower value within the range will be used.

Table 13.5 below summarises the range of vibration values and the associated potential effects on humans.

Table 13.5: Guidance on effects of human response to PPV magnitudes

Vibration level, PPV	Effect
0.140 mm/s	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies. At lower frequencies people are less sensitive to vibration.
0.3 mm/s	Vibration might be just perceptible in residential environments.
1 mm/s	It is likely that a vibration level of this magnitude in residential environments will cause complaint.

Vibration typically becomes perceptible at around 0.15 to 0.3 mm/s and may become disturbing or annoying at higher magnitudes. However, higher levels of vibration are typically tolerated for single events or events of short-term duration, particularly during construction projects and when the origin and or the duration of vibration is known. For example, piling can typically be tolerated at vibration levels up to 2.5 mm/s if adequate public relations are in place, or up to 12 mm/s during blasting, when advance warning is given and timeframes are known. These values refer to the day-time periods only.

During surface construction works (excavation, etc.) the vibration limits set within Table 13.5 would be perceptible to building occupants and have the potential to cause subjective effects. The level of effect is, however, greatly reduced when the origin and time frame of the works are known and limit values relating to structural integrity are adequately communicated. In this regard, the use of clear communication and information circulars relating to planned works, their duration and vibration monitoring can significantly reduce vibration effects to the neighbouring properties.

Interpretation of the Human Response to Vibration

In order to assist with interpretation of vibration thresholds, Table 13.6 presents the significance table relating to potential impacts to building occupants during construction, based on guidance from BS5228-2:2009+A1:2014.

Table 13.6: Guidance on effects of human response to PPV magnitudes

Criteria	Impact Magnitude	Significance Rating
≥10 mm/s PPV	Very High	Very Significant
≥1 mm/s PPV	High	Moderate to Significant
≥0.3 mm/s PPV	Medium	Slight to Moderate
≥0.14 mm/s PPV	Low	Not significant to Slight
<0.14 mm/s PPV	Very Low	Imperceptible to Not significant

13.2.2 Operational Phase

13.2.2.1 Criteria for Assessing Operational Noise Impacts

The main potential source of outward noise from the proposed development will relate to traffic flows to and from the development site onto the public roads and activities from vehicular movements on site, including car park, etc. There will also be a variety of electrical and mechanical plant required to service the development. The relevant guidance documents used to assess potential operational noise and vibration impacts are summarised in the following sections.

Change in Traffic Noise Levels

In the absence of any Irish guidelines or standards describing the effects associated with changes in road traffic noise levels, reference has been made to the *DMRB Noise and Vibration* (UKHA 2020). This document provides magnitude rating tables relating to changes in road traffic noise. The document suggests that, during the year of opening, the magnitude of impacts between the Do Minimum and the Do Something scenarios are likely to be greater compared to the longer term period (fifteen years post-opening), when people become more habituated to the noise level change. It shows that small changes in noise levels are not normally noticeable, whereas an increase of 10 dB would be described as a doubling of loudness. In summary, the assessment looks at the impact with and without development at the nearest noise sensitive locations.

Table 13.7: Likely impact associated with short-term change in traffic noise level (DMRB 2020)

Change in Noise Level (dB L_{A10})	Short to medium-term magnitude	EPA criteria magnitude of impact
<1.0	Negligible	Imperceptible
1.0 to 2.9	Minor	Not Significant
3 – 4.9	Moderate	Significant
>5.0	Major	Significant

Table 13.6: Likely impact associated with long-term change in traffic noise level (DMRB 2020)

Change in Noise Level (dB L_{A10})	Subjective Reaction	Long-Term Term Magnitude	EPA Classification Magnitude of Impact
< 3.0	Barely Perceptible	Negligible	Not Significant
3 – 4.9	Perceptible	Minor	Slight
5 – 9.9	Up to a doubling of loudness	Moderate	Moderate
10+	More than a doubling of loudness	Major	Significant - Profound

The criteria above reflect the key benchmarks that relate to human perception of sound. A change of 3 dB(A) is generally considered to be the smallest change in environmental noise that is perceptible to the human ear. A 10 dB(A) change in noise represents a doubling or

halving of the noise level. The difference between the minimum perceptible change and the doubling or halving of the noise level is split to provide greater definition to the assessment of changes in noise level.

Plant Noise

Once a development of this nature becomes fully operational, a variety of electrical and mechanical plant will be required to service the development. Most of this plant will be capable of generating noise to some degree. Some of this plant may operate 24 hours a day, and hence would be most noticeable during quiet periods (i.e. overnight). Noisy plant with a direct line-of-sight to noise sensitive properties would potentially have the greatest effect. Plant contained within plant rooms has the least potential for impact, once consideration is given to appropriate design of the space.

The following wording would be considered typically suitable for a planning condition related to operational noise (plant) associated with a development of this nature: -

> *"Noise levels from the Proposed Development should not be so loud, so continuous, so repeated, of such duration or pitch or occurring at such times as to give reasonable cause for annoyance to a person in any premises in the neighbourhood or to a person lawfully using any public space. In particular the rated noise levels from the Proposed Development shall not constitute reasonable grounds for complaint as provided for in B.S. 4142. Method for rating industrial noise affecting mixed residential and industrial area.*
> *Reason: In order to ensure a satisfactory standard of development, in the interests of residential amenity."*

The typical planning condition outlined above related to noise emissions from mechanical plant items makes reference to the British Standard BS 4142: 2014+A1:2019: *Methods for Rating and Assessing Industrial and Commercial Sound.* This document is the industry standard method for analysing building services plant noise emissions to residential NSLs and is the document used by planning authorities in their standard planning conditions and also in complaint investigations.

BS 4142 describes methods for rating and assessing sound of an industrial and/or commercial nature. The methods described in this British Standard use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.

For an appropriate BS 4142 assessment, it is necessary to compare the measured external background noise level (i.e. the $L_{A90,T}$ level measured in the absence of plant items) to the rating level ($L_{Ar,T}$) of the various plant items, when operational. Where noise emissions are found to be tonal, impulsive in nature or irregular enough to attract attention, BS 4142 also advises that a penalty be applied to the specific level to arrive at the rating level.

The subjective method for applying a penalty for tonal noise characteristics outlined in BS 4142 recommends the application of a 2 dB penalty for a tone which is just perceptible at the NSL, 4 dB where it is clearly perceptible, and 6 dB where it is highly perceptible.
The following definitions, as discussed in BS 4142, are summarised below: -

"ambient noise level, $L_{Aeq,T}$"	is the noise level produced by all sources including the sources of concern, i.e. the residual noise level plus the specific noise of mechanical plant, in terms of the equivalent continuous A-weighted sound pressure level over the reference time interval [T].
"residual noise level, $L_{Aeq,T}$"	is the noise level produced by all sources excluding the sources of concern, in terms of the equivalent continuous A-weighted sound pressure level over the reference time interval [T].
"specific noise level, $L_{Aeq,T}$"	is the sound level associated with the sources of concern, i.e. noise emissions solely from the mechanical plant, in terms of the equivalent continuous A-weighted sound pressure level over the reference time interval [T].
"rating level, $L_{Ar,T}$"	is the specific sound level plus any adjustments for the characteristic features of the sound (e.g. tonal, impulsive or irregular components);
"background noise level, $L_{A90,T}$"	is the sound pressure level of the residual noise that is exceeded for 90% of the time period T.

If the rated plant noise level is +10 dB or more above the pre-existing background noise level, then this indicates that complaints are likely to occur and that there will be a significant adverse effect. A difference of around +5 dB is likely to be an indication of an adverse effect, depending on the context.

The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse effect or a significant adverse effect. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low effect.

It is important to note that cumulative plant noise levels from the proposed development site must be designed so as to meet the relevant noise criteria set at a given sensitive receptor location.

Internal Noise at Receivers within the Development

To ensure there is no adverse inward impact on the future inhabitants of the proposed development itself, it is appropriate to refer to internal noise targets derived from BS 8233: 2014: *Guidance on Sound Insulation and Noise Reduction for Buildings.* The recommended indoor ambient noise levels are set out in Table 13.9 and are based on annual average data; that is to say, they omit occasional events where higher intermittent noisy events may occur.

Table 13.9: Professional Practice Guidance on Planning and Noise (ProPG) Internal Noise Levels (BS 8233:2014)

Activity	Location	Day (07:00 to 23:00hrs) dB $L_{Aeq,16hr}$	Night (23:00 to 07:00hrs) dB $L_{Aeq,8hr}$
Resting	Living room	35 dB $L_{Aeq,16hr}$	-
Dining	Dining room/ area	40 dB $L_{Aeq,16hr}$	-

Activity	Location	Day (07:00 to 23:00hrs) dB $L_{Aeq,16hr}$	Night (23:00 to 07:00hrs) dB $L_{Aeq,8hr}$
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16hr}$	30 dB $L_{Aeq,8hr}$ 45 dB $L_{Amax,T}$[6]

For the purposes of this assessment, it is appropriate to derive external assessment criteria based on the internal criteria noted in the table above. This is done by factoring in the degree of noise reduction afforded by a partially open window. The typical level of sound reduction offered by a partially open window is typically applied as 15 dB[7] to 18 dB .

Based on the guidance outlined the BS8233 standard, the following external noise levels would be considered reasonable in order to achieve suitable internal noise levels within the nearest residential properties:

- Daytime (07:00 to 23:00 hrs): 55 dB $L_{Aeq,15mins}$
- Night-time (23:00 to 07:00 hrs): 45 dB $L_{Aeq,15mins}$

Dún Laoghaire – Rathdown County Council Noise Action Plan (NAP)

The Dublin Agglomeration Environmental Noise Action Plan December 2018 – July 2023 Volume 2 – Dún Laoghaire – Rathdown County Council (NAP) states the following regarding how noise should be dealt with in the planning system for new noise sensitive developments:

> *"In the scenario where new residential development or other noise sensitive development is proposed in an area with an existing climate of environmental noise, there is currently no clear national guidance on appropriate noise exposure levels. The EPA has suggested that in the interim that Action Planning Authorities should examine the planning policy guidance notes issued in England titled, 'ProPG Planning and Noise: Professional Practice Guidance on Planning and Noise'. This has been produced to provide practitioners with guidance on a recommended approach to the management of noise within the planning system in England."*

In accordance with this NAP policy, an Acoustic Design Statement (ADS) has been prepared to comply with the requirements of this policy (see Section 13.5) of this chapter.

ProPG: Planning & Noise

The *Professional Practice Guidance on Planning & Noise* (ProPG) document was published in May 2017. The document was prepared by a working group comprising members of the Association of Noise Consultants (ANC), the Institute of Acoustics (IOA) and the Chartered Institute of Environmental Health (CIEH). Although not a government document, since it's adoption it has been generally considered as a best practice guidance and has been widely adopted in the absence of equivalent Irish guidance.

[6] The document comments that the internal $L_{AFmax,T}$ noise level may be exceeded no more than 10 times per night without a significant impact occurring.

[7] Section 2.33 of ProPG, additional information can be found in the DEFRA NANR116: *'Open/Closed Window Research' Sound Insulation Through Ventilated Domestic Windows'*

The ProPG outlines a systematic risk based 2 stage approach for evaluating noise exposure on prospective sites for residential development. The two primary stages of the approach can be summarised as follows:

- Stage 1 – Comprises a high level initial noise risk assessment of the proposed site considering either measured and or predicted noise levels; and,
- Stage 2 – Involves a full detailed appraisal of the proposed development covering four "key elements" that include:

    - Element 1 - Good Acoustic Design Process;
    - Element 2 - Noise Level Guidelines;
    - Element 3 - External Amenity Area Noise Assessment
    - Element 4 - Other Relevant Issues

A key component of the evaluation process is the preparation and delivery of an ADS which is intended for submission to the planning authority. This document is intended to clearly outline the methodology and findings of the Stage 1 and Stage 2 assessments, so as the planning authority can make an informed decision on the permission. ProPG outlines the following possible recommendations in relation to the findings of the ADS:

A. Planning consent may be granted without any need for noise conditions;
B. Planning consent may be granted subject to the inclusion of suitable noise conditions;
C. Planning consent should be refused on noise grounds in order to avoid significant adverse effects ("avoid"); or,
D. Planning consent should be refused on noise grounds in order to prevent unacceptable adverse effects ("prevent").

Section 3.0 of the ProPG provides a more detailed guide on decision making to aid local authority planners on how to interpret the findings of an accompanying ADS.

A summary of the ProPG approach is illustrated in Figure 13.1.

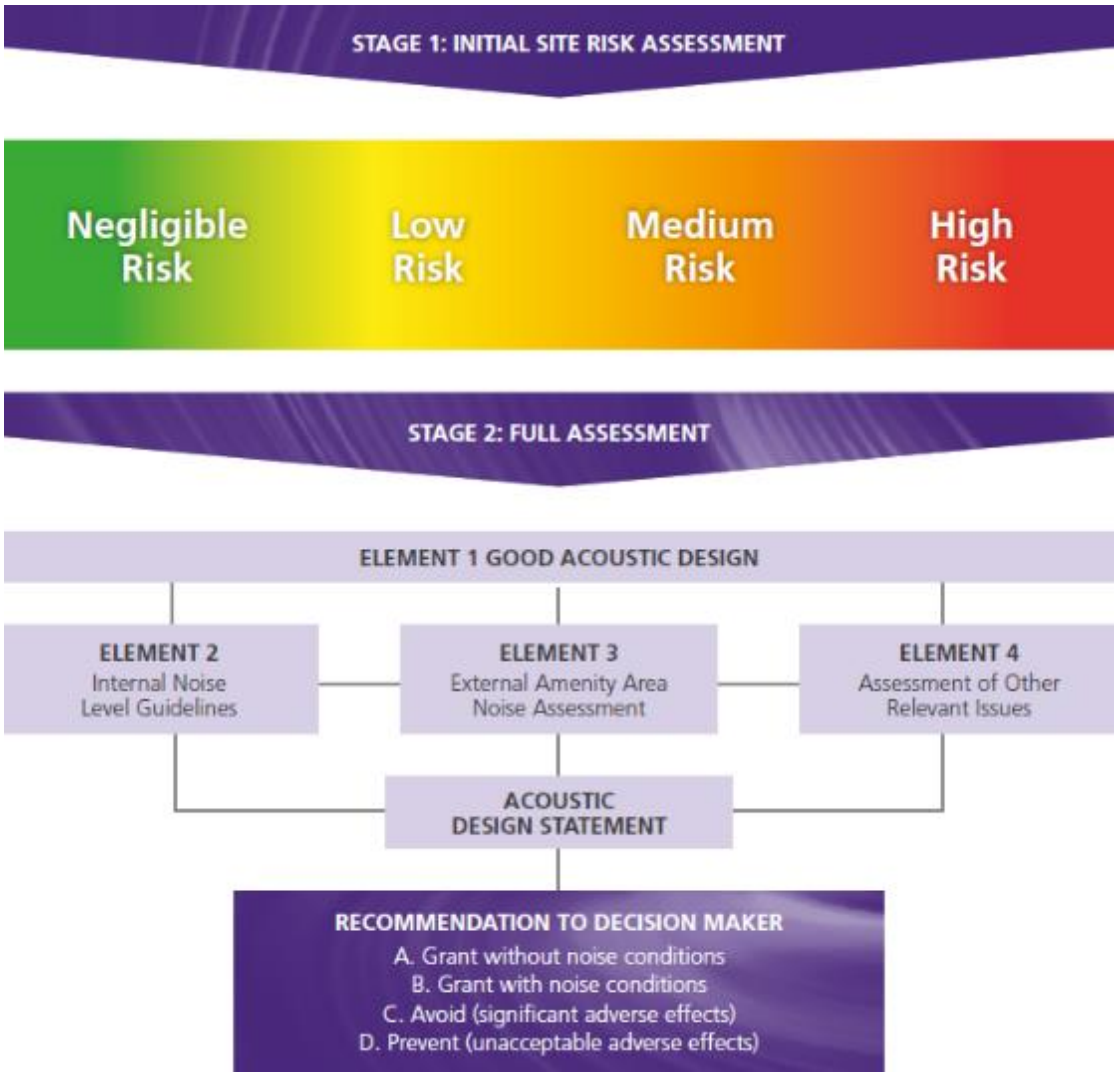

Figure 13.1 ProPG Approach (Source: ProPG)

WHO Environmental Noise Guidelines for Europe

The World Health Organisation (WHO) published the *Environmental Noise Guidelines for the European Region* in October 2018. The objective of these guidelines is to provide recommendations for protecting human health from exposure to environmental noise from transportation, wind farm and leisure sources of noise. The guidelines present recommendations for each noise source type in terms of L_{den} and L_{night} levels above which there is risk of adverse health risks.

However, it should be noted that the WHO guideline values referred to here are recommended to serve as the basis for a policy-making process to allow evidence-based public health orientated recommendations. They are not intended to be noise limits and the WHO document states the following regarding the implementation of the guidelines,

> *"The WHO guideline values are evidence-based public health-oriented recommendations. As such, they are recommended to serve as the basis for a policy-making process in which policy options are considered. In the policy decisions on reference values, such as noise limits for a possible standard or legislation, additional*

considerations – such as feasibility, costs, preferences and so on – feature in and can influence the ultimate value chosen as a noise limit. WHO acknowledges that implementing the guideline recommendations will require coordinated effort from ministries, public and private sectors and nongovernmental organizations, as well as possible input from international development and finance organizations. WHO will work with Member States and support the implementation process through its regional and country offices."

It is therefore not intended to refer to the WHO guidelines in an absolute sense as part of this assessment and it will be a decision for national and local policy makers to adopt the WHO guidelines and propose noise limits for use.

13.2.2. Criteria for Assessing Operational Vibration Impacts

There are no noteworthy sources of vibration associated with the operational stage, therefore vibration criteria have not been specified.

13.3 Baseline Environment

13.3.1 Site Area Description

The existing noise and vibration environments across the development site and in the vicinity of the nearest existing noise sensitive locations are dictated by transportation sources in the study area including the existing roads and Luas movements. After development of the proposed units this is expected to remain the same. The receiving environment in terms of baseline noise and vibration is expected to be the same for the CMH Masterplan development.

13.3.2 Desk Based Study of Published Data

In order to quantify noise emissions across the existing site reference has been made to the noise maps prepared by Transport Infrastructure Ireland (TII). The following noise maps have been referred to when carrying out the desk based assessment of the baseline noise environment:

- Round 4 Noise Maps for Roads – Dublin Agglomeration, and;
- Round 4 Noise Maps for Rail – Dublin Agglomeration.

The above noise maps are provided for the overall day / evening / night period in terms of L_{den} and for the night-time period in terms of L_{night}.

All data has been taken from the EPA Mapping website http://gis.epa.ie.

Figure 13.2 to Figure 13.5 present the predicted noise levels across the development site for road and LUAS traffic in terms of L_{den} and L_{night}.

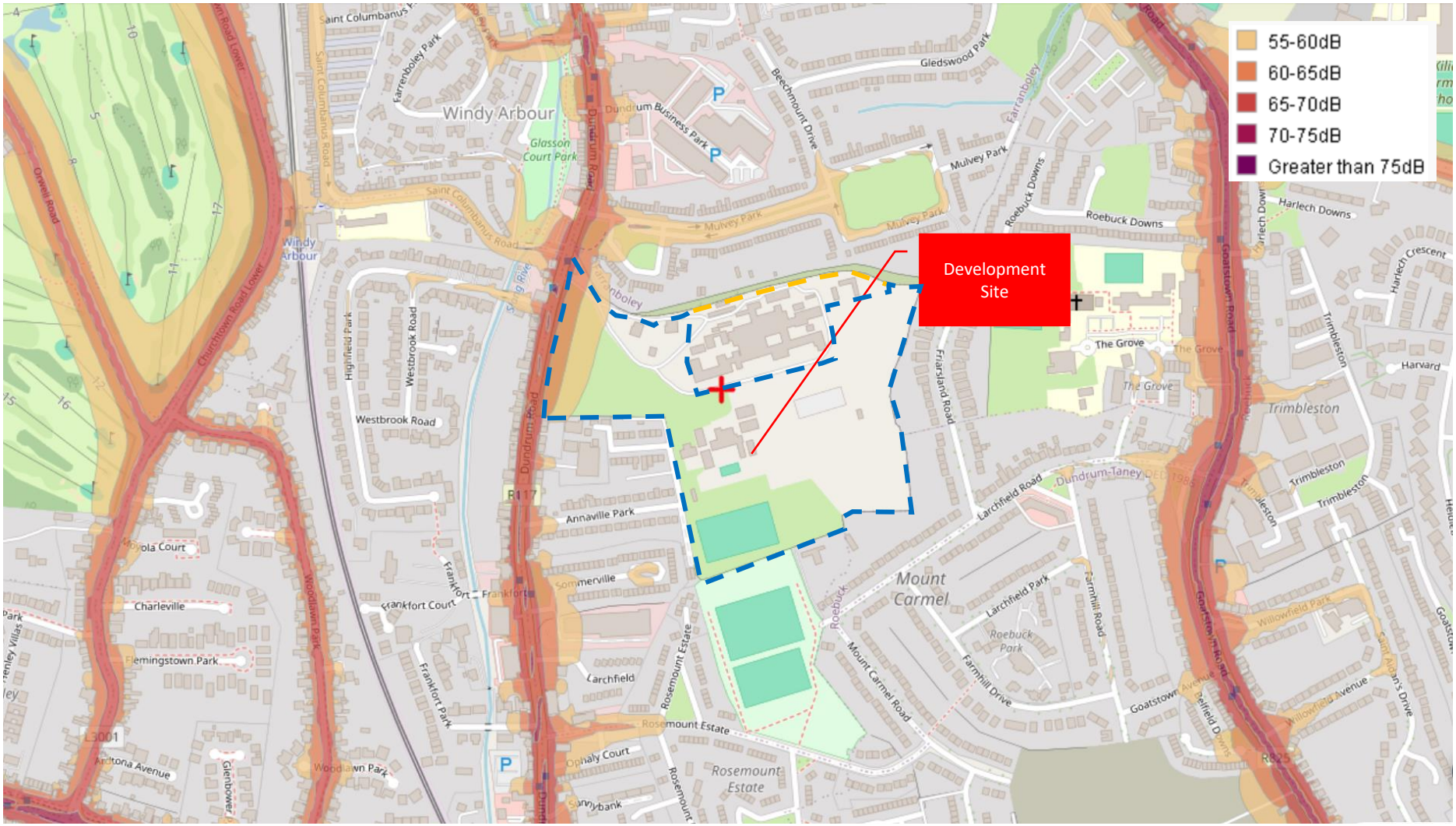

Figure 13.2 **L_{den} Road Traffic Noise Levels (approximate site boundary)**

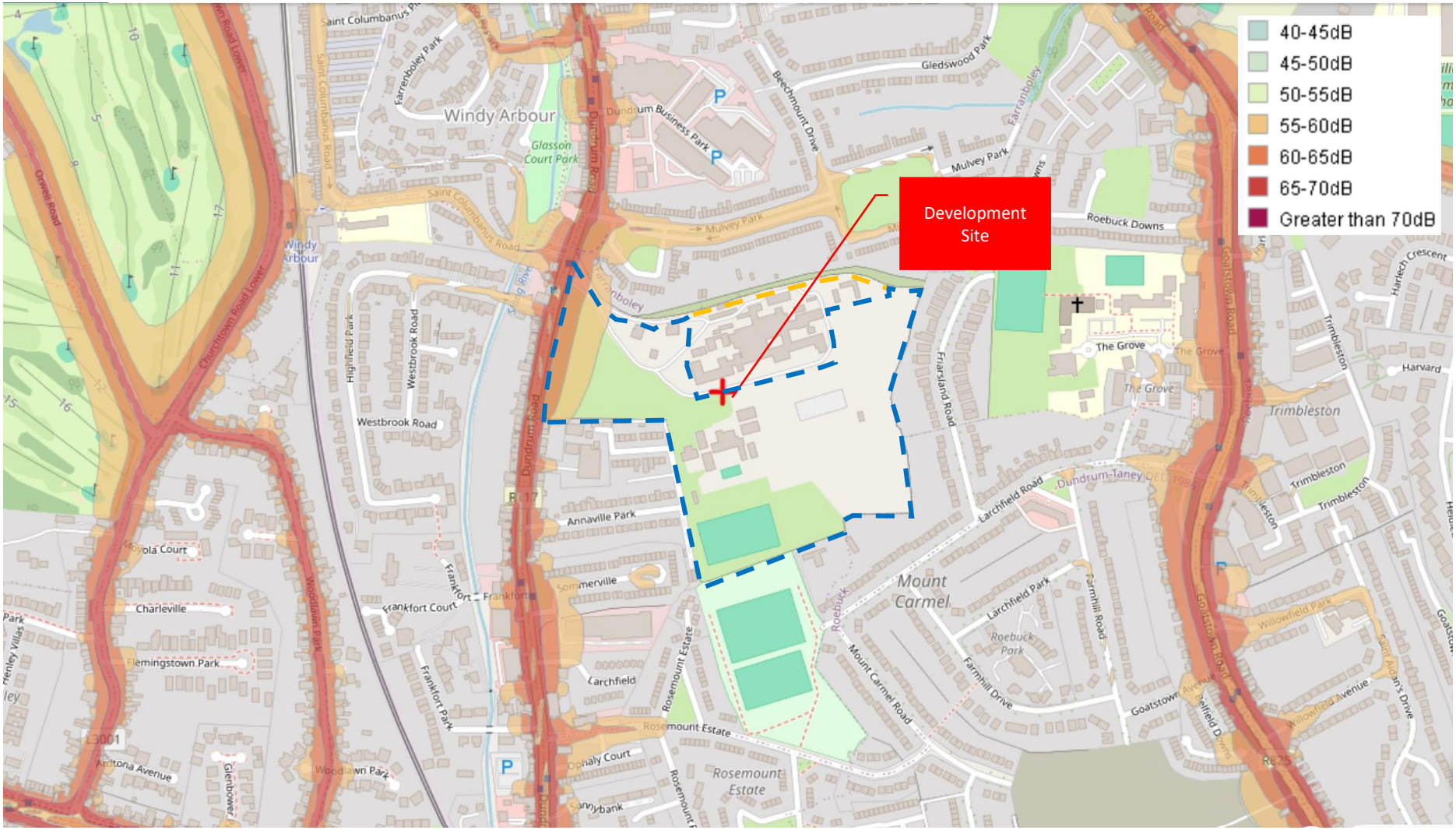

Figure 13.3 **L_{night} Road Traffic Noise Levels (approximate site boundary)**

Figure 13.4 L_{den} **Rail Traffic Noise Levels (approximate site boundary)**

Figure 13.5 **L_{night} Rail Traffic Noise Levels (approximate site boundary)**

The mapping contours suggest that road traffic on the R117 Dundrum Road has the potential to be the dominant noise at the development along the western boundary. It is noted that the development site is located within the 65 to 69 dB L_{den} contour and 55 to 64 dB L_{night} contours within 10m distance from the R117 Dundrum Road. Between 10m to 20m distance from the R117 Dundrum Road, the development site is located within the 60 to 64 dB L_{den} contour and the 50 to 54 dB L_{night} contour. Between 20m to 60m distance from the R117 Dundrum Road, the development site is located within the 55 to 59 dB L_{den} contour. At distances typically greater than 30m from the R117 the development site is located in the <45 to 50 dB L_{night} contour. Note that the L_{den} values translate to an approximate value of 58 to 62 dB L_{day} across the site.

Table 13.10 summarises the current noise levels across the site for each source type.

Table 13.10 Noise Levels at development site

Noise Source	L_{den}, dB	L_{night}, dB	L_{day}, dB [8]
Road Traffic	55 – 69	<45 – 64	53 – 67
Rail Traffic	<45	<45	<45
Total	55 – 69	<48 – 64	54 – 67

13.3.3 Environmental Noise Survey

An environmental noise survey has been conducted in order to quantify noise emissions across the existing site. The external survey was conducted in general accordance with ISO1996-2:2017 Acoustics - Description, Measurement and Assessment of Environmental Noise -- Determination of Environmental Noise Levels. Specific details are set out in the following sections.

The attended baseline noise monitoring was undertaken during January and February 2024. As access to the proposed development site is limited due to security restrictions, unattended baseline noise monitoring undertaken during October 2021,when restrictions were eased and non-essential retail reopened and employees were permitted to return to work in businesses if working from home was not an option has been used. To quantify any potential reductions in baseline noise levels due to the pandemic, a review of desk based study of published data was also carried out.

Combined, the 2021 unattended survey along with the desk based study of published data and 2024 attended surveyquantify the existing and future varying noise environment across the proposed development site, namely:

- The desk based study of the noise environment giving consideration to the noise levels across the site for the inward noise assessment, i.e. worst case scenario as noise levels will be higher than those measured in the noise surveys as there will be no screening from the perimeter wall to the western boundary, and

13.3.3.1 Measurement Parameters

The noise survey results are presented in terms of the following parameters:

[8] L_{day} has been estimated by assuming day and evening noise levels are equal

L_{Aeq} is the equivalent continuous sound level. It is a type of average and is used to describe a fluctuating noise in terms of a single noise level over the sample period.

L_{AFmax} is the instantaneous maximum sound level measured during the sample period using the 'F' time weighting.

L_{A90} is the sound level that is exceeded for 90% of the sample period. It is typically used as a descriptor for background noise.

The 'A' suffix denotes the fact that the sound levels have been 'A-weighted' in order to account for the non-linear nature of human hearing. All sound levels in this report are expressed in terms of decibels (dB) relative to 2×10^{-5} Pa.

13.3.3.2 Environmental Noise Survey

The location of the proposed development site is such that the noise climate is dominated by road traffic. Two unattended noise surveys were undertaken in order to obtain long term measurements. Four attended monitoring locations were undertaken in the close vicinity of the proposed site, representative of the existing noise environment at the closest NSLs.

Survey Locations

The measurement location was selected on the proposed site as discussed below.

Location UN1 Unattended monitoring. Approximately 10m from the western boundary of site. Located to capture the noise environment for proposed Block 9 and 10 dwellings for inward impact assessment.

Location UN2 Unattended monitoring. Approximately 20m from the southern boundary of site. Located to capture the noise environment for proposed Block 2 to Block 8 dwellings for plant noise assessment.

Location AN1 Attended monitoring approximately 10 m from south western boundary of site, in line with facades of nearest NSLs (Annaville Grove). Representative of the nearest NSLs situated to the west of the site.

Location AN2 Attended monitoring. Approximately 20 m from western boundary of site along R117 Dundrum Road. Approximately 10m from the road. Representative of the nearest NSLs situated to the west of the site.

Location AN3 Attended monitoring approximately 60 m from northern boundary of site, in line with facades of nearest NSLs to the north (Mulvey Park). Representative of the nearest NSLs situated to the north of the site.

Figure 13.6 shows map indicating the monitoring locations. Photographs were not permitted on the existing site due to security restrictions.

Figure 13.6 Indicating noise survey locations (© Google Earth June 2024) approximate redline boundary

Personnel and Monitoring Equipment

AWN Consulting performed the unattended and attended measurements during the survey period. Measurements were performed using Rion NL-52 Sound Level Meters.

The noise survey was carried out between the following survey periods:

- Unattended noise monitoring at UN1 was undertaken between 13:04 hrs 5 October 2021 to 11:51 hrs 11 October 2021.
- Unattended noise monitoring at UN2 was undertaken between 13:25 hrs 5 October 2021 to 12:03 hrs 11 October 2021.
- Attended noise monitoring was undertaken at AN1 to AN3 between 12:55 hrs to 16:00 hrs on 29 January 2024 and 20:20 hrs to 01:00 hrs 15 February 2024.

Table 13.11 Instrumentation details

Location	Manufacturer	Model	Serial Number	Calibration Data
UN1	Rion	NL-52	1076330	20 October 2020
UN2	Rion	NL-52	764925	9 September 2021
Calibrator	Brüel & Kjaer	4231	2460007	26 March 2021
AN1 to AN3	Brüel & Kjaer	2250	2818091	22 November 2023

Location	Manufacturer	Model	Serial Number	Calibration Data
Calibrator	Brüel & Kjaer	4231	2615338	25 October 2023

Sample periods were 15 minutes. Before and after the survey, the measurement instruments were check calibrated using a Brüel & Kjaer 4231 Sound Level Calibrator.

The weather during the survey periods were generally dry and calm and was not considered to have had a detrimental effect on the noise measurements.

UN1 Results

The weather during the survey period was generally dry and calm and was not considered to have had a detrimental effect on the noise measurements Table 13.12 and Table 13.13 presents a summary the unattended noise levels measured at location UN1.

Table 13.12 Summary of unattended noise measurements at UN1

Day	Sound Pressure Level (dB re. $2x10^{-5}$ Pa)								
	Daytime (07:00 to 19:00 hrs)			Evening (19:00 to 23:00 hrs)			Night (07:00 to 23:00 hrs)		
	L_{Aeq}	L_{A90}	L_{AFMax}	L_{Aeq}	L_{A90}	L_{AFMax}	L_{Aeq}	L_{A90}	L_{AFMax}
Tues, October 5th	54	50	78	52	46	70	46	35	68
Wed, October 6th	52	48	83	52	48	82	47	37	68
Thurs, October 7th	53	48	84	50	44	70	46	34	68
Fri, October 8th	54	47	79	51	45	80	48	38	74
Sat, October 9th	52	47	77	50	43	77	45	34	71
Sun, October 10th	51	45	77	50	44	73	45	34	67
Mon, October 11th	55	48	73	--	--	--	--	--	--
Average	53[9]	48[10]	--	51[8]	45[9]	--	46[8]	35[9]	--

Daytime noise levels were found to range between 51 to 55 dB $L_{Aeq,12hour}$, evening noise levels were in the range between 50 to 52 dB $L_{Aeq,4hour}$, while night-time noise levels were in the were in the range between 45 to 48 dB $L_{Aeq,8hour}$. Dominant noise sources noted during the survey were road traffic on the R117 Dundrum Road.

Table 13.13 presents a summary of the daytime and night-time frequency spectrum at UN1.

Table 13.13 Summary of L_{Aeq} unattended noise measurements at UN1

Date	Period	Octave Band Centre Frequency (Hz)						Overall $L_{Aeq,T}$ dB
		125	250	500	1k	2k	4k	
Tues, October 5th	Day	51	49	48	50	45	39	53
	Night	43	41	39	41	35	29	44
Wed, October 6th	Day	52	49	47	49	44	37	52
	Night	42	41	40	41	35	30	44
Thurs, October 7th	Day	52	50	47	48	43	35	52
	Night	41	41	39	41	35	26	44

[9] Logarithmically averaged.
[10] Arithmetically averaged.

Date	Period	Octave Band Centre Frequency (Hz)						Overall $L_{Aeq, T}$ dB
		125	250	500	1k	2k	4k	
Fri, October 8th	Day	51	49	47	49	43	34	52
	Night	42	43	42	43	38	31	46
Sat, October 9th	Day	50	48	46	48	43	33	51
	Night	41	41	39	42	36	25	44
Sun, October 10th	Day	50	48	46	48	42	31	50
	Night	41	40	38	40	33	23	43
Mon, October 11th	Day*	52	49	48	50	45	37	53
Worst Case Day		52	49	48	50	45	37	53
Worst Case Night		42	43	42	43	38	31	46

The L_{AFmax} values were measured at 15 minute intervals over the duration of the unattended monitoring survey. Figure 13.7 presents the distribution of the magnitude of L_{AFmax} events during the night period.

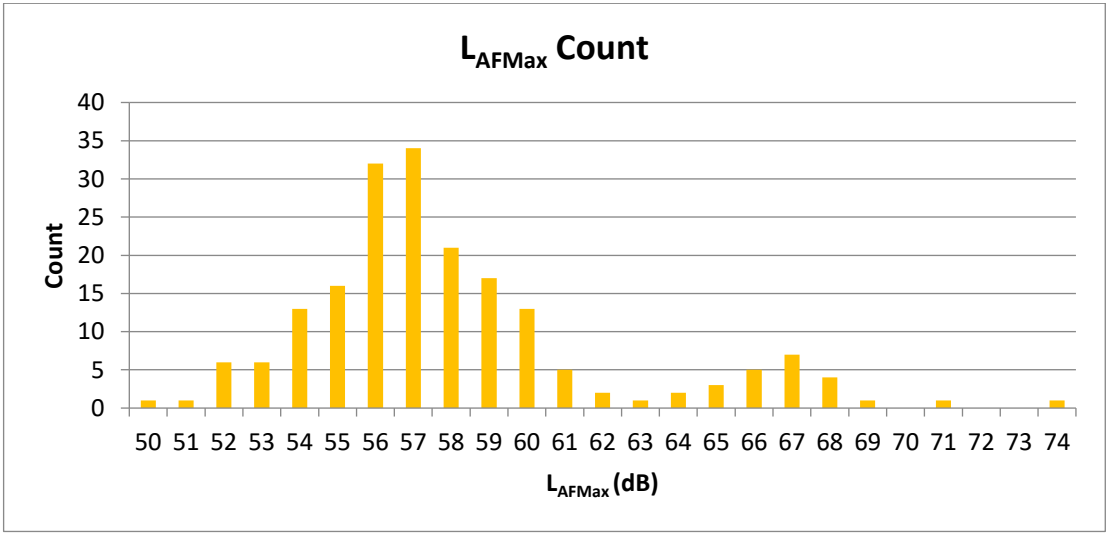

Figure 13.7: Number of L_{AFmax} events at each decibel level measured during the night period at location UN1

Spectral data has been derived from an arithmetic averaging of the frequency content measured at the most frequent magnitude of 57 dB L_{AFmax}.

UN2 Results

The weather during the survey period was generally dry and calm and was not considered to have had a detrimental effect on the noise measurements. Table 13.14 presents a summary the unattended noise levels measured at location UN2.

Table 13.14: Summary of unattended noise measurements at UN1

Day	Sound Pressure Level (dB re. $2x10^{-5}$ Pa)								
	Daytime (07:00 to 19:00 hrs)			Evening (19:00 to 23:00 hrs)			Night (07:00 to 23:00 hrs)		
	L_{Aeq}	L_{A90}	L_{AFMax}	L_{Aeq}	L_{A90}	L_{AFMax}	L_{Aeq}	L_{A90}	L_{AFMax}
Tues, October 5th	50	46	73	45	43	60	39	36	64
Wed, October 6th	49	43	76	48	43	92	40	36	62
Thurs, October 7th	46	43	74	40	37	60	36	32	58
Fri, October 8th	46	41	75	42	39	67	43	36	66
Sat, October 9th	45	41	75	42	39	66	37	34	55
Sun, October 10th	46	40	79	42	40	74	39	35	61
Mon, October 11th	45	42	64	--	--	--	--	--	--
Average	47[1]	42[2]	--	44[1]	40[2]	--	40[1]	35[2]	--

Daytime noise levels were found to range between 45 to 50 dB $L_{Aeq,12hour}$, evening noise levels were in the range between 40 to 48 dB $L_{Aeq,4hour}$, while night-time noise levels were in the were in the range between 36 to 43 dB $L_{Aeq,8hour}$. Dominant noise sources noted during the survey were road traffic on the local roads and the R117 Dundrum Road in the distance.

AN1 Results

The survey results for Location AN1 are presented in Table 13.15 Distant Road traffic noise from the R117 Dundrum Road and local traffic were the dominant noise source noted at this location with occasional noise from the nearby sports field and birdsong audible during the measurement periods.

Table 13.15: Measured noise levels at location AN1

Date	Period	Measurement Period	Measured Noise Levels, dB re $2x10^{-5}$ Pa		
			L_{Aeq}	L_{AFMax}	L_{AF90}
29 January 2024	Day	13:38	50	68	41
		14:38	49	65	40
		15:40	51	67	40
15 February 2024	Evening/Night	21:17	50	70	37
		23:42	36	51	34
		00:44	36	49	33

Daytime ambient noise levels at this location were dominated by road traffic noise from the R117 Dundrum Road. Ambient noise levels were between 49 to 51 dB $L_{Aeq,15min}$ and background noise levels were between 40 to 41 dB $L_{A90,15min}$ during the daytime measurement period.

During the night time period, ambient noise levels at this location were dominated by distant road traffic noise and noise associated with local traffic. Ambient noise levels were of the order of 36 $L_{Aeq,15min}$ and background noise levels were in the range of 33 to 34 dB $L_{A90,15min}$.

No significant level of vibration was noted at this location during site attendance.

AN2 Results

The survey results for Location AN2 are presented in Table 13.16 Road traffic noise from the R117 Dundrum Road was the dominant noise source noted at this location, with birdsong and occasional pedestrian chatter.

Table 13.16: Measured noise levels at location AN2

Date	Period	Measurement Period	Measured Noise Levels, dB re $2x10^{-5}$ Pa		
			L_{Aeq}	L_{AFMax}	L_{AF90}
29 January 2024	Day	13:18	72	82	61
		14:19	71	83	55
		15:21	72	84	61
15 February 2024	Evening/Night	20:56	71	81	58
		23:22	68	84	49
		00:23	67	81	40

Daytime ambient noise levels at this location were dominated by road traffic noise from the R117 Dundrum Road. Ambient noise levels were between 71 to 72 dB $L_{Aeq,15min}$ and background noise levels were between 55 to 61 dB $L_{A90,15min}$ during the daytime measurement period.

During the night time period, ambient noise levels at this location were dominated by distant road traffic noise and noise associated with local traffic. Ambient noise levels were in the range of 67 to 68 $L_{Aeq,15min}$ and background noise levels were in the range of 40 to 49 dB $L_{A90,15min}$.

No significant level of vibration was noted at this location during site attendance.

AN3 Results

The survey results for Location AN3 are presented in Table 13.17 Local road traffic was the dominant noise source. Other noise sources included intermittent road traffic noise, birdsong, and activities within the housing estate.

Table 13.17: Measured noise levels at location AN3

Date	Period	Measurement Period	Measured Noise Levels, dB re $2x10^{-5}$ Pa		
			L_{Aeq}	L_{AFMax}	L_{AF90}
29 January 2024	Day	12:55	49	58	45
		13:59	49	57	45
		14:59	47	59	43
15 February 2024	Evening/Night	20:24	48	63	43
		23:07	45	56	38
		00:02	46	57	37

Daytime ambient noise levels at this location were dominated by intermittent car pass by on local roads. Ambient noise levels were between 47 to 49 dB $L_{Aeq,15min}$ and background noise levels were between 43 to 45 dB $L_{A90,15min}$ during the daytime measurement period.

During the night time period, ambient noise levels at this location were dominated by distant road traffic noise and noise associated with local traffic. Ambient noise levels were in the

range of 45 to 46 $L_{Aeq,15min}$ and background noise levels were in the range of 37 to 38 dB $L_{A90,15min}$.

No significant level of vibration was noted at this location during site attendance.

Outward Noise Impact Assessment of Construction and Operational Plant

At UN2 due to the central positioning of the noise monitoring location on site, the measured noise data gathered at this location is considered representative of the quieter (rear) façades of the closest NSLs overlooking the site i.e. to the north, east, south and southwest of the site. The measured noise data presented for UN2, supplemented by AN2 to AN4 will be used as a worst case scenario in setting the construction noise thresholds and operational plant noise limits for the outward noise assessment.

At those NSLs located to the west of R117 Dundrum Road, the measured noise data from AN1 will be used as a worst case scenario in setting the construction noise thresholds for the outward noise assessment.

Inward Noise Impact Assessment at Block 9 and Block 10

Although the unattended noise monitor at UN1 was positioned at 4m height it was still below the height of the existing perimeter boundary wall facing onto the R117 Dundrum Road (of 4m to 5m height). A barrier correction of 13 dB has been assumed based on the distance between the dominant road traffic noise source, the receiver and barrier, and the height of each. When compared to the EPA maps, the calculated L_{den}, L_{night} and L_{day} are comparable. The assumed noise levels presented in Table 13.18 below will be used as a worst case inward noise impact assessment for facades within 15m of the site boundary to the west i.e. western facades at Block 9 and Block 10.

Table 13.18 Assumed UN1 Noise Levels at Development Site

Origin of Data	Location	Barrier Correction	Noise Levels, dB re 2x10-5 Pa			
			L_{den}, dB	L_{night}, dB	L_{day}, dB	L_{AFmax}, dB
Measured	UN1	+13 dB	69	59	66	70
EPA Maps	UN1	--	69	59	66	--
Assumed	UN1	--	69	59	66	70

Table 13.19 presents a summary of the daytime and night-time frequency spectrum at UN1.

Table 13.19 Summary of daytime and night-time frequency spectrum at UN1

Period	Octave Band Centre Frequency (Hz)						Overall $L_{Aeq,T}$ dB
	125	250	500	1k	2k	4k	
Worst Case Day	65	62	61	63	58	50	66
Worst Case Night	55	56	55	56	51	44	59

The averaged spectral data has then been re-adjusted to the assessment value of 70 dB L_{AFmax}.

Table 13.20 Summary of night-time frequency spectrum at UN1

Overall dB L_{AFmax}	Octave Band Centre Frequency (Hz)					
	125	250	500	1k	2k	4k
70	72	68	66	67	61	54

13.4 Potential Impacts of the Proposed Project

A variety of items of plant will be in use for the purposes of demolition of existing buildings, site clearance including removal of sections of the perimeter wall and general construction. The type and number of equipment will vary between the varying construction phases, and depending on the phasing of the works. There will be vehicular movements to and from the site that will make use of existing roads. Due to the nature of these activities, there is potential for the generation of elevated levels of noise.

During the operational phase, the potential sources of noise are those associated with additional vehicular traffic on public roads, operational plant and building services, and vehicular movements and car parking on-site.

Noise and vibration emissions from the proposed development will vary both in terms of duration and magnitude. The following sections analyse the expected construction and operational phase noise and vibration impacts, both in terms of the proposed assessment criteria and the expected impacts in terms of the significance of effects.

The CMH Masterplan has been included in the construction and operational phase assessments.

13.4.1 Demolition and Construction Phase

A variety of items of plant will be in use for the purpose of demolition, site clearance and construction works. There will also be vehicular movements to and from the site that will make use of existing roads. Due to the nature of these activities, there is potential for the generation of elevated levels of noise in the vicinity of existing noise sensitive properties.

The proposed general construction hours are 08:00 to 19:00 hrs, Monday to Friday and 08:00 to 14:00 hrs on Saturdays. The overall construction duration is expected to be six and a half years approximately.

The demolition and construction phases will be controlled through the use of construction noise threshold values which the contractor will be required to work within as much as is practicable. In this regard, the choice of plant, scheduling of works on site, provision of localised screening and other best practice control measures will be employed.

13.4.1.1 Sensitive Receptors

Noise and vibration impacts will be assessed to the nearest sensitive locations to the proposed development site boundaries, i.e. a worst case assessment of the closest sensitive locations during any of the construction stages. These closest locations are identified in Figure 13.8.

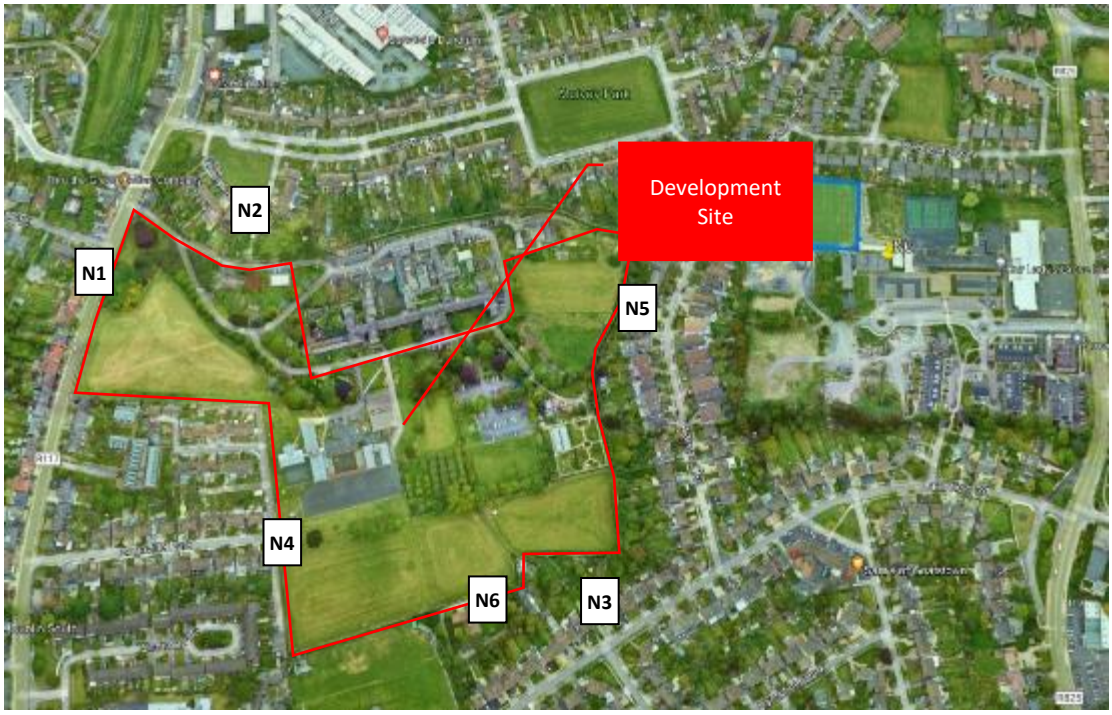

Figure 13.8: Indicating closest noise sensitive locations (© Google Earth June 2024) approximate site boundary

- ***N1:*** Residential NSLs to west along R117 Dundrum Road, approx. 20 m from western boundary of site.
- ***N2***: Mulvey Park residential development approx. 30 m from northern boundary of site.
- ***N3***: Residential NSLs to north of Larchfield Road, approx. 40 m from northern boundary of site.
- ***N4***: Annaville Park residential development, approx. 10m from south-western site boundary.
- ***N5***: Residential NSLs to west along Friarsland Road , approx. 15 m from western boundary of site.
- ***N6:*** Residential NSLs along Larchfield Road, approximately 5m from southern and south-eastern site boundary.

During the construction phase, as a worst-case assessment the closest NSLs within the development site at any stage of construction are: -

- Block 2 residential dwellings, located approximately 10m to Phase 2 northern and eastern boundaries.
- Block 3 residential dwellings, located approximately 60m to Phase 2 eastern boundary.
- Block 4 to 6 residential dwellings, located approximately 10m to Phase 2 southern boundary.
- Block 7 residential dwellings, located approximately 40m to Phase 1 eastern boundary.
- Block 8 to 9 residential dwellings, located approximately 10m to Phase 1 western boundary.
- Block 10 residential dwellings, located approximately 10m to Phase 1 western boundary.

The following construction noise threshold levels are proposed for the construction stage of this development: -

- For residential NSLs to west of proposed site boundary along the R117 Dundrum road, it is considered appropriate to adopt the 75 dB(A) threshold level, given the baseline monitoring carried out, it would indicate that Category B values are appropriate using the ABC method.
- For residential NSLs to north, east, south and southwest of proposed site boundary it is considered appropriate to adopt the 65 dB(A) threshold level, given the baseline monitoring carried out, it would indicate that Category A values are appropriate using the ABC method.
- For clinical NSLs it is considered appropriate to adopt the 70 dB(A) threshold level, given the suburban environment in which the CMH resides.
- For Block 2 to 8 residential NSLs to it is considered appropriate to adopt the 65 dB(A) threshold level, given the baseline monitoring carried out, it would indicate that Category A values are appropriate using the ABC method.
- For Block 10 residential NSLs to it is considered appropriate to adopt the 75 dB(A) threshold level, given the baseline monitoring carried out, it would indicate that Category C values are appropriate using the ABC method.

13.4.1.2 Construction Plant

The construction programme will create typical construction activity related noise onsite. During the construction stage of the proposed works, a variety of items of plant will be in use, such as excavators, lifting equipment, dumper trucks, compressors and generators.

Due to the fact that the construction programme has been established in outline form only, it is difficult to calculate the actual magnitude of noise emissions to the local environment. Indicative ranges of noise levels associated with construction may be calculated in accordance with the methodology set out in BS 5228-1:2009+A1:2014 *Code of Practice for Noise and Vibration Control on Construction and Open Sites – Noise.* This standard sets out sound power / sound pressure levels for plant items normally encountered on construction sites, which in turn enables the prediction of noise levels. However, it is not possible to conduct detailed accurate prediction calculations for the construction phase of a project in support of the EIAR due to the level of variability during different construction stages over short periods of time.

The following section discusses typical worst-case noise levels associated with the Proposed Development and comments on potential noise impacts at distances to the nearest NSLs.

<u>Intrusive Works and High Noise Activities Including Demolition and Basement Excavation</u>
Given the ground conditions it is anticipated that piled foundations will not be required on the site. It is also anticipated that rock breaking will not be required on site given the depth of rock below ground level determined in the Geotechnical Site Investigation.

For works associated with demolition and basement excavations including excavators, concrete crushers, breaking/cutting steel and dump trucks noise levels are typically in the range of 78 to 86 dB L_{Aeq} at 10m.

For construction activity associated with the above activities, a total construction noise level of 89 dB L_{Aeq} at 10m has been used for the purposes of indicative calculations for these activities representing variety over this stage. This would include, for example two items of

plant at 82 dB L_{Aeq} one item of plant at 86 dB L_{Aeq} and one item of plant at 78 dB L_{Aeq} operating simultaneously within one work area resulting in a total noise level of 79 dB L_{Aeq} at 10m.

Utilities and Structural Works Including Foundation Slab Construction

For construction works associated with activities such as site clearance, excavation and structural works including excavators, loaders, dozers, cranes, generators, concreting works. noise levels are typically in the range of 70 to 80 dB L_{Aeq} at 10m.

For ongoing construction activity associated with the above activities, a total construction noise level of 82 and 85 dB L_{Aeq} at 10m has been used for the purposes of indicative calculations for these activities representing variety over this stage. This would include, for example two items of plant at 80 dB L_{Aeq} and three items of plant at 75 dB L_{Aeq} operating simultaneously within one work area resulting in a total noise level of 85 dB L_{Aeq} and up to six items of plant with a noise level of between 70 and 75 dB L_{Aeq} resulting in a total noise level of 82 dB L_{Aeq} at 10m.

Superstructure and Lower Noise Activities

For construction work areas with lower noise levels such as site compounds (for storage, offices and material handling, generators etc.), smaller items of mobile plant (excavators, cranes, dozers), landscaping and concreting works with lower noise emissions, a total construction noise level of 78 dB L_{Aeq} at 10m has been used for the purposes of indicative calculations. This would include, for example one item of plant at 75 dB L_{Aeq} and three items of plant at 70 dB L_{Aeq} operating simultaneously within a work area.

Given the variations of on-site activities and noise levels over any one day and considering that all activities will not operate simultaneously, the values noted above are considered robust for the purposes of assessing potential construction impacts.

13.4.1.3 Indicative Construction Noise Calculations at Varying Distances

The closest external NSLs to the Proposed Development are at distances of approximately 5m to the south and southeast boundaries along Larchfield Road. The remaining closest NSLs are at distances of approximately 10m to 40m. Remaining properties are located at distances greater than 40 m from different work stages.

The closest internal NSLs within the CMH Masterplan are directly adjacent to the site boundaries to the north i.e. the existing main hospital building, the chapel and the infirmary building.

13.21 presents the calculated noise levels at distances between 10m and 100m representing the closest NSLs to the construction works. The calculations assume that plant items are operating for 66%[11] of the time. For the purpose of the assessment, a standard site hoarding of 2.4m high has been included in the calculations for noise sensitive boundaries. Screening from existing buildings have not been included in the calculations. It must be stated that for

[11] This estimate assumes that the plant will operate for approximately 6.5 hours over the proposed 10 hour working period which equates to a 66% on time over a daytime period or 40 minutes over a 1 hour period. The dynamic nature of construction sites is such that this is deemed to be a conservative estimate, particularly for breaking and drilling work.

most of the time, plant and equipment will be a greater distance from the nearest NSLs than those used within the calculations in and consequently will have lower impact. Our assessment is therefore representative of a "worst-case" scenario representing construction activities at a minimum distance from the NSLs.

Table 13.21 Indicative construction noise calculations at varying distances

Construction Programme Activity	Combined L_{Aeq} at 10 m	Predicted construction noise level at a specific distance with plant operating at 66% on-time (dB $L_{Aeq,1hour}$)					
		10 m	15 m	20 m	30 m	50 m	100 m
Initial works stage including intrusive works e.g. basement excavation	89	79	74	71	67	61	54
Utilities and structural works and basement foundation slab construction	85	78	74	67	63	59	53
	82	75	72	64	61	56	50
General site work including site compounds and landscaping	78	71	68	60	57	52	46

The worst-case predicted noise levels detailed in the
13.21 above indicate that at the residential and clinical NSLs at distances greater than 50m from the initial works stage and at distances greater than 15m to 20m from all other works would not be expected to exceed the significance threshold of 65 dB $L_{Aeq,1hr}$. At the residential NSLs overlooking the R117 Dundrum Road, at distances greater than 30m from the initial works stage and at distances greater than 10m to 15m from all other works would not be expected to exceed the significance threshold of 75 dB $L_{Aeq,1hr}$. At these nearest locations the associated construction noise impact is not considered significant.

Comment on Outward Construction Noise for Residential NSLs
Based on the set distances calculated in
13.21 the following comments are made:

- N1 (residential properties) are located approximately 20m from the site boundary. During all construction works after the initial works stage the predicted noise levels is below the significance threshold of 75 dB $L_{Aeq,1h.}$

    - Given the variations of on-site activities and number of plant items during any one phase and the location of works only operating along the closest boundaries for a limited the duration of the works, the calculated noise levels presented are considered to present a worst-case scenario. The effect of impact in the absence of mitigation is estimated to be **negative**, **not significant** and **short term**.

- N2 and N3 (rear facades of residential properties) are located approximately 30m to the north and 40m to the southeast respectively from the closest site boundary and the predicted noise level is above the significance threshold of 65 dB $L_{Aeq,1h}$ during the initial intrusive works stage. During all other construction works the predicted noise levels is below the significance threshold of 65dB $L_{Aeq,1h.}$

- Given the variations of on-site activities and number of plant items during any one phase and the location of works only operating along the closest boundaries for a limited the duration of the works, the calculated noise levels presented are considered to present a worst-case scenario. When the initial works are at distances greater than 50m from the significance threshold of 65 dB $L_{Aeq,1hr}$ will not be exceeded. The effect of impact in the absence of mitigation is estimated to be **negative**, **moderate to significant** and **short term**.

- N4 to N6 (residential properties) are located approximately 5m to 15m approximately to the west (N4), east (N5) and south (N6) from the closest site boundary and the predicted noise level is above the significance threshold of 65 dB $L_{Aeq,1h}$ during all construction works stage.

  - Given the variations of on-site activities and number of plant items during any one phase and the location of works only operating along the closest boundaries for a limited the duration of the works, the calculated noise levels presented are considered to present a worst-case scenario. When the initial works are at distances greater than 50m and all other works are at distances greater than 15m to 20m the significance threshold of 65 dB $L_{Aeq,1hr}$ will not be exceeded. The effect of impact in the absence of mitigation is estimated to be **negative**, **significant to very significant** and **short term**.

The results of the initial assessment indicate that under the 'worst case' assessment scenarios construction activities are likely to exceed the recommended noise threshold levels at the closest NSLs when occurring along the closest boundaries. Noise mitigation measures will therefore be required to reduce potential impacts at these residential properties to avoid significant impacts. Further discussion on mitigation measures is included in Section 13.6.

13.4.1.3 Construction Vibration

Demolition of existing structures will involve careful deconstruction using controlled techniques. There may be a requirement for breaking ground as part of specific demolition procedures, depending on the structure. Potential for vibration impacts during the demolition phase programme are likely to be applicable to the closest receptor locations to the proposed works (N2, N4).

Empirical data for demolition is not provided in the BS 5228- 2:2009+A1:2014 standard, however the likely levels of vibration from this activity is expected to be significantly below the vibration criteria for building damage on experience from other sites. AWN Consulting have previously conducted vibration measurements under controlled conditions, during trial construction works, on a sample site where concrete slab breaking was carried out. The trial construction works consisted of the use of the following plant and equipment when measured at various distances:

- 3 tonne hydraulic breaker on small CAT tracked excavator, and;
- 6 tonne hydraulic breaker on large Liebherr tracked excavator.

Vibration measurements were conducted during various staged activities and at various distances. Peak vibration levels during staged activities using the 3 Tonne Breaker ranged from 0.48 to 0.25 PPV (mm/s) at distances of 10 to 50m respectively from the breaking activities. Using a 6 Tonne Breaker, measured vibration levels ranged between 1.49 to 0.24 PPV (mm/s) at distances of 10m to 50m respectively.

The range of values recorded provides some context in relation typical ranges of vibration generated by construction breaking activity likely required on the proposed site. The range of vibration magnitudes indicate vibration levels at the closest offsite residential NSLs (N2 and N4) and onsite clinical receivers are likely to be below the limits set out in Table 13.4. Vibration levels are also expected to be below a level that would cause disturbance to building occupants, as set out in Table 13.5. The predicted vibration impact during the construction phase is ***short-term, neutral and imperceptible***.

Nonetheless, any demolition activities undertaken on the site will be required to operate below the recommended vibration criteria set out in Table 13.4 during all activities. Further discussion on mitigation measures during this phase are discussed in Section 13.6.

With respect to excavation, potential for vibration impacts during the construction phase programme are likely to be limited given the nature of excavations required.

Considering the low vibration levels at very close distances to the excavation, vibration levels at the nearest buildings are not expected to pose any significance in terms of cosmetic or structural damage. In addition, the range of vibration levels is typically below a level which would cause any disturbance to occupants of nearby buildings.

In this instance, taking account of the distance to the nearest sensitive off-site buildings external to the Proposed Development and the protected structures on-site in the CMH Masterplan, vibration levels at the closest neighbouring buildings are expected to be orders of magnitude below the limits set out in Table 13.4 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 13.5. The predicted vibration effect of impact during the construction phase is ***short-term, neutral and imperceptible***.

13.4.1.4 Construction Traffic

Based on the information provided by Barrett Mahony Civil and Structural Consulting Engineers it is anticipated that no more than 39 HGV peak vehicle movements will be carried out in a day. It is assumed that all of the HGVs with enter / exit the site via R117 Dundrum Road.

An increase of 25% in traffic is required to increase overall traffic noise levels by 1 dB, which is insignificant in the overall context of the noise environment along the R117 Dundrum Road and wider road network in the vicinity of the proposed development. Therefore, the short-term noise environment assumed for this project is expected to be within at least 1 dB of the baseline scenario, which would give a magnitude of increase in traffic noise that is ***not significant***.

Based on the scenario of HGV figures identified above, it is assumed that as a worst-case scenario no more than 30 truck movements (out of the site) will occur in a one hour period. The NSLs are closest to the route at 10m distance along the R117 Dundrum entrance.

The noise level associated with an event of short duration, such as a passing vehicle movement, may be expressed in terms of its Sound Exposure Level (L_{AX}). The mean value of Sound Exposure Level (SEL) for a truck at low to moderate speeds (i.e. 15 to 45km/hr) is of the order of 85 dB L_{AX} at a distance of 5 metres from the vehicle. This figure is based on a series of measurements conducted under controlled conditions. The SEL can be used to calculate the contribution of an event or series of events to the overall noise level in a given period.

The appropriate formula is given below.

$$L_{Aeq,T} = L_{AX} + 10Log_{10}(N) - 10Log_{10}(T) + 20Log_{10}\left(\frac{r_1}{r_2}\right) dB$$

where: -

$L_{Aeq,T}$ is the equivalent continuous sound level over the time period T in seconds).
L_{AX} is the "A-weighted" Sound Exposure Level of the event considered (dB).
N is the number of events over the course of time period T.
r_1 is the distance at which L_{AX} is expressed.
r_2 is the distance to the assessment location.

Using the equation detailed above, the predicted noise level at the nearest residential NSLs is in the order of 58 $L_{Aeq,1hr}$. Levels of this order would not be expected to exceed the significance threshold of 70 dB $L_{Aeq,1hr}$ at the closest residential NSLs along the R117 Dundrum Road.

Reference to the baseline noise levels made at AN2 along the road edge in the vicinity of the site indicates that the calculated noise levels are below the existing baseline and a change in noise level which would be barely perceptible. It should be noted that, in order to assess a worst-case scenario, a large proportion of the daily vehicle numbers have been assumed to depart over an hour long period. Therefore, it is expected in the absence of specific mitigation measures that there will be a ***negative, not significant and short-term*** effect of impact at the closest receptors.

No further mitigation measures would therefore be required.

13.4.2 Operational Phase

Once the proposed development is operational, the potential noise impacts to the surrounding environment are predicted to be minimal. The residential aspect of the development is not expected to generate any significant noise sources over and above those which form part of the existing environment at neighbouring residential areas (road traffic noise, estate vehicle movements, children playing, etc.) and, hence, no significant impact are predicted in this regard.

Due consideration must be given to the nature of the primary noise sources when setting criteria. Potential noise impacts during the operational phase include the following:

- Additional vehicular traffic on surrounding roads;
- Building services plant;

- Deliveries;
- Car parking on-site;
- Childcare facility playground area; and
- Patron Noise from External Seating in Commercial Areas

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

13.4.2.1 Additional Vehicular Traffic on Surrounding Roads

For the purposes of assessing the potential noise impact, it is appropriate to consider the relative increase in noise level associated with traffic movements on existing roads and junctions with and without the proposed development, given that traffic from the development will make use of the existing road network.

A traffic impact assessment relating to the proposed development has been prepared by ILTP Consulting as part of this EIAR (refer to Chapter 18). Figure 13.9 presents the road links external to the proposed development (1-7) and those within the development itself (8 and 9). The results of this assessment have been reviewed to predict any impact of the proposed development on traffic flows in the area. The calculated change in noise levels during Opening Year (2027) and Future Design Years (2042)[12] are summarised in Table 13.22.

[12] ILTP Consulting have assumed that there is no additional background traffic growth between 2024 and 2039. In reality traffic volumes are likely to fall, hence traffic remaining at current levels as presented presents a worse-case scenario.

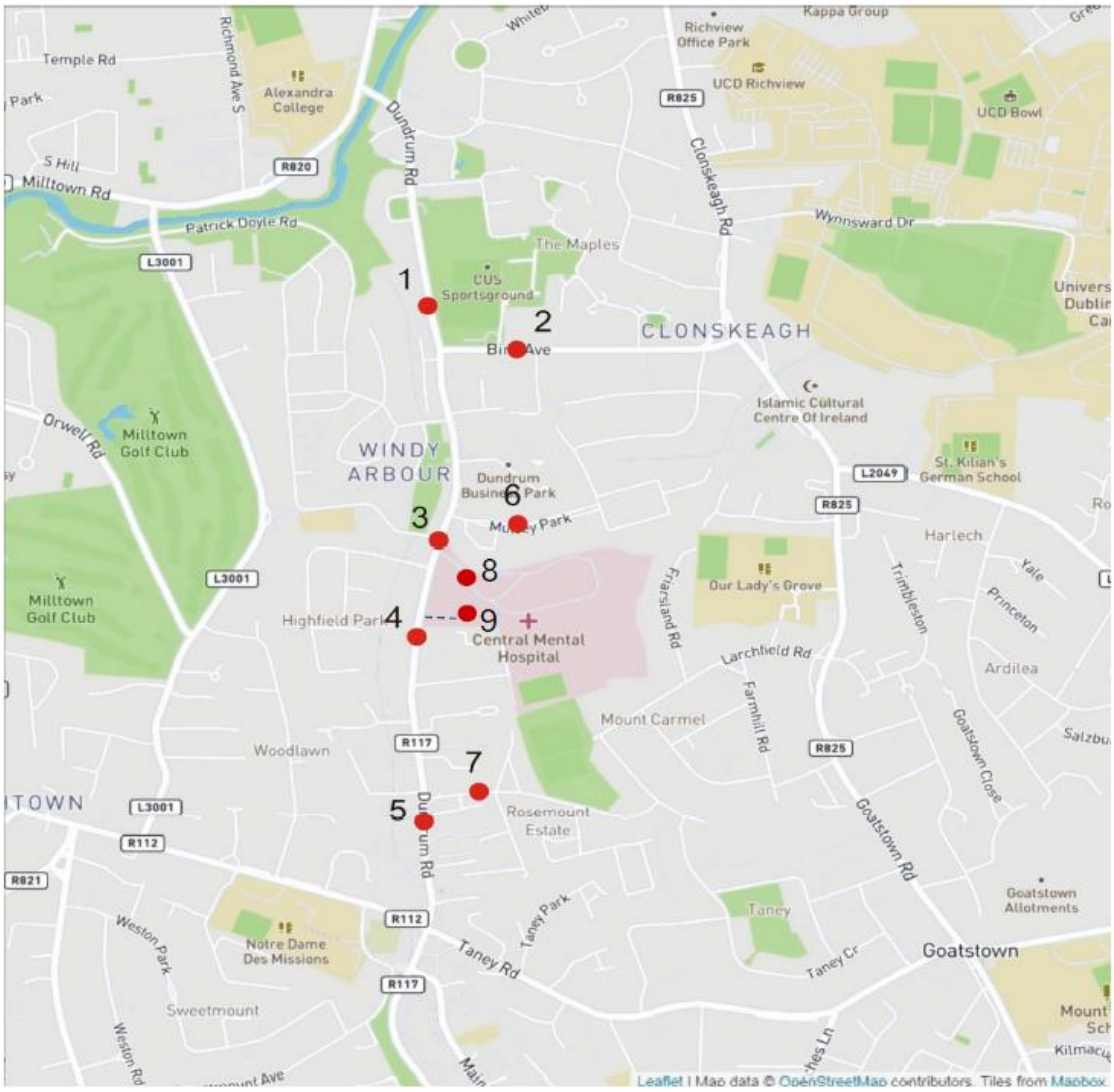

Figure 13.9 Road links for traffic assessment (Source: ILTP Consulting)

Table 13.22 Summary of change in noise level (Opening Year 2027)

Location	AADT do nothing	AADT do something	Change in noise level (all vehicles)
	Opening year / Design year		
1	14733	15523	+0.2
2	9836	10247	+0.2
3	15361	16719	+0.4
4	15333	16690	+0.4
5	17055	18381	+0.3
6	1404	1562	+0.5
7	3260	3733	+0.6
8	33	33	+0
9	0	3157	n/a

Table 13.23 Summary of change in noise level (Design Year 2042)

Location	AADT do nothing	AADT do something	Change in noise level (all vehicles)
	Opening year / Design year		
1	14733	15523	+0.2
2	9836	10247	+0.2
3	15361	16719	+0.4
4	15333	16690	+0.4
5	17055	18381	+0.3
6	1404	1562	+0.5
7	3260	3733	+0.6
8	33	33	0.0
9	0	3157	n/a

The predicted increase in AADT traffic levels with links external (1 to 7) to the associated development are between 0.0 to +0.6 dB(A) in the vicinity of the roads assessed for the Opening Year and Future Design Year. This is largely due to the existing volume of traffic along the surrounding road network onto which the development traffic will travel and the small additional traffic added by the proposed development. Reference to Table 3.7 confirms that the increase in the Opening Year is ***neutral, imperceptible and short-term***. Reference to Table ***13.6*** confirms that the increases in the Future Design Year are ***neutral, not significant and long-term***.

Comment on Additional Vehicular Traffic on Internal Roads Within the Proposed Development

The predicted AADT traffic volumes along the existing internal road (Link 8) and proposed second access internal link to the associated development are also presented in Table 13.22. The predicted increase in AADT traffic levels along the existing internal link (8) to the north of the proposed development is 0 dB(A) assessed for the Opening Year and Future Design Year.

It is noted however that the closest NSLs external to the development are at 30m to the north of Link 8 (N2) and at 30m to the south of Link 9 (N4), with 3% of the AADT comprised of HGVs. To further assess the potential noise impact of internal traffic movements on the surrounding environment, the specific noise level associated with traffic volumes at the nearest NSLs has been calculated.

The noise level associated with an event of short duration, such as a passing vehicle movement, may be expressed in terms of its SEL (L_{AX}). The mean value of SEL for an HGV at low to moderate speeds (i.e. 15 to 45km/hr) is of the order of 85 dB L_{AX} at a distance of 10 metres from the vehicle, the SEL for a light goods vehicle in similar conditions is of the order of 68 dB L_{AX}. The SEL can be used to calculate the contribution of a series of events to the overall noise level in a given period. The SEL formula used previously in Section 13.4.1.4 construction traffic calculation also has been applied here. It has been assumed that no more than 25% of vehicles will occur in a 1 hour period.

The calculated traffic noise level associated with Opening Year / Design Year traffic within the development internal roads are summarised in Table 13.25.

Table 13.24: Summary of change in noise level internal roads (Opening Year 2027)

Link	NSL ID.	$L_{Aeq, 1hr}$ Do Nothing	$L_{Aeq, 1hr}$ Do Something	Existing Baseline (dB $L_{Aeq, T}$)
		Opening year 2027		
8	N2	33[13]	33	47-49
9	N4	32[14]	51	49-51

Table 13.25: Summary of change in noise level internal roads (Design Year 2042)

Link	NSL ID.	$L_{Aeq, 1hr}$ Do Nothing	$L_{Aeq, 1hr}$ Do Something	Existing Baseline (dB $L_{Aeq, T}$)
		Opening year 2027		
8	N2	33[15]	33	47-49
9	N4	32[16]	51	49-51

The predicted traffic noise level at the nearest residential NSLs to the north (N2) is 33 dB $L_{Aeq,1hr}$, a lower noise level than the measured baseline traffic noise at these NSLs, the overall noise level is well within the daytime criterion of 55 dB $L_{Aeq,1hr.}$ and is significantly below measured ambient noise levels at this location (AN2) which encompasses other surrounding sources. No change in the existing baseline noise level is predicted. As a result the effect of impact is considered **negative, long-term** and **not significant**.

The predicted traffic noise level at the nearest residential NSLs to the south (N4) is 51 dB $L_{Aeq,1hr}$, which is below the daytime criterion of 55 dB $L_{Aeq,1hr}$ and is 0 - 2 dB above the measured ambient noise levels at this location (UN2). An increase of 3 – 4 dB(A) in the existing baseline is predicted, as a result the effect of impact is considered **negative**, **long-term** and **slight.**

In summary, the predicted increase in noise levels associated with vehicles at road junctions in the vicinity of the proposed development during the operational phase the effect of impact constitutes a negative, ***long-term, not significant*** impact for the vast majority of noise sensitive locations, while the predicted effect of impact at the nearest residences at the nearest residences at N4 during the operational phase the effect of impact constitutes a negative, ***long-term, slight*** effect.

13.4.2.2 Building Services and Plant

Once operational, there will be building services plant items required to serve the commercial and residential aspects of the proposed development. The specific requirements for mechanical and electrical plant items for each element of the commercial, residential buildings or crèche / community buildings has not yet been progressed at this stage of the design. Most of this plant will be capable of generating noise to some degree and may operate 24 hours a day. It would, therefore, be most noticeable during quiet periods (i.e. overnight). Noisy plant with a direct line-of-sight to noise sensitive properties as well as louder plant areas on roofs would potentially have the greatest impact.

[13] Screening effect from 4m perimeter wall included in calculation (8 dB reduction).
[14] Screening effect from 4m permitter wall and proposed buildings included in calculation (10 dB reduction)
[15] Screening effect from 4m perimeter wall included in calculation (8 dB reduction).
[16] Screening effect from 4m perimeter wall included in calculation (8 dB reduction).

The type of building services plant has not yet been established. Therefore, it is not possible to calculate noise levels to the surrounding environment. In this instance, is it best practice to set appropriate noise limits that will inform the detailed design during the selection and layout of building services for the proposed development. Plant items will be selected, designed and located so that there is no negative impact on sensitive receivers within the development itself. The cumulative operational noise level from building services plant at the nearest noise sensitive location within the proposed development (e.g. apartments, etc.) will be designed/attenuated to meet the relevant BS 4142 noise criteria for day and night-time periods as set out in this assessment. Based on the baseline noise data collected for this assessment it is considered an appropriate design criterion is the order of **40 dB $L_{Aeq,15min}$** during daytime periods and **35 dB $L_{Aeq,15min}$** at night at the nearest sensitive receptors. This limit is set in order to achieve acceptable internal noise levels within residential spaces based on prevailing noise levels in the area.

The main known noise sources associated with the day to day operation of the site from a mechanical point of view relates to ventilation fans associated with basement carparks and air source heat pumps.

The ventilation fans are located at ground level within the site, there is the potential for noise to affect residential units within the proposed development itself. Where required, additional attenuation will be incorporated into the design such that the noise level from the proposed fans does not exceed 40 dB(A) at 3m from the basement ventilation louvres in order to protect residential amenity of the spaces.

Air source heat pumps (ASHPs) are located in several locations across the development. There is the potential for this plant noise to affect residential units within the proposed development itself and the nearest noise sensitive locations. A preliminary review has determined that with the incorporation of screening, ASHPs with a sound power level of 68 dBA can achieve the design criteria at the nearest noise sensitive locations and for residential units within the proposed development. At the detailed design stage ASHPs will be selected and suitable mitigation measures will be incorporated so that there is no negative impact within the development itself.
For balcony areas overlooking ASHPs and during the night time period bedrooms overlooking ASHPs with windows open, ASHPs will be audible, however reasonable operational plant will not exceed the criteria outlined for reasonable internal noise levels as outlined in Table 13.9 or the recommended daytime noise levels for amenity areas, as outlined in Section 13.5.2.

Taking into account that sensitive receivers within the proposed development are much closer than off-site sensitive receivers, once the relevant noise criteria are achieved within the proposed development, it is expected that the effect of impact will be ***not significant, negative and long term*** at sensitive receivers off site.

13.4.2.3 Deliveries

Although the traffic figures related to the amount of delivery activity at the proposed development are currently unknown at this stage, the nearest NSLs are likely to be within the development itself. The frequency of deliveries will be designed to be within the adopted daytime criterion of 55 dB $L_{Aeq,1\,hr}$ at all adjacent NSLs during the daytime period. Existing NSLs are likely to be at a greater distance and as such the impact will be less.

At detailed design stage further assessment will be carried out to identify if those NSLs within the development itself will require enhanced façade specification to ensure internal noise levels are within the guidance set out in BS 8233: 2014: *Guidance on Sound Insulation and Noise Reduction for Buildings.* Deliveries will not be made during the night-time period.

Taking into account that sensitive receivers within the proposed development are much closer than off-site sensitive receivers, once the relevant noise criteria are achieved within the proposed development, it is expected that the effect of impact will be ***not significant, negative*** and ***long term*** at sensitive receivers off site.

No further mitigation measures would therefore be required.

13.4.2.4 Proposed Car Parking

Within the proposed development the closest car parking space is located to the west of Block 6 and is approximately 7m from the closest off-site NSL (N4). The car parking area associated with the Community Centre in Block 6 is screened from off-site NSLs to the west (N4) by the existing perimeter wall of 4-5m height.

Within the development the closest car parking spaces are approximately 5m from the nearest on-site NSLs (various locations across the site itself).

Typical noise levels 10m beyond the boundary of a busy car park during peak periods are of the order of 48 dB $L_{Aeq,T}$. Allowing for distance and estimated frequency of usage, the noise levels due to car parking activity would be of the order of 41 dB $L_{Aeq,1hr}$ for the residences located closest to the car park at N4 and 54 dB $L_{Aeq,1hr}$ at the apartments within the development overlooking car parking areas. These levels are within the daytime criterion of 55 dB $L_{Aeq,1hr}$ and are comparable to the measured ambient noise levels at these locations (AN4 and UN2).

It is envisaged that activity levels in the car park spaces immediately located beside the apartments within the development during the night-time period would be significantly less. Assuming that there are ten times less car park movements during the night time period as during the daytime period, the noise levels due to car parking activity would be less than 45 dB $L_{Aeq,1hr}$ at the closest car park spaces. These levels are within the night time criterion of 45 dB $L_{Aeq,15min}$ and comparable to the measured ambient noise levels at this location (UN2).

In summary, the likely noise effect of impact of car park activities on the local environment is ***negative, not significant and long-term*** for NSLs.

13.4.2.5 Crèche Playground Noise Breakout

There is a childcare facility located within Block 10 to the west of the proposed site. 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 closest off-site NSL (N4) is 40m from the crèche play area. Considering the distance activities from the crèche are calculated to be 33 dB $L_{Aeq,1hr}$. Therefore, it is expected in the

absence of specific mitigation measures that there will be a ***neutral, imperceptible and long-term*** effect of impact at the closest off-site receptors.

The nearest on-site residential NSL apartments are in Block 10 itself overlooking the Block 10 childcare play area to the east of Block 10. Considering the closest Block 10 receptors are located at the first floor the calculated noise level is approximately less than 59 dB $L_{Aeq,1hr}$ the recommended daytime criterion of 55 dB $L_{Aeq,1hr.}$ Therefore, it is expected in the absence of specific mitigation measures that there will be a ***negative, not significant and long-term*** effect of impact at the closest on-site Block 10 receptors.

No further mitigation measures would therefore be required.

13.4.2.6 Patron Noise from External Seating in Commercial Areas

Although the maximum number of patrons occupying external commercial areas e.g. outdoor café seating area, the nearest NSLs are likely to be within the development itself. The maximum capacity will be designed to be within the adopted daytime criterion of 55 dB $L_{Aeq,1hr}$ at all adjacent NSLs during the daytime period. Existing NSLs are likely to be at a greater distance and as such the impact will be less.

At detailed design stage further assessment will be carried out to identify if those NSLs within the development itself will require enhanced façade specification to ensure internal noise levels are within the guidance set out in BS 8233: 2014: *Guidance on Sound Insulation and Noise Reduction for Buildings.*

External seating areas will not be occupied during the night-time period.

Taking into account that sensitive receivers within the proposed development are much closer than off-site sensitive receivers, once the relevant noise criteria are achieved within the proposed development, it is expected that there will be ***not significant negative*** effect of impact at sensitive receivers off site.

No further mitigation measures would therefore be required.

13.5 Inward Noise Impact

The Acoustic Design Statement (ADS) has been presented separately to the operational impacts as it refers to the inward impact assessment of the residential properties within the development, rather than the outward impact assessment carried out in Section 13.4.

13.5.1 Stage 1 – Noise Risk Assessment

13.5.1.1 Methodology

The initial noise risk assessment is intended to provide an early indication of any acoustic issues that may be encountered. It calls for the categorisation of the site as a negligible, low, medium or high risk based on the pre-existing noise environment and presents the basis of

the initial noise risk assessment; it provides appropriate risk categories for a range of continuous noise levels either measured and/or predicted on site.

It should be noted that a site should not be considered a negligible risk if more than 10 L_{AFmax} events exceed 60 dB during the night period and the site should be considered a high risk if the L_{AFmax} events exceed 80 dB more than 20 times a night.

In order to conduct the noise risk assessment, noise levels recorded during the baseline survey have been corrected to account for additional noise from the development and used to calculate internal noise levels within common rooms and bedrooms. The calculations take account of the surface area of the building elements (brick work, glazing etc.), their sound reduction indices and the internal room volumes of the spaces under consideration.

In this instance there are buildings to be demolished along with sections of the western boundary perimeter wall. The site topography is not expected to change significantly during construction. For the Stage 1 ADS it has assumed that no perimeter wall is present and there is no screening from any existing buildings which will be demolished.

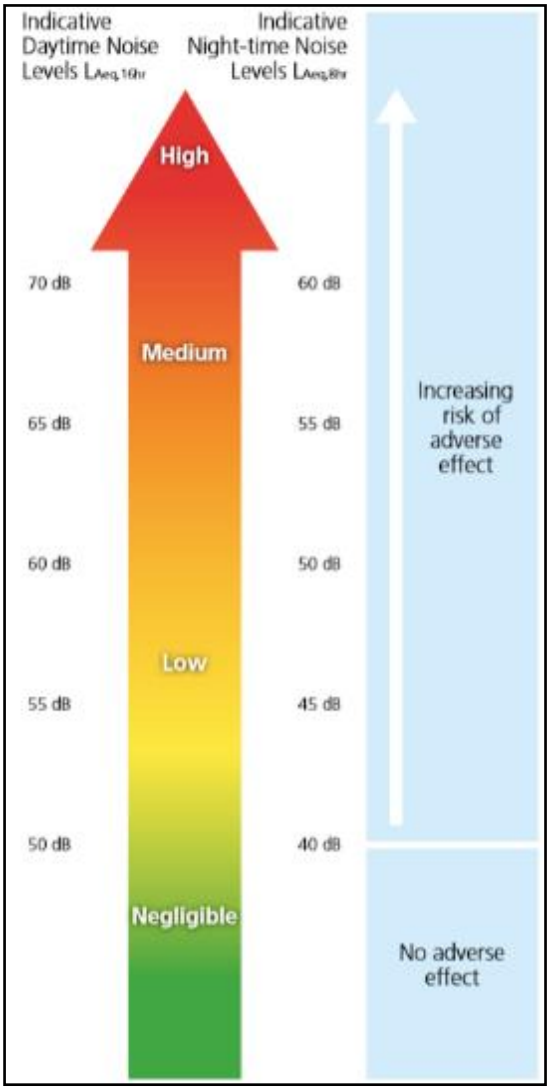

Figure 3.10 ProPG Stage 1 - Initial Noise Risk Assessment

13.5.1.2 Baseline Noise Levels

In this instance the calculated external noise levels in the vicinity of the western boundary of the site (Blocks 9 and 10) are in the range of >50 – 66 dB $L_{Aeq,T}$ during the daytime and night-time. At the remaining boundaries of the site the measured external noise levels are <50 dB $L_{Aeq,T}$ during the daytime and night-time.

13.5.1.3 Noise Risk Assessment Conclusion

Considering the calculated noise levels presented above and applied to Figure 3.10, the initial site noise risk assessment has concluded that the level of risk varies from negligible to low at the northern, eastern and southern boundaries and across the centre of the site. To the boundaries of the site facing onto the western boundaries the level of risk is medium to high facing on to the R117 Dundrum Road boundary.

Additionally, the Stage 1 Noise Risk Assessment requires analyses of the L_{AFmax} noise levels. The L_{AFmax} results indicate that there is the potential for L_{AFmax} noise levels to exceed 60 dB more than 10 times per night on facades exposed closer to the R117 Dundrum Road boundary, for which ProPG recommends that the site is considered as medium risk for L_{AFmax} values.

ProPG states the following with respect to these levels of risk:

- ***Low Risk:*** *"At low noise levels, the site is likely to be acceptable from a noise perspective provided that a good acoustic design process is followed and is demonstrated in an ADS which confirms how the adverse impacts of noise will be mitigated and minimised in the finished development."*

- ***Medium Risk:*** *"As noise levels increase, the site is likely to be less suitable from a noise perspective and any subsequent application may be refused unless a good acoustic design process is followed and is demonstrated in an ADS which confirms how the adverse impacts of noise will be mitigated and minimised, and which clearly demonstrate that a significant adverse noise impact will be avoided in the finished development."*

- ***High Risk*** *"High noise levels indicate that there is an increased risk that development may be refused on noise grounds. This risk may be reduced by following a good acoustic design process that is demonstrated in a detailed ADS. Applicants are strongly advised to seek expert advice."*

Given the above it can be concluded that parts of the development site may be categorised as Medium, principally due to the elevated noise levels at the R117 Dundrum Road western boundary, and as such an ADS will be required to demonstrate that suitable care and attention has been applied in mitigating and minimising noise impact to such an extent that an adverse noise impact will be avoided in the final development. It should be noted that ProPG states the following with regard to how the initial site noise risk is to be used:

> *"2.12: It is important that the assessment of noise risk at a proposed residential development site is not the basis for the eventual recommendation to the decision maker. The recommended approach is intended to give the developer, the noise practitioner, and the decision maker an early indication of the likely initial suitability of the site for new residential development from a noise perspective and the extent of the acoustic issues*

that would be faced. Thus, a site considered to be high risk will be recognised as presenting more acoustic challenges than a site considered as risk. A site considered as negligible risk is likely to be acceptable from a noise perspective and need not normally be delayed on noise grounds. A potentially problematical site will be flagged at the earliest possible stage, with an increasing risk indicating the increasing importance of good acoustic design."

Therefore, following the guidance contained in ProPG does not preclude residential development on sites that are identified as having medium or high noise risk. It merely identifies the fact that a more considered approach will be required to ensure the developments on the higher risk sites are suitably designed to mitigate the noise levels. The primary goal of the approach outlined in ProPG is to ensure that the best possible acoustic outcome is achieved for a particular site.

13.5.2 Stage 2 – Full Acoustic Design Statement

13.5.2.1 Element 1 – Good Acoustic Design Process

In practice, good acoustic design should deliver the optimum acoustic design for a particular site without adversely affecting residential amenity or the quality of life or occupants or compromising other sustainable design objectives. It is important to note that ProPG specifically states that good acoustic design is not equivalent to overdesign or "gold plating" of all new development but that it seeks to deliver the optimum acoustic environment for a given site.

Section 2.23 of the ProPG outlines the following checklist for Good Acoustic Design (GAD):

- Check the feasibility of relocating, or reducing noise levels from relevant sources;
- Consider options for planning the site or building layout;
- Consider the orientation of proposed building(s);
- Select construction types and methods for meeting building performance requirements;
- Examine the effects of noise control measures on ventilation, fire regulation, health and safety, cost, construction, design and management, etc.;
- Assess the viability of alternative solutions; and
- Assess external amenity area noise.

In the context of the proposed development at the western boundary each of the considerations listed above have been addressed in the following subsections.

Application of GAD Process to Proposed Application

Relocation or Reduction of Noise from Source

The R117 Dundrum Road is located outside the site boundary and, therefore, it is beyond the scope of this proposed development to introduce any noise mitigation at source.

Planning, Layout and Orientation

Consideration has been given to the location of both the buildings and external amenity areas. In the first instance, a primary consideration was to ensure that buildings are located as far as possible from the road.

The orientation of the site is such that the buildings themselves screen the common external amenity areas associated with the development.

Select Construction Types for meeting Building Regulations

Masonry constructions will be used in the external walls of the proposed development. This construction type offers high levels of sound insulation performance. However, as is typically the case, the glazed elements and any required ventilation paths to achieve compliance with Part F of the Building Regulations will be the weakest elements in the façade in terms of sound insulation performance.

Consideration will, therefore, be given to the provision of upgraded glazing and acoustic vents, where required. For units where it will not be possible to achieve the desirable internal acoustic environments with windows open, the proposal here will be to provide dwelling units with glazed elements and ventilators that have good acoustic insulation properties so that when the windows are closed the noise levels internally are good. Inhabitants will be able to open the windows if they wish. However, doing so will increase the internal noise level. This approach to mitigation is supported in ProPG where it states the following

> *"2.22: Using fixed unopenable glazing for sound insulation purposes is generally unsatisfactory and should be avoided; occupants generally prefer the ability to have control over the internal environment using openable windows, even if the acoustic conditions would be considered unsatisfactory when open. Solely relying on sound insulation of the building envelope to achieve acceptable acoustic conditions in new residential development, when other methods could reduce the need for this approach, is not regarded as good acoustic design. Any reliance upon building envelope insulation with closed windows should be justified in supporting documents."*
>
> *"Note 5: Designing the site layout and the dwellings so that the internal target levels can be achieved with open windows in as many properties as possible demonstrates good acoustic design. Where it is not possible to meet internal target levels with windows open, internal noise levels can be assessed with windows closed, however any façade openings used to provide whole dwelling ventilation (e.g. trickle ventilators) should be assessed in the "open" position and, in this scenario, the internal LAeq target levels should not normally be exceeded."*
>
> *"2.34: Where the LPA accepts that there is a justification that the internal target noise levels can only be practically achieved with windows closed, which may be the case in urban areas and at sites adjacent to transportation noise sources, special care must be taken to design the accommodation so that it provides good standards of acoustics, ventilation and thermal comfort without unduly compromising other aspects of the living environment. In such circumstances, internal noise levels can be assessed with windows closed but with any façade openings used to provide "whole dwelling ventilation" in accordance with Building Regulations Approved Document F (e.g. trickle ventilators) in the open position (see Supplementary Document 2). Furthermore, in this scenario the internal LAeq target noise levels should not generally be exceeded."*

It is very important to note that it is impractical to achieve the good internal noise levels with windows open across the vast majority of development sites in close proximity to major infrastructure such as roads. Such sites would need to be classified as having a negligible risk in accordance with the ProPG noise risk assessment approach. For this reason, there are no

guidance documents either at a local level or an international level that AWN is aware of which would support the approach of achieving the ideal internal noise levels in the open window scenario. It is, therefore, considered entirely correct and justifiable to provide building façades with a moderate degree of sound insulation, such that with windows closed but vents opened, a good internal acoustic environment is achieved.

Impact of Noise Control Measures on Fire, Health and Safety
The good acoustic design measures that have been proposed on site do not have any significant impact on other issues.

Assess Viability of Alternative Solutions
Due to the height and location of the proposed buildings it is considered that any acoustic screens along the boundary of the site to attenuate traffic noise would be ineffective. However, for the Stage 2 assessment the proposed perimeter wall heights along the western boundary will be included in the modelling.

Assess External Amenity Area Noise
ProPG provides the following advice with regards to external noise levels for amenity areas in the development:

> *"The acoustic environment of external amenity areas that are an intrinsic part of the overall design should always be assessed and noise levels should ideally not be above the range 50 – 55 dB $L_{Aeq,16hr}$."*

Noise levels across external amenity areas associated with the development are presented in Section 13.5.2.3.

Summary
Considering the constraints of the site, in so far as possible and without limiting the extent of the development area, the principles of GAD have been applied to the proposed development.

In terms of viable alternatives to acoustic treatment of façade elements, currently it is not considered likely that there will be further options for mitigation outside of proprietary acoustic glazing and ventilation.

13.5.2.2 Element 2 – Internal Noise Guidelines

Internal Noise Criteria

Element 2 of the ProPG document sets out recommended internal noise targets derived from BS 8233 and World Health Organisation Community Noise Guidelines. The recommended indoor ambient noise levels are set out in Table 13.26 and are based on annual average data, that is to say they omit occasional events such as New Year's Eve.

Table 13.26 ProPG internal noise levels (BS 8233:2014)

Activity	Location	Day (07:00 to 23:00hrs) dB $L_{Aeq,16hr}$	Night (23:00 to 07:00hrs) dB $L_{Aeq,8hr}$
Resting	Living room	35 dB $L_{Aeq,16hr}$	-
Dining	Dining room/ area	40 dB $L_{Aeq,16hr}$	-

Activity	Location	Day (07:00 to 23:00hrs) dB $L_{Aeq,16hr}$	Night (23:00 to 07:00hrs) dB $L_{Aeq,8hr}$
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16hr}$	30 dB $L_{Aeq,8hr}$ 45 dB $L_{Amax,T}$[17]

Giving consideration to the external noise levels, particularly along the western site boundary, in line with the ProPG guidelines it may be necessary to use acoustic glazing and ventilation to meet the recommended internal noise levels. The need for enhanced glazing is assessed in further detail below.

Noise Model of Study Area

Proprietary noise calculation software was used for the purposes of establishing the prevailing noise levels on the proposed site. The selected software, Brüel & Kjær Type 7810 Predictor, calculates noise levels in accordance with the Calculation of Road Traffic Noise (CRTN) issued by the UK Department of Transport in 1988. This is the standard recognised for the prediction of road traffic noise by Transport Infrastructure Ireland (TII) and the Environmental Noise Regulations 2006 SI/140 2006.

The following information was included in the model:

- Site layout drawings of proposed development;
- OS mapping of surrounding environment; and
- Predicted noise levels along R117 Dundrum Road estimated from site calibration results.

Noise Model Validation

Noise levels recorded during the unattended survey were used to calibrate the noise model to within 1 dB of the calculated values. This is regarded as very strong correlation in respect of predicted noise levels. Noise levels are calculated over daytime periods, i.e. 07:00 to 23:00hrs and night-time periods, 23:00 to 07:00 hrs.

Table 13.27 Calculated and Measured Noise Levels at Development Site

Location	Time Period	Measured Noise Level (dB)	Calculated Noise Level (dB)
UN1	Daytime, $L_{Aeq,16hr}$	66[18]	66
	Night-time, $L_{Aeq,8hr}$	59[19]	59

Façade Noise Levels

Noise levels have been predicted across the proposed development site during day and night-time periods using the noise model developed to include the development buildings and proposed perimeter wall alterations. Figure 13.11 and Figure 13.12 illustrate the predicted traffic noise levels for daytime and night-time.

[17] The document comments that the internal $L_{AFmax,T}$ noise level may be exceeded no more than 10 times per night without a significant impact occurring.
[18] 13dB has been added to daytime measured noise levels as outlined in section 13.3.3.2
[19] 13dB has been added to daytime measured noise levels as outlined in section 13.3.3.2

Predicted daytime noise levels across the site range from <50 dB in sheltered areas, screened from road traffic, to 70 dB along the western boundary which face on to the R117 Dundrum Road. Predicted night-time noise levels across the site range from <50 dB in sheltered areas, screened from road traffic, to 60 dB along the western boundary which face on to the R117 Dundrum Road.

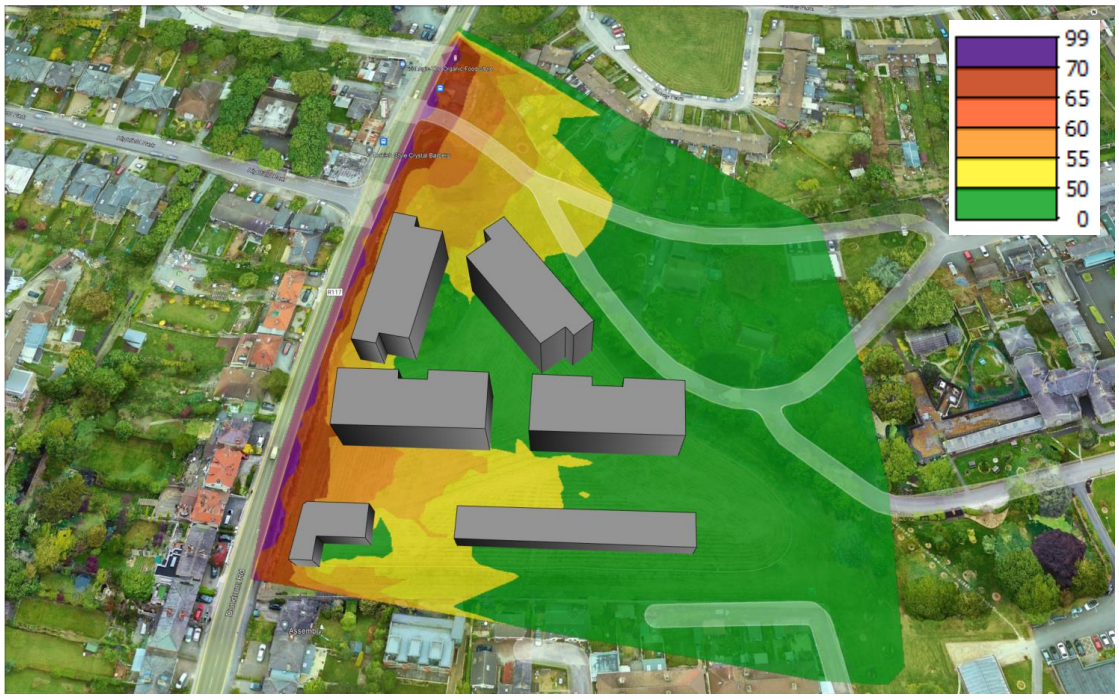

Figure 13.11 ProPg Stage 2 – Predicted Noise Levels – Daytime

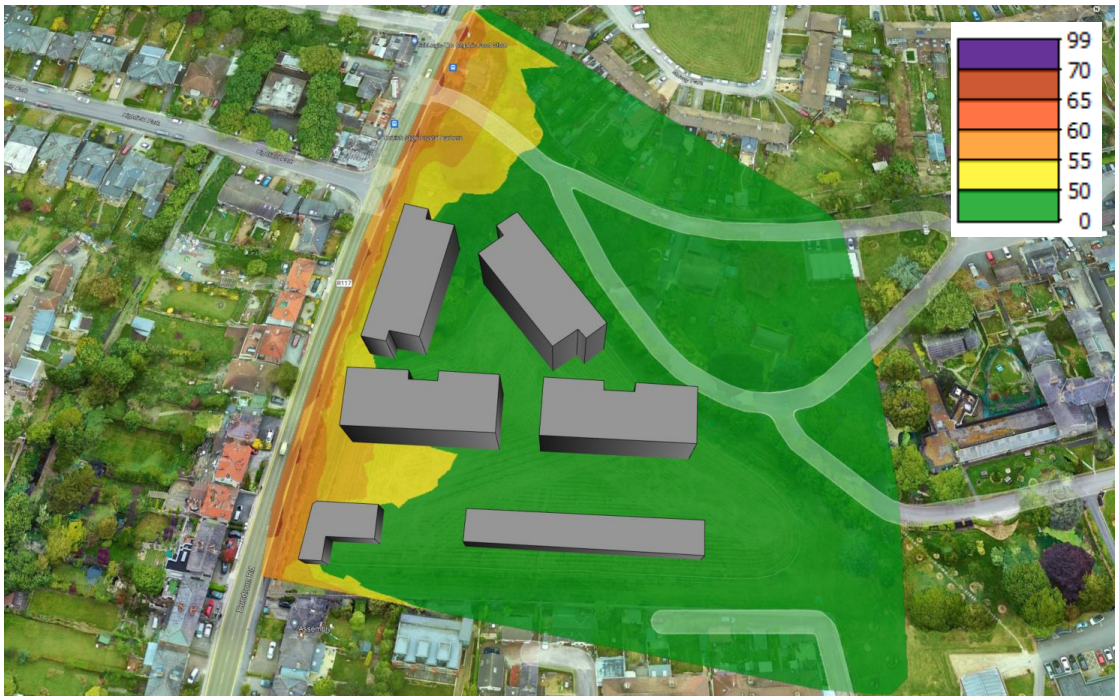

Figure 13.12 ProPg Stage 2 – Predicted Noise Levels – Night-time

Where façade noise levels are less than 55 dB $L_{Aeq,16hr}$ during the day and 50 dB $L_{Aeq,8hr}$ at night it is possible to achieve reasonable internal noise levels while also ventilating the dwellings

with open windows. Therefore, for those properties where the façade noise levels are less than 55 dB $L_{Aeq,16hr}$ during the day and 50 dB $L_{Aeq,8hr}$ at night no further mitigation is required.

Where façade levels are above these levels the sound insulation performance of the building façade becomes important and a minimum sound insulation performance specification is required for windows to ensure that when windows are closed the internal noise criteria are achieved.

Predicted noise levels on several facades are above a level whereby internal noise levels are achieved with standard double glazing and therefore mitigation in the form of enhanced glazing will be required. Table 13.28 along with Figure 13.13, present the noise levels calculated to be incident on the various façades during day and night-time periods respectively.

Table 13.28: Summary of Predicted Façade Noise Levels

Ref	Period (T)	$L_{Aeq,T}$ dB	Octave Band Centre Frequency (Hz)					
			125	250	500	1k	2k	4k
Red	Day (16hr)	67	66	63	61	65	60	51
	Night (8hr)	60	56	56	55	57	53	45
Orange	Day (16hr)	64	64	59	57	61	57	48
	Night (8hr)	57	53	53	51	54	49	41
Green	Day (16hr)	59	59	55	52	56	51	42
	Night (8hr)	52	49	49	46	49	44	36

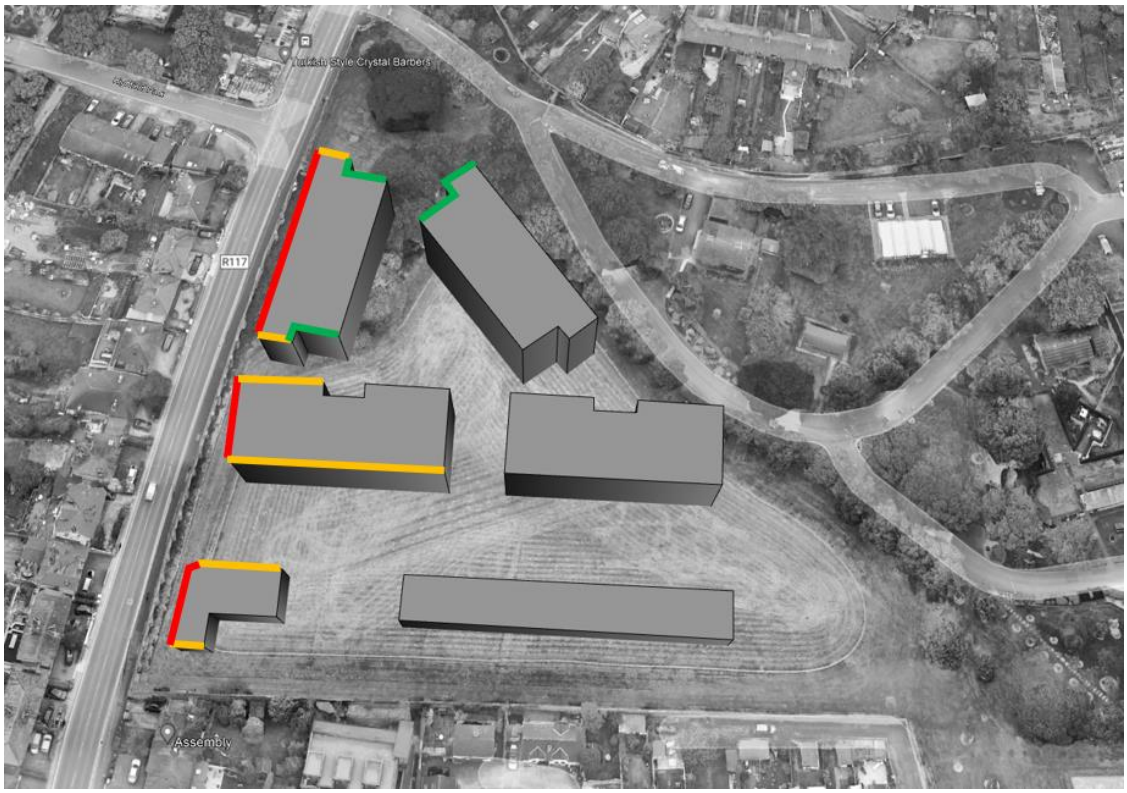

Figure 13.13: Designation of Predicted Noise Levels for Each Façade

These facades include:

- Block 9 (to furthermost western boundary) along western façade, northern façade and southern façade;
- Block 10 (to northwest of western boundary) along western façade, northern façade and southern façade;
- Block 10 (to southwest of western boundary) along western façade, northern façade and southern façade; and
- Block 10 (to northeast of western boundary) along western façade.

The specification of the enhanced façades are discussed in Section 13.6.3.

13.5.2.3 Element 3– External Amenity Area Noise Assessment

External Noise Levels

Figure 13.14 presents the calculated day time noise levels across the site with the development buildings in place. The contours are calculated for a height of 1.5m.

External noise levels within the vast majority of communal open spaces across the development site are less than the recommended range of noise levels from ProPG of between 50 – 55 dB $L_{Aeq,16hr}$ as illustrated in Figure 13.14. It is considered that the objectives of achieving suitable external noise levels is achieved within the overall site, therefore no further mitigation is required to control external noise levels across amenity areas.

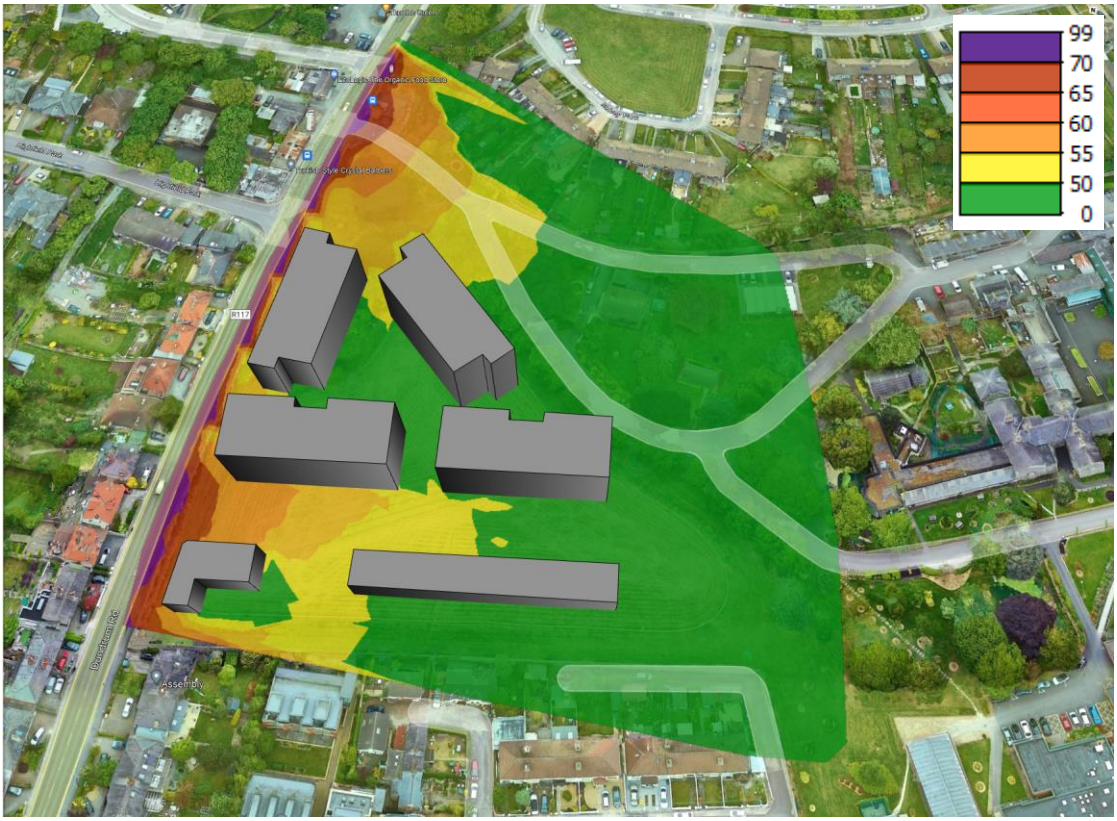

Figure 13.14: Predicted Noise Levels across External Areas (1.5m above ground)

13.5.2.4 Element 4– Assessment of Other Relevant Issues

Element 4 gives consideration to other factors that may prove pertinent to the assessment, these are defined in the document as:

- 4(i) compliance with relevant national and local policy;
- 4(ii) magnitude and extent of compliance with ProPG;
- 4(iii) likely occupants of the development;
- 4(iv) acoustic design v unintended adverse consequences; and
- 4(v) acoustic design v wider planning objectives.

Each is discussed in turn below.

Compliance with Relevant National and Local Policy

There are no National policy documents relating to the acoustic design of residential dwellings. Locally the Dublin Agglomeration Noise Action Plans specify that the guidance contained within ProPG should be used in assessing the noise impact on new residential developments.

This Acoustic Design Statement has been prepared in compliance with the requirements of ProPG and therefore complies with the requirements of local policy.

Magnitude and Extent of Compliance with ProPG

As discussed within this chapter, the following conclusion has been drawn with regards to the extent of compliance with ProPG:

- All dwellings as part of the development have been designed to achieve the good level of internal noise levels specified within ProPG. The closest western boundary units require closed windows and open vents to achieve this level; and
- External amenity areas have been assessed and calculated, due to screening from buildings they comply with the recommended criterion set out in ProPG.

Based on the preceding, it is concluded that the proposed development is in full compliance with the requirements of ProPG.

Likely Occupants of the Development

The criteria adopted as part of this assessment are based on those recommended for permanent dwellings and are, therefore, considered robust and appropriate for the likely occupants.

Acoustic Design v Unintended Adverse Consequences

Unintended adverse consequences did not occur in relation to this proposed development.

Acoustic Design v Wider Planning Objectives

This chapter has demonstrated the noise insulation measures required to ensure that the proposed dwelling units achieve a good internal noise environment.

13.5.2.5 Conclusion

An initial site noise risk assessment has been carried out on the proposed residential development to the western boundary of the proposed development. The assessment has classified the development site on the western boundaries as medium to high risk facing on to the R117 Dundrum Road boundary. This was determined through a combination of measurements of noise levels on site and through the prediction of noise levels on the site.

Further discussion is presented in terms of the likely noise impact of both the external and internal areas of the proposed development. It has been found that all the inhabitants will have access to a quiet external area that is screened by the development itself from road traffic noise. In compliance with the relevant standards detailed in this report all habitable rooms will achieve a good internal noise environment with the enhanced acoustic glazing and ventilation.

13.6 Mitigation Measures

13.6.1 Construction Phase

Best practice noise and vibration control measures will be employed by the contractor during the construction phase in order to avoid significant impacts at the nearest sensitive buildings. The best practice measures set out in BS 5228 (2009 +A1 2014) Parts 1 and 2 will be complied with. This includes guidance on several aspects of construction site mitigation measures, including, but not limited to:

- Selection of quiet plant;
- Noise control at source;
- Screening, and;
- Liaison with the public.

Further comment is offered on these items in the following paragraphs. Noise control measures that will be considered include the selection of quiet plant, enclosures and screens around noise sources, limiting the hours of work and noise monitoring, where required. The contractor will put in place the most appropriate noise control measures depending on the level of noise reduction required at individual working areas i.e. based on the construction threshold values for noise and vibration set out in Table 13.4 and Table 13.5.

N_1: Selection of Quiet Plant

Selection of quiet plant is recommended in relation to static plant such as compressors and generators. It is recommended that these units be supplied with manufacturers' proprietary acoustic enclosures. The potential for any item of plant to generate noise will be assessed prior to the item being brought onto the site. The least noisy item will be selected wherever possible. Should a particular item of plant already on the site be found to generate excessive noise levels, the first action will be to identify whether or not said item can be replaced with a quieter alternative.

N_2: Noise Control at Source

If replacing a noisy item of plant is not a viable or practical option, consideration will be given to noise control at source. This refers to the modification of an item of plant or the application

of improved sound reduction methods in consultation with the supplier. For example, resonance effects in panel work or cover plates can be reduced through stiffening or application of damping compounds; rattling and grinding noises can often be controlled by fixing resilient materials in between the surfaces in contact.

The following best practice migration measures will be employed:

- Site compounds will be located away from noise sensitive boundaries within the site constraints.
- The lifting of bulky items, dropping and loading of materials within these areas will be restricted to normal working hours.
- For mobile plant items such as cranes, dump trucks, excavators and loaders, , utilising an acoustic canopy to replace the normal engine cover and/or ensuring the enclosure panels are closed during operation can reduce noise levels over normal operation. Mobile plant will be switched off when not in use and not left idling.
- For steady continuous noise, such as that generated by diesel engines, noise control measures include fitting a more effective exhaust silencer system to reduce the noise emitted.
- For percussive tools such as pneumatic breakers, a number of noise control measures include fitting muffler or sound reducing equipment to the breaker tool and ensuring any leaks in the air lines are sealed.
- Erecting localised screens around breaker or drill bit when in operation in close proximity to noise sensitive boundaries.
- For concrete mixers, control measures will be employed during cleaning to ensure no impulsive hammering is undertaken at the mixer drum.
- For all materials handling, materials will not be dropped from excessive heights, lining drops chutes and dump trucks with resilient materials.
- For compressors, generators and pumps, these will be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation.
- All items of plant will be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures.

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. Standard construction site hoarding (2.4m in height) with a mass per unit of surface area greater than 7 kg/m^2 can provide adequate sound insulation. This will be required, as a minimum around the site perimeter.

N_4: Liaison with the Public

A designated Community Liaison Officer (CLO) will be appointed to site during construction works. Any noise complaints will be logged and followed up in a prompt fashion by the CLO. In addition, prior to particularly noisy construction activity (e.g. demolition), the CLO 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. If piling works are in progress on another site at the same time as other works of construction that themselves may generate significant noise and vibration, the working programme will be phased so as to ensure noise limits are not exceeded due to cumulative activities. This will be reviewed in relation to other potential cumulative works occurring on adjacent construction site in close proximity to noise sensitive properties which have the potential to lead to significant construction noise impacts.

13.6.2 Operational Phase - Noise

N_6: General Operational Phase Site Activity

The assessment outlined previously has specified noise limits at the nearest noise sensitive properties that must be achieved in order to ensure the impact is acceptable, summarised in Section 13.2.2.1 of Chapter 13 Noise and Vibration

To achieve these noise limits, it will be necessary to review (at the detailed design stage) the variety of mitigation measures and forms of noise control techniques that will be applicable. Some example of these measures are as follows:

- Duct-mounted attenuators on the atmosphere side of air moving plant;
- Splitter attenuators or acoustic louvres providing free ventilation to internal plant areas;
- Solid barriers screening any external plant; and
- Anti-vibration mounts on reciprocating plant.

In addition to the above, the following measures will be adopted to minimise potential noise disturbance for neighbours:

- All mechanical plant items (e.g. motors, pumps etc.) shall be regularly maintained to ensure that excessive noise generated by any worn or rattling components is minimised;
- Any new or replacement mechanical plant items, including plant located inside new or existing buildings, shall be designed so that all noise emissions from site do not exceed the noise limits outlined in this document; and
- Plant items will be selected such that site noise emissions do not contain tonal or impulsive characteristics at nearby noise sensitive locations.

N_7: Building Services and Plant

Taking into account that sensitive receivers within the development are much closer than off-site sensitive receivers, once the relevant noise criteria included in Section 13.6.2 (i.e. design

criterion is the order of **40dB $L_{Aeq,15min}$** during daytime periods and **35dB $L_{Aeq,15min}$** at night at the façades of the nearest noise sensitive locations). It is expected that there will be no negative impact at sensitive receivers on or off site, and therefore no further mitigation required.

13.6.3 Operational Phase – Inward Noise Impact

N_8 Proposed Façade Treatment

The British Standard BS EN 12354-3: 2000: *Building acoustics – Estimation of acoustic performance of buildings from the performance of elements – Part 3: Airborne sound insulation against outdoor sound* provides a calculation methodology for determining the sound insulation performance of the external envelope of a building. The method is based on an elemental analysis of the building envelope and can take into account both the direct and flanking transmission paths. The Standard allows the acoustic performance of the building to be assessed taking into account the following:

- Construction type of each element (i.e. windows, walls, etc.);
- Area of each element;
- Shape of the façade, and;
- Characteristics of the receiving room.

The principals outlined in BS EN 12354-3 are also referred to in BS8233 and Annex G of BS8233 provides a calculation method to determine the internal noise level within a building using the composite sound insulation performance calculated using the methods outlined in BS EN 12354-3. The methodology outlined in Annex G of BS8233 has been adopted here to determine the required performance of the building facades.

Glazing and Ventilation

As is the case in most buildings, the glazed and ventilation elements of the building envelope are typically the weakest element from a sound insulation perspective. In this instance it has been calculated that the various facades are to be provided with glazing that, when closed, achieve the minimum sound insulation performance as set out in Table 13.29 and Table 13.20 (and assigned to each applicable façade in Figure 13.15.

Table 13.29 Sound insulation performance requirements for glazing, SRI (dB)

Facade	SRI (dB) per Octave Band Centre Frequency (Hz)						dB R_w
	125	250	500	1k	2k	4k	
Orange	28	36	38	44	40	34	41
Green	25	30	35	39	36	30	37

Table 13.30 Sound insulation performance requirements for ventilation, SRI (dB)

Facade	SRI (dB) per Octave Band Centre Frequency (Hz)						dB D_{new}
	125	250	500	1k	2k	4k	
Orange	36	37	42	48	44	36	45
Green	32	32	39	44	38	32	40

Figure 13.15 Enhanced Façade Mark-Up – Blocks 9 and 10 where applicable

Test data should be sought from the supplier of the glazing and vents at detailed design stage to ensure that the acoustic specification is met.

It is important to note that the acoustic performance specifications detailed herein are minimum requirements which apply to the overall glazing system. In the context of the acoustic performance specification the 'glazing system' is understood to include any and all of the component parts that form part of the glazing element of the façade, i.e. glass, frames, seals, openable elements etc.

The assessment has demonstrated that the recommended internal noise criteria can be achieved through consideration of the proposed façade elements at the design stage. The calculated glazing and ventilation specifications are preliminary and are intended to form the basis for noise mitigation at the detailed design stage.

Wall Construction

In general, all wall constructions (i.e. blockwork or concrete) offer a high degree of sound insulation, much greater than that offered by glazing systems. Therefore, noise intrusion via the wall construction will be minimal. The calculated internal noise levels across the building façade have assumed a minimum sound reduction index of 54 dB R_w for this construction.

Internal Noise Levels

Taking into account the external façade levels and the specified building envelope, the internal noise levels have been calculated. In all instances the good internal noise criteria are achieved for daytime and night-time periods i.e. at or below the internal noise level thresholds outlined in Table 13.26.

13.6 Residual Impacts

13.6.1 Construction Phase

During the construction phase of the project there is the potential for temporary noise impacts on nearby noise sensitive properties due to noise emissions from site activities. The application of binding noise limits and hours of operation, along with implementation of appropriate noise and vibration control measures, will ensure that noise and vibration impact is kept to a minimum as far as practicable.

During periods when initial construction works are occurring at distances of up to 50m and other construction works at a distance of up to 20m from the nearest noise sensitive locations to the site boundary, there is potential for ***temporary, negative, moderate to significant*** noise impacts to occur.

For the remainder of construction periods, construction noise impacts will be ***short-term, negative, slight to moderate.***

Vibration impacts during the construction phase will be ***neutral, short-term and imperceptible.***

13.6.2 Operational Phase

13.6.2.1 Additional Traffic on Roads

The predicted change in noise levels associated with additional traffic is expected to be ***neutral, not significant*** and ***long-term*** along the existing road network.

13.6.2.2 Building Services and Plant

Proprietary noise and vibration control measures will be employed as part of the detailed design in order to ensure that noise emissions from building services plant do not exceed the adopted criterion at any nearby NSLs. In addition, noise emissions should be broadband in nature and should not contain any tonal or impulsive elements. The effect of impact from building services and plant is predicted to be ***negative, not significant and long term.***

13.6.2.3 Deliveries

Any change in noise levels associated with deliveries on site are expected to be ***negative, not significant*** and ***long term*** effect of impact.

13.6.2.4 Car Parking

Any change in noise levels associated with car parking on site are expected to be ***negative, not significant*** and ***long term*** effect of impact.

13.6.2.5 Crèche Playground Noise Breakout

Any change in noise levels associated with the crèche playgrounds on site are expected to be ***negative, not significant*** and ***long term*** effect of impact.

13.6.2.6 Patron Noise from External Seating in Commercial Areas

Any change in noise levels associated with patron noise from external seating in commercial areas on site are expected to be ***negative, not significant*** and ***long term*** effect of impact.

13.7 Monitoring

13.7.1 Construction Phase

During the construction phase, noise and vibration monitoring will be undertaken by the Contractor at the nearest sensitive locations to ensure construction noise and vibration limits outlined in Table 13.1 and Table 13.4 are not exceeded. Noise monitoring will be conducted in accordance with the International Standard ISO 1996: Acoustics – Description, measurement and assessment of environmental noise Part 1 (2016) and Part 2 (2017). The selection of monitoring locations will be based on the nearest sensitive buildings to the working areas.

Noise control audits should be conducted at regular intervals throughout the construction programme in conjunction with noise monitoring. The purpose of the audits will be to ensure that all appropriate steps are being taken to control construction noise emissions and to identify opportunities for improvement, where required.

13.7.2 Operational Phase

There is no monitoring recommended for the operational phase of the development as impacts to noise and vibration are predicted to be imperceptible.

13.8 Reinstatement

During reinstatement the construction phase noise and vibration impacts outlined in Section 13.4.1 will apply.

13.9 Interactions

The potential interaction between noise and vibration and other specialist chapters in the EIAR is primarily limited to Chapter 7 (Population & Human Health), Chapter 8 (Biodiversity) and Chapter 18 (Material Assets – Roads and Traffic). This chapter has been prepared in consideration of and in conjunction with the relevant elements of these chapters. For example noise and vibration impacts associated with the Proposed Development have been fully considered within this Chapter of the EIA Report. However, commentary on the impact assessment and related noise levels are also summarised specifically with respect to potential human health impacts in Chapter 7 and Chapter 8. The traffic flow projections associated with the development provided by the traffic consultants in Chapter 18 (Traffic & Transportation) has been utilised in the construction and operational noise calculations in this Chapter of the EIAR report.

13.10 Cumulative Impacts

13.10.1 Construction Phase

For the purpose of the cumulative assessment, two scenarios have been considered. The first scenario is a review of the cumulative construction impacts from the Proposed Development and the future planning application within the Former Central Mental Hospital site i.e. the CMH Masterplan. The cumulative Phase 1 and Phase 2 construction periods phases are likely to overlap and as such have been assessed together in Section 13.4.1. The second scenario is a review of approved and proposed developments in the local area which are external to the CMH Masterplan site, as summarised in Table 13.30

Table 13.30 Developments in the Local Area

Reg. Ref.	Name
ABP30943021	Our Lady's Grove, Goatstown Road, Dublin 14
ABP31128721	No. 97A Highfield Park (D14P710), and No. 1 Frankfort Castle (D14 HY03), No. 2 Frankfort Castle (D14DE72) and Frankfort Lodge (D14C9P2), Old Frankfort, Dublin 14
ABP31013821	Mount Saint Mary's and Saint Joseph's, Dundrum Road, Dundrum, Dublin 14
ABP31293522	Sommerville House, Dundrum Road, Dublin 14
ABP31323522	car sales premises currently known as Vector Motors (formerly known as Victor Motors), Goatstown Road, Dublin 14, D14FD23
ABP31322022	the old Dundrum Shopping Centre known as Main Dundrum Street Village Centre (D14K3T7)
ABP316470	lands at Frankfort Centre, Dundrum Road, Dublin 1
D15A/0081	Notre Dames Des Missions residential zoned site, Churchtown Road Upper, Churchtown, Dublin 14
D06A/1510	Lands adjoining Trimbleston, Goatstown Road, Goatstown, Dublin 14.
ABP245621	Bird Avenue, Clonskeagh, Dublin 14.
ABP301033	Site at Ardilea Crescent, Heidelberg, Ardilea, Clonskeagh, Dublin 14
CMH Future application	Lands at Central Mental Hospital

In order to assess the cumulative impacts it has been assumed that there would be an increase in predicted construction noise levels by no more than 3 dB when compared to the values presented in Table 13.21 in Section 13.4.1 previously.

While a 3 dB increase is a doubling of sound energy, subjectively any change in noise level below 3 dB would be barely perceptible. This 3 dB increase (maximum doubling of plant items) is based on the practical number of plant and equipment items that could be reasonably assumed at the closest boundaries to the NSLs i.e. there will be a greater separation between plant / equipment and the NSL, which will result in a reduction in the predicted noise level at the closest NSL. In addition, the construction activities in the closest site to the NSL will be the dominant noise source, with very little contribution from sites at greater distances to the NSL i.e. where the contribution from the specific phase is more than 10 dB below noise contribution from the closest phase to the NSL.

13.10.1.1 CMH Masterplan

Given the explanation above, the majority of NSLs that may be affected by the CMH Masterplan construction works are located to the north (N2 receiver) and northeast (N5 receiver) of the CMH Masterplan boundaries.

At N2 the closest construction boundaries are within 30m (Proposed Development) and 60m approximately (future planning application). The predicted cumulative construction noise levels at these NSLs to the immediate north of the site boundary will be no more than 3 dB

higher than those predicted in Section 13.4.1. As a result, it would only be when demolition and basement works are within 100m of the NSLs that the recommended construction noise threshold value of 65 dB L_{Aeq} Monday through Friday (08:00 to 18:00hrs) would be exceeded at the NSLs to the immediate north of the works boundary. During all other works to the north the cumulative Masterplan CMH would be below the recommended construction noise threshold value of 65 dB L_{Aeq} Monday through Friday (08:00 to 18:00hrs). This worst-case scenario would be expected to take place over a very short period of time, if at all.

At N5 the closest construction boundaries are within 10m (Proposed Development) and 80m approximately (future planning application). As a result of sound propagation over distance the contribution of noise from the future planning application construction site would be more than 10 dB below the contribution from the Proposed Development site. Therefore, there is no greater than those values presented in Section 13.4.1. Cumulative construction noise effects of impacts are expected to be **negative**, **significant** and **short-term**.

13.10.1.1 Developments in the Local Area

Given the explanation above, due to the distance between the proposed development and the following grant / proposed developments in the local area it is not anticipated that there will be any significant cumulative impacts on noise and vibration at nearby NSLs during the construction or operational phase of the developments:

- ABP31128721– Site of approximately c.0.9ha at No. 97A Highfield Park (D14P710), and No. 1 Frankfort Castle (D14 HY03), No. 2 Frankfort Castle (D14DE72) and Frankfort Lodge (D14C9P2), Old Frankfort, Dublin 14, located approximately 950m from proposed development;
- ABP31013821 – Mount Saint Mary's and Saint Joseph's, Dundrum Road, Dundrum, Dublin 14, located approximately 950m from proposed development;
- ABP31323522– Site of approximately 0.34 hectares comprising the car sales premises currently known as Vector Motors (formerly known as Victor Motors), Goatstown Road, Dublin 14, D14FD23, located approximately 530m from proposed development;
- ABP31322022 – site 3.5335ha incorporating the old Dundrum Shopping Centre known as Main Dundrum Street Village Centre (D14K3T7) , located approximately 750m from proposed development;
- ABP316470 – Site of approx. 0.24 ha on lands at Frankfort Centre, Dundrum Road, Dublin 1, located approximately 370m from proposed development;
- D15A/0081 – Notre Dames Des Missions residential zoned site, Churchtown Road Upper, Churchtown, Dublin 14, located approximately 700m from proposed development;
- D06A/1510 – Lands adjoining Trimbleston, Goatstown Road, Goatstown, Dublin 14, located approximately 500m from proposed development; and
- ABP245621 – Bird Avenue, Clonskeagh, Dublin 14, located approximately 720m from proposed development; and
- ABP301033 – Site at Ardilea Crescent, Heidelberg, Ardilea, Clonskeagh, Dublin 14, located approximately 970m from proposed development.

There are two development sites with planning permission granted /proposed for development nearby to the proposed development:

- Student bedspace accommodation and associated site works at Our Lady's Grove, Goatstown Road, Dublin 14 (granted project under ABP30943021) with a distance between site boundaries of 260m approximately along Friarsland Road.
- Residential development at Sommerville House, Dundrum Road, Dublin 14 (proposed project) with a distance between site boundaries of 210m approximately along Annaville Grove / Sommerville.

In the event that construction activities are taking place at the above mentioned sites concurrently with the construction of the proposed development, there is potential for cumulative noise impacts to occur. Due to the proximity and nature of construction works associated with the proposed development, however, noise levels from the proposed development will dominate the noise environment when occurring in proximity to the noise sensitive locations along its immediate boundary. The contribution from other sites will therefore have slight impact (i.e. will be at least 10 dB below those associated with the proposed development) such that the construction noise levels discussed in Section 13.4.1 will remain a representation of a worst case analysis.

Nonetheless liaison between construction sites should be on-going throughout the duration of the construction phase. Contractors should schedule work in a co-operative effort to limit the duration and magnitude of potential cumulative impacts on nearby sensitive receptors. Cumulative construction noise effects of impact are expected to be ***negative, moderate to significant and short-term.***

13.10.2 Operational Phase

During the operational phase any cumulative impacts will be due to an increase in road traffic noise. However, given the insignificant levels of noise increase as a result of the traffic associated with this proposed development, it is not expected that cumulative traffic noise will increase by any significant margin as a result of this proposed development.

13.11 'Do-Nothing' Effect

The Do Nothing scenario includes this predominantly greenfield site remaining unchanged. The noise and vibration levels measured/noted during the desktop assessment and 2021 baseline studies are considered representative of the Do-Nothing scenario. The Do-Nothing scenario is, therefore, considered to have a neutral effect of impact.

13.12 Difficulties Encountered in Compiling the Chapter

No difficulties encountered.

13.13 Conclusion

A predominantly residential development is proposed on lands at the Former Central Mental Hospital, Dundrum Road, Dundrum, Dublin 14. The noise and vibration chapter presents a summary of the aspects of the development pertinent to environmental noise and vibration.

The existing noise environment has been quantified by way of an environmental noise survey consisting of attended and unattended measurements. Existing noise levels have been found to be typical of a suburban area.

Suitable noise and vibration criteria have been identified for the assessment of construction noise. Similarly, appropriate noise criteria have been selected for the relevant operational elements of the development.

This chapter has outlined the general approach to construction noise and vibration that will be considered and applied as necessary during the demolition and construction phases of the proposed development. It is acknowledged that there is likely to be some degree of short term impact on nearby receptors arising noise during the construction phase, which will require suitable mitigation, monitoring and management. Suitable best practice construction noise mitigation measures are outlined in line with BS 5228.

This chapter has outlined the main potential sources of outward operational noise from the development will be traffic flows to and from the development via public roads, mechanical and electrical plant used to service the buildings, deliveries, car parking on-site, childcare facilities (crèche) and patron noise from commercial outdoor areas.

Consideration has been given to the potential condition criteria for operational noise that may be applied by the planning authority at nearby noise sensitive locations. Such noise conditions will typically state that plant items will be selected, designed and located so that there is no negative impact on sensitive receivers within the development itself. It is reasonable to assume that there will be no significant impacts on nearby noise sensitive locations once the plant is designed/attenuated to meet the relevant BS 4142 and BS 8233 criteria, based on prevailing noise levels in the area.

Any change in noise levels associated with other potential operational sources of noise in the vicinity of the Proposed Development is expected to be not significant.

Mitigation has been specified for the Block 9 and 10 western facing facades facing onto the R117 Dundrum Road and calculations indicate that the following daytime and night-time internal noise criteria are not exceeded with the mitigation in place:

- 35 dB $L_{Aeq,16hr}$ daytime within living rooms;
- 30 dB $L_{Aeq,8hr}$ night-time within bedrooms; and,
- A value of 45 dB L_{AFmax} is not normally exceeded more than 10 – 15 times in bedrooms at night.

As a mitigation measure, an enhanced glazing and ventilation specification has been proposed.

The ProPG inward impact assessment demonstrates that the recommended internal noise criteria can be achieved through consideration of the proposed façade elements at the design stage. Note that the calculated glazing and ventilation specifications in this document are preliminary and are intended to form the basis for noise mitigation at the detailed design stage. There may be further combinations of glazing and ventilation systems that will mitigate external noise intrusion sufficiently to meet the recommended internal noise criteria. Consequently, the glazing specification should remain subject to change as the project progresses during detail design stage.

13.14 References

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- British Standard BS 4142: 2014+A1:2019: *Methods for Rating and Assessing Industrial and Commercial Sound.*
- British Standard BS 5228: 2009 +A1:2014: *Code of Practice for Control of Noise and Vibration on Construction and Open Sites Part 1: Noise & Part 2: Vibration.*
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- Department of Transport Welsh Office, HMSO (1988). *Calculation of Road Traffic Noise.*
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- ISO 1996: 2017: *Acoustics – Description, measurement and assessment of environmental noise.*
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- WHO (2018). *Environmental Noise Guidelines for the European Region.*

14.0 LANDSCAPE AND VISUAL

14.1 Introduction

This Landscape/Townscape and Visual impact Assessment report has been prepared in respect of a proposed development at the Former Central Mental Hospital site Dundrum Road, Dundrum, Dublin 14. This report 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.

This Landscape/Townscape and Visual Assessment report was prepared by Richard Barker Principal 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 LVIA and TVIA for a vast range of infrastructural, industrial and commercial projects over the past 18 years, including numerous urban and residential projects.

14.1.1 Description of the Proposed Development

A ten year approval to carry out the following proposed development which is located on a total application site area of c. 9.7 ha, located on the former Central Mental Hospital, Dundrum Road, Dundrum, Dublin 14 and areas of Dundrum Road and St. Columbanus Road, Dublin 14.

The development will consist of the construction of a residential scheme of 934 no. dwellings on an overall site of c. 9.7 ha.

The subject site is in the immediate setting and curtilage of a number of protected structures, namely the 'Asylum' (RPS No. 2072), the 'Catholic Chapel' (RPS No. 2071) and the 'Hospital Building' (RPS No. 2073).

The development will consist of the demolition of existing structures associated with the existing use (3,677 sq m), including:

- Single storey former swimming pool / sports hall and admissions unit (2,750 sq m);
- Two storey redbrick building (305 sq m);
- Single storey ancillary and temporary structures including portacabins (618sq m);
- Removal of existing internal sub-divisions/ fencing, including removal of security fence at Dundrum Road entrance;
- Demolition of section of porch and glazed screens at Gate Lodge building (4 sq m);
- Removal of walls adjacent to Main Hospital Building;
- Alterations and removal of section of wall to Walled Garden.

The development will also consist of alterations and partial demolition of the perimeter wall, including:

- Alterations and removal of section of perimeter wall adjacent to Rosemount Green (south);
- Formation of a new opening in perimeter wall at Annaville Grove to provide a pedestrian and cyclist access;
- Alterations and removal of sections of wall adjacent to Dundrum Road (including removal of existing gates and entrance canopy), including reduction in height of section, widening of existing vehicular access, and provision of a new vehicle, cyclist and pedestrian access;
- Alterations and removal of section of perimeter wall adjacent to Mulvey Park to provide a pedestrian and cyclist access.

The development with a total gross floor area of c. 94,058 sq m (c. 93,980 sq m excluding retained existing buildings), will consist of 934 no. residential units comprising:

- 926 no. apartments (consisting of 342 no. one bedroom units; 98 no. two bedroom (3 person) units; 352 no. two bedroom (4 person) units; and 134 no. three bedroom units) arranged in 9 blocks (Blocks 02-10) ranging between 2 and 8 storeys in height (with a lower ground floor to Blocks 02 and Block 10 and Basements in Blocks 03 and 04), together with private balconies and private terraces and communal amenity open space provision (including courtyards) and ancillary residential facilities, including an 130 sq m internal residential amenity area at the Ground Floor Level of Block 3;
- 6 no. three bedroom duplex apartments located at Block 02, together with private balconies and terraces.
- 2 no. 5 bedroom assisted living units and private rear gardens located at Block 02.

The development will also consist of 4,380 sq m of non-residential uses, comprising:

- Change of use and renovation of existing single storey Gate Lodge building (former reception/staff area) to provide a café unit (78 sq m);
- 1 no. restaurant unit (266 sq m) located at ground floor level at Block 03;
- 3 no. retail units (1,160 sq m) located at ground floor level at Blocks 03 and 07;
- 1 no. medical unit (288 sq m) located at ground floor level at Block 02;

- A new childcare facility (716 sq m) and associated outdoor play area located at lower ground and ground floor level at Block 10;
- A management suite (123 sq m) located at ground floor level at Block 10; and
- A new community centre facility, including a multi-purpose hall, changing rooms, meeting rooms, storage and associated facilities (1,749 sq m) located at ground and first floor level at Block 06.

Vehicular access to the site will be from a new signalised access off Dundrum Road to the south of the existing access and the existing access of Dundrum Road will be retained for emergency vehicle, pedestrian and cyclist access only. The development will also consist of the provision of public open space and related play areas; hard and soft landscaping including internal roads, cycle and pedestrian routes, active travel routes for cyclists and pedestrians, pathways and boundary treatments, street furniture, wetland features, part-basement, car parking (524 no. spaces in total, including car sharing and accessible spaces); motorcycle parking; electric vehicle charging points; bicycle parking (long and short stay spaces including stands); ESB substations, piped infrastructural services and connections (including connection into existing surface water sewer in St. Columbanus Road); ducting; plant (including external plant for Air Source Heat Pumps and associated internal heating plantrooms); waste management provision; SuDS measures (including green roofs, blue roofs, bio-retention areas); attenuation tanks; sustainability measures (including solar panels); signage; public lighting; any making good works to perimeter wall and all site development and excavation works above and below ground.

14.2 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 2022-28;
- Fieldwork to study the receiving environment and capture baseline photography;
- 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.

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).

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."

14.2.1 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 14.1**.

Table 14.1: 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 14.2** refers.

Table 14.2: 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.

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 14.3.**

Table 14.3: Impact Significance Matrix

	Sensitivity of Receptor				
Scale/Magnitude	*Very High*	*High*	*Medium*	*Low*	*Negligible*
Very High	Profound	Profound-substantial	Substantial	Moderate	Slight
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

Table 14.4: Indicative significance of effect criteria descriptions

	Townscape	***Visual***
Profound	*There are notable changes in landscape characteristics over an extensive area or a very intensive change over a more limited area.*	*The view is entirely altered, obscured or affected.*
Substantial	*An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the townscape. There are notable changes in landscape / townscape characteristics over a substantial area or an intensive change over a more limited area.*	*An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the visual environment. The proposal affects a large proportion of the overall visual composition, or views are so affected that they form a new element in the physical landscape.*

Moderate	*An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends. There are minor changes over some of the area or moderate changes in a localised area.*	*An effect that alters the character of the visual environment in a manner that is consistent with existing and emerging trends. The proposal affects an appreciable segment of the overall visual composition, or there is an intrusion in the foreground of a view.*
Slight	*An effect which causes noticeable changes in the character of the landscape without affecting its sensitivities. There are minor changes over a small proportion of the area or moderate changes in a localised area or changes that are reparable over time.*	*An effect which causes noticeable changes in the character of the visual environment without affecting its sensitivities. The affected view forms only a small element in the overall visual composition or changes the view in a marginal manner.*
Imperceptible	*An effect capable of measurement but without noticeable consequences. There are no noticeable changes to landscape context, character or features.*	*An effect capable of measurement but without noticeable consequences. Although the development may be visible, it would be difficult to discern resulting in minimal change to views.*

It is important that the likely effects of the proposals are transparently assessed and understood in order that the determining authority can bring a balanced, well-informed judgement to bear when making a planning decision. As such, whilst the Significance Matrix and criteria provide a useful guide, the significance of an effect is ultimately determined by the landscape specialist using professional judgement, and in the context of occasional hybrid judgements to account for nuance.

Effects assessed as 'Substantial' or greater (orange cells in the Significance Matrix) are considered to be the most notable in townscape and visual terms and may be regarded as 'Significant', albeit it is important to note that this is not a reflection of their acceptability in planning terms.

14.2.2 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 Viewshed Reference Point (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".*

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;

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.

14.2.3 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 1.4** below.

Table 14.4: 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.

14.2.4 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).

14.2.5 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 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 – Effects lasting less than a year;
- Short Term – Effects lasting one to seven years;
- Medium Term – Effects lasting seven to fifteen years;
- Long Term – Effects lasting fifteen to sixty years; and
- Permanent – Effects lasting over sixty years.

14.2.6 Extent of Study Area

It is anticipated that the proposed development is not likely to give rise to significant landscape/townscape or visual impacts beyond approximately 1km due to screening by intervening built development and vegetation. If visible from elevated vantage points beyond this distance i.e. the Dublin Mountains, the development will read as an integrated part of a vast and distant urban sprawl where significant townscape and visual impacts could not occur. As a result, a 1km-radius study area is used in this instance and this is consistent with the proportional approach promoted by GLVIA-2013 and best practice for TVIA within Dublin City.

Figure 14.0 - Study area for the proposed development

14.3 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. 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.

14.3.1 Immediate Site Context

The site itself comprises of the Main Hospital Building within the north-central portion of the land holding. This stone clad, three storey over basement, gothic-style facility has multiple wings and semi-enclosed internal circulation areas. Within the surrounding grounds is an array of lower and more modern structures along with associated car parking and vehicular

circulation areas. Open areas consist of both formal gardens and parkland containing grass lawns and mature specimen trees. Around the entire perimeter of the site is an imposing c. 5m high stone wall. The Former Central Mental Hospital (formerly Central Criminal Lunatic Asylum) was constructed in 1850. The site was originally chosen to be soothing to mental health patients and was intentionally not linked to any particular prison service to maintain distinction between criminality and illness. Thus, the grounds are laid out in parkland and formal gardens for the benefit of recuperation rather than having adopted a more utilitarian design more typically associated with incarceration.

Adjoining the site in almost all directions are mid-low density residential housing estates where the rear yards of dwellings are backed by the stone perimeter wall of the Former CMH site. The only exception is a portion of the southern boundary, which adjoins the northern end of a recreational open space accessed from Mount Carmel Avenue and a portion of the western Boundary wall, which fronts the Dundrum Road.

Figure 14.1 – Immediate site context looking northwards

Figure 14.2 – View north across Mount Carmel Avenue open space towards site

Figure 14.3 – View from Mulvey Park residential estate looking south

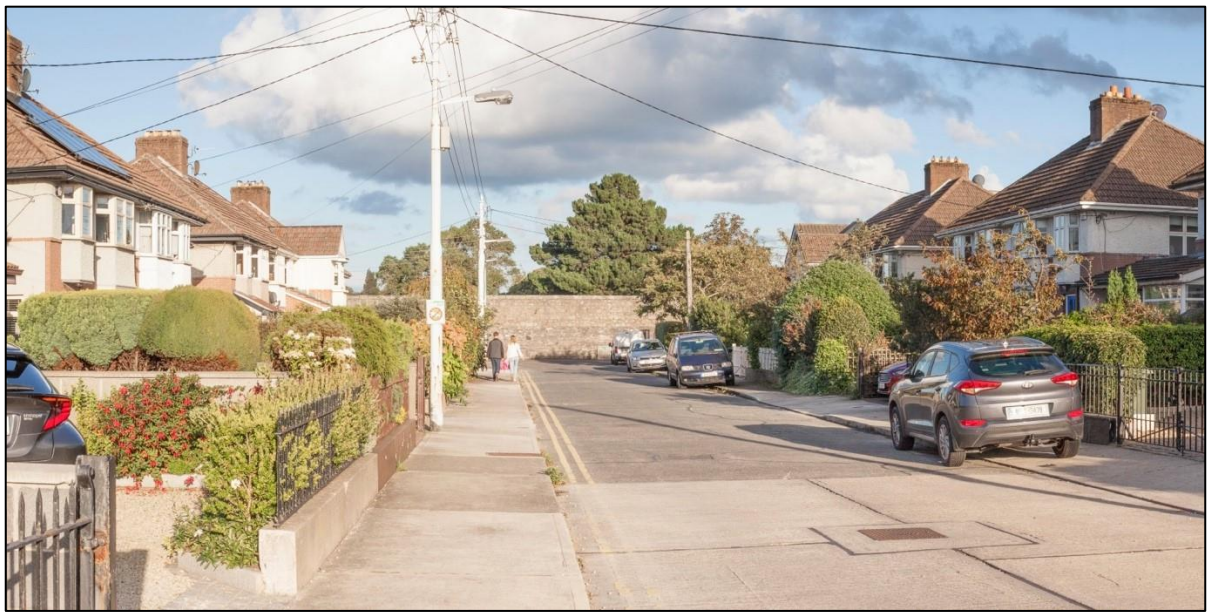

Figure 14.4 – View from Annaville Park to the west of the site

14.3.2 Broader Townscape Context

Beyond the immediate site boundary context is a broader variety of urban land uses, albeit in an overriding matrix of mid-low density semi-detached and terraced housing estates. Some of the most notable nodes of non-residential development include Our lady's Grove Primary School beyond Friarsland housing estate to the northeast of the CMH site. To the north, beyond Mulvey park Housing estate is the Dundrum Business Park.

Further west beyond the Dundrum Road, the LUAS light rail line runs in a general north – south direction between the Dundrum LUAS Stop and Windy Arbour LUAS stop. Milltown Golf Course occupies much of the north-western extents of the study area.

The most iconic aspect of the study area is Dundrum Town Centre consisting of the largest shopping mall in Ireland, which in-turn is surrounded by high density residential development in the form of apartment blocks. The LUAS line runs along the eastern side of the Dundrum Town Centre precinct and crosses over the major transport intersection of Churchtown Road and Dundrum Road in the form of an elegant tension bridge.

Other notable apartment developments within the study area include Trimblestown in the eastern portion of the study area and Fernbank just to the southwest of the LUAS bridge at Dundrum. It should also be noted that although the site and study area is generally flat to mildly undulating, there is a subtle fall in terrain from southeast to northwest across the study area. A tributary of the River Dodder forms the lowest section of the study area as it runs in a northerly direction to the west of Dundrum Road.

Figure 14.5 – View from Dundrum LUAS bridge looking north along Dundrum Road in the general direction of the site

Figure 14.6 – View from Dundrum LUAS bridge looking south towards Dundrum Town Centre

Figure 14.7 – Broader urban fabric of the Study Area context looking northwards

14.3.3 Dun Laoghaire Rathdown Development Plan 2022 – 2028

According to the Dun Laoghaire Rathdown Development Plan:

- The site is zoned under Land Use Zoning objective 'A,' with an objective 'To provide residential development and improve residential amenity while protecting the existing residential amenities'.
- The lands associated with the former Central Mental Hospital also have an 'Institutional Lands' designation with an objective "to protect and / or provide for institutional use in open lands".
- Within the near surrounds of the site are small zoned areas relating to Objective NC (Neighbourhood Centres) and "Objective F (Amenity Open Space).
- Dundrum Business Park, which is a short distance to the north of the site, has an underlying zoning of Objective E (Economic Development and Employment), whilst Dundrum town centre further to the south has a zoning of Objective MTC (Major Town Centre).
- The purple dotted line that encompasses the site and much of the west and south towards Dundrum Town Centre denotes an area of the Dundrum Local Area Plan 2023.
- Protected Structure 2072 'Hospital \ Asylum' is contained within the site.
- There are three tree icons indicating and objective to "Protect and Preserve Trees and Woodlands", however it is assumed that these are a general representation of the objective to preserve mature trees and woodlands within the overall former CMH site rather that three specific clusters.

In addition to the above, there are a series of specific Local Objectives (SLO) relating directly to the site or adjacent lands these include;

122 – "To allow offices in excess of 200 sq. metres in the former Central Mental Hospital buildings which are included on the Record of Protected Structures. Any application for offices in excess of 200 sq. metres shall (i)relate only to the former Mental Hospital Buildings with any extension to the building in office use to be only small ancillary structures, (ii)shall include a report that demonstrates that other suitable uses that are permitted in principle or open for consideration have been explored and that the reasons for discounting same relate to the proper planning and sustainable development of the area"

123 – "To ensure that, as Strategic Regeneration Sites, residential provision on the Central Mental Hospital Site and the Old Shopping Centre site will provide for a balanced mix of housing tenure, including affordable homes, and an acceptable mix of larger flexible units, and lifetime adaptable homes to ensure balanced, sustainable communities in Dundrum"

113 – "Any integration of / or connectivity between the Central Mental Hospital lands with the adjoining residential area should include the development of enhanced sporting facilities/ infrastructure for existing and future residents."

Aside from the aforementioned zoning considerations (above), according to the interactive map for the development plan (see Figure 14.8 below):

- There are no Candidate Architectural Conservation Areas within the near vicinity of the site;
- There are no designations to preserve 'Views' and 'Prospects' within the near vicinity of the site
- The site is not within or near a High Amenity Area.

Figure 14.8 – Extract of the DLR CDP Map 1

Chapter 8 of the Development Plan pertains to 'Green Infrastructure and Biodiversity'. Section 8.4 pertains to 'Landscape', however, none of the listed policies or objectives in this Section are of specific relevance to the site or wider study area.

Dun Laoghaire Rathdown Landscape Character Assessment

Appendix 8 of the Dún Laoghaire-Rathdown County Development Plan ('DLRCDP') identifies that there are 14 Landscape Character Areas ('LCA') within the administrative area of Dún Laoghaire-Rathdown. However, the LCA's relate to the rural landscape of the Dún Laoghaire-Rathdown jurisdictional area and are not considered to be relevant in this instance.

Dundrum Local Area Plan 2023

Section 8.4.8 of the Dundrum Local Area Plan (2023) deals with the 'Central Mental Hospital Lands'. Objectives HC6 to HC10 cover; New Development; Reuse of protected structures; Boundary Treatment; Adaptive reuse of features; and Open Character. The most relevant of these to the TVIA are;

Objective HC8 – Boundary Treatment

It is an Objective of the Council to seek the retention of substantial elements of the perimeter wall as part of the re-development of the CMH lands, except where their

removal in part is required to facilitate permeability and connectivity, as per the Objectives set out in Chapters 2 and 3 of this Plan.

Objective HC10 – Open Character

It is an Objective of the Council to ensure that the 'open' character and landscaped setting of the CMH lands informs the re-development of the lands. Any design should seek to celebrate and enhance the setting of the unique built and natural features that contribute to the character of these lands.

Visual Policy

Policy GIB6 in the DLRCDP relates to protected views and prospects and states:

- *"It is a Policy Objective to preserve, protect and encourage the enjoyment of views and prospects of special amenity value or special interests, and to prevent development, which would block or otherwise interfere with Views and/or Prospects."*

Table 8.1 of the DLRCDP lists 14 of 'Prospects to be Preserved' but none of these occur within the study area. The DLRCDP also states '*Roads or other public areas from which there is a View that is deemed worthy of protection are graphically shown on the Development Plan Maps*'. Certain locations are identified on the DLRCDP Development Plan Maps ('DPM') under the heading of '*Other Objectives*' including; '*To preserve Views*'; and '*To preserve Prospects*'. On review none of these are relevant to the proposed development.

It should be noted that there are designated scenic views within the Dublin Mountains from which distant views of the proposed development will be afforded. These are well outside of the study area beyond 5km away and the viewing scenario will be that of a node of increased intensity of residential development within the overall context of Dublin City. In that context, views of the development may be of notable interest but will not have a material negative influence on visual amenity.

14.3.6 Identification of Viewshed Reference Points as a Basis for Assessment

Viewshed Reference Points (VRP's) 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 report 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 Viewshed Reference Points are selected at locations that are most likely to afford visibility of the proposed development, whilst remaining relevant to the receptor in question. Occasionally 'illustrative' VRPs are used to highlight a particular aspect of the visual impact scenario such as the absence of visibility from important receptor locations. The VRPs selected in this instance are set out in Table 1.5 and shown on Figure 1.10 below.

Figure 1.10 – Viewpoint Selection Map

Table 14.5 Outline Description of Selected Viewshed Reference Points (VRPs)

VRP No.	*Location*	*Direction of view*
VP1	Dundrum LUAS Bridge / Stop	N
VP2	Mount Carmel Avenue	N
VP3	Mount Carmel Road	N

VP4	Roebuck Shopping Centre	NW
VP4a	Larchfield Road	NW
VP5	Friarsland Road	W
VP6	Goatstown Road / Our lady's Grove	W
VP7	Mulvey Park	SW
VP8	Entrance to Mulvey Park Housing Estate	SE
VP9	Glasson Court Park	SE
VP10	Annaville Park	E
VP11	Dundrum Road (adjacent to NW site boundary)	E
VP12	Taney Crescent	NW
VP13	Dundrum Road (adjacent to north-western site entrance)	SE
VP14	Dundrum Road (adjacent to W site boundary)	E
VP15	Mulvey Park north of site	S
VP16	Annaville Grove	N/E
VP17	Cnr Larchfield Road and Farmhill Drive	NW

14.4 Potential Landscape/townscape Impacts of the Proposed Project

14.4.1 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." In a city that has evolved over millennia, the study area is a relatively recent addition.

The site itself is fully deserving of the 'Institutional' designation overlying its residential zoning as it contains many of the features associated with institutional settings described in the DLR CDP. It consists of a large centralised stately building surrounded by various ancillary structures that have emerged over the life of the former CMH facility, all within the context of a parkland style landscape incorporating occasional formal and food gardens. There are some stands of mature trees within the site, the crowns of which, serve as a containing skyline feature providing some amenity and respite from built form for surrounding residents.

A key element of the former CMH facility and the only one that is readily apparent to those who live or pass by in close proximity to the site is its tall and comprehensive stone wall perimeter. This is not only an imposing physical barrier - it also represents protection and not only for those within the site, but those outside of it. For those who live adjacent to the site it forms a distinctive and enclosing feature typically located at the end of rear yards. It has a long established aesthetic and provides a strong sense of privacy and security.

The other strong perceptual quality associated the former CMH perimeter wall is that it reinforces the sense of a 'void' within the otherwise typical and consistent urban fabric of the Dundrum area. There is little sense of what lies within, but there is the perception that it is a vast and inaccessible area, around which, normal urban life revolves, but within which, there is relative stasis. There is also a clear comprehension that the former CMH facility was here before the vast majority of built development that surrounds it and that the residential housing estates and suburban form has enveloped it over the last century.

Whilst there are strong perceptual townscape associations with the former CMH facility, these are not the positive recreational and visual amenity ones that might be associated with other institutional facilities such as schools as hospitals or large parkland demesnes associated with stately houses. These associations are more akin to a large prison facility.

In landscape fabric terms and as discussed above, the former CMH facility reads as a slightly anomalous void protected by stark and severe stone walls that generate a sense of foreboding. However, the facility also offers distinctive respite from the surrounding and relatively unremarkable residential housing estates. It represents a feature that is entwined with the sense of place for Dundrum, even if this is without wholly positive connotations.

In terms of the townscape values and sensitivities associated with the surrounding study area, the most notable feature is Dundrum Town Centre, which is essentially a large modern shopping mall with high density apartment dwellings and other commercial uses surrounding it. This is also served by the LUAS light rail service, which has its own iconic tension bridge marking the northern entrance to this distinctly modernised precinct. The presence of the Dundrum shopping centre and its associated facilities have made Dundrum a popular suburb to live, which is aided by its general proximity and accessibility to Dublin City centre. Most of the remainder of the study area could be best be described as typical mid-low density residential housing estates services by pocket parks, playing pitches and neighbourhood

service centres. These have generally evolved in a radial fashion out from Dublin city centre over the course of the past 60 - 80 years.

On balance of the factors outlined above, the sensitivity of the receiving townscape setting is considered to be **Medium-low**.

14.4.2 Magnitude of Landscape/townscape effects - Construction Phase

Townscape effects are considered in the context of physical changes to landcover and buildings as well as the resultant effects to townscape fabric and character within the site and wider study area.

There will be permanent physical effects to the land cover of the site, which are not readily reversible. During the construction stage of the proposed development there will be periods of 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 tower cranes on-site;
- Temporary storage of excavated materials and construction materials on-site;
- Gradual emergence of the proposed apartment buildings, and associated works;

In most urban areas, ground level site activity, material stockpiling, security fencing and worker welfare facilities would all be key components of the construction stage effects contributing to visual clutter, complexity and movement. However, in this instance, the existing c.5m high perimeter stone wall around the site will preclude visibility of much of this activity. It is only as the taller buildings begin to rise into view above the perimeter wall that construction stage landscape and visual effects will begin to become material.

The physical impacts to the site's land cover will be permanent and not readily reversible. Whilst the former CMH building will remain as an integral part of the development along with the walled garden and some areas of open space and associated mature trees, much of the current parkland setting will be removed and replaced by high density residential development, albeit 34% of the site will be contained in public open space (new and existing). This represents a dramatic change to the physical landscape of the site with the loss of some key elements and the retention of others, albeit in a dramatically altered setting.

Construction stage impacts on landscape/townscape character will be 'medium-term' (i.e. lasting 7-15 years), in accordance with the EPA definitions of impact duration. Whilst major construction projects associated with Dundrum Town Centre and the LUAS line have been characteristic of the wider study area in the past two decades, lesser scale apartment / housing developments associated with our Lady's Grove and Trimblestown are more typical of the residential area closer to the site. The construction stage works, will be of a noticeably greater scale and intensity than those developments, but with the buffering / screening effect of the existing perimeter wall around the site.

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-low sensitivity of the receiving landscape, **the overall significance of construction stage landscape/townscape impacts** is considered to be **Moderate,** in accordance with the criteria contained in Section 1.5. The quality of construction stage effects will be **Negative**.

14.4.3 Magnitude of Landscape/townscape effects - Operational Phase

Following the completion of the proposed works, landscape/townscape impacts will relate entirely to the development's impact on the character of the receiving landscape/townscape and whether this is positive or negative.

The proposed development represents a marked and comprehensive change to the land use of the site, the scale and nature of development within the site and its perception within its receiving environment. The completely insular former CMH site, which currently serves as something of a perceptual void in the landscape fabric of Dundrum, will be transformed into a modern, outwardly bold, high density residential precinct. And yet, for those that live and move around the local area of the site, especially where the perimeter walls will be substantially retained and new vehicular accesses are not proposed (north, west, southeast, southwest) the change to townscape character will not be as dramatic. Instead, it is likely to be manifest as some of the taller centrally located apartment blocks within the site rising just into view above the perimeter wall and between intervening treetops.

The masterplan design of the proposed development allows for a terracing up in the intensity of development and buildings heights from the mid-low density housing estates that surround the site, to the tallest centrally located apartment blocks. This is an appropriate design response as it allows the development merge into its setting without an abrupt transition of scale, which would read awkwardly in terms of adjacent low-rise residential neighbourhoods and avoids an overbearing presence for those that live adjacent to the site.

Due to the 'Institutional' designation on this residential zoned site, there is generous spacing between buildings and a campus / parkland aesthetic that serves to soften and downplay the intensity and height of apartment buildings within the development. Open spaces are varied and connected, both internally and externally with some retention of existing features such as the walled garden and mature parkland trees through the central portions of the site, particularly surrounding 'the Avenue' which forms the main entrance into the site. The main external open space connection is with Rosemount Green to the south of the site and there are also pedestrian/ cycle connections to Mulvey Park (north) and Annaville Grove (west). The main physical and visual connection with the external townscape fabric will be at the north-western boundary of the site where it connects with Dundrum Road. The site perimeter wall will be punctuated twice along this section of road to allow vehicular access to and from the site and further sections of the wall between the vehicle accesses, will also be removed and replaced with sections of railing to allow visual connectivity with the site. Aside from being

functional connections to the site these external connections are important for the integration of the proposed development with the surrounding urban context. A delicate balance of retained privacy and connectivity appears has been achieved by the proposed layout.

In the wider urban context, there is a strong functional and thematic relationship between the proposed development and the nearby Dundrum Town Centre. They both represent intensive contemporary design responses to the needs of a rapidly growing urban population. This is an appropriate and recognised node for such development intensity as the Dundrum Town Centre is zoned as a 'Major Town Centre' in the DLR CDP. Not only is this area well served in its own right in terms of commercial and retail uses, it is also well connected to the city centre via the LUAS light rail system.

The proposed development is not alone in terms of mid to high density apartment developments in the immediate area with the nearby apartment developments at Our Lady's grove, Trimblestown and Fernbank setting some precedent for higher intensity nodes within the general matrix of mid-low intensity housing estates.

Aside from a larger scale than these other apartment developments in terms of both extent and buildings heights another key variation for the proposed development is the eclectic design of the various buildings contained within it. Whereas most apartment developments have a deliberately consistent design language, the proposed development design celebrates diversity of form, colour and texture. Some of this diversity is thrust upon it by the retention of the existing 'infirmary' building of the former CMH (to be repurposed for community / amenity / enterprise use), which forms part of the masterplan for the site, but is outside the redline boundary for this application for permission. The rest is a deliberate and successful attempt to have the proposed development read as a residential mixed used campus almost like it might have evolved organically over time like traditional urban centres. A more homogenous design palette would appear much more like a discrete, singular and insular apartment development and would not work as well at this scale and in this setting as the proposed design does.

For the reasons outlined above, the **magnitude of operational stage landscape/townscape impacts** is considered to be **High** in terms of its effect on the landscape 'fabric' of the area and its comprehensive filling of a perceptual void in the predominant residential suburban setting of the area. In terms of its perceived effect on the townscape character of the area, the change is deemed to be slightly less marked – **High-medium**. This is on the basis that the development does not represent an overt visual change to the urban setting as it remains largely contained behind the existing perimeter stone walls of the site. The study area will remain a townscape setting defined by mid-low density residential housing estates and the Dundrum Town Centre, albeit with an additional node of higher density residential mixed use development contained within it. Effects on urban fabric and townscape character would not normally be differentiated, but in this somewhat unique context, it is considered appropriate.

14.4.4 Significance of Landscape/townscape effects

In accordance with the Landscape/Visual significance matrix contained in Table 14.3, the combination of a 'Medium-low' townscape sensitivity judgement and a 'High / High-medium' townscape impact magnitude judgment results in a 'Moderate' significance of townscape impact. On balance of the factors outlined above, the quality of that impact is generally considered to be Positive. Thus the overall significance is **Moderate** / **Positive**.

14.5 Potential Visual Impacts of the Proposed Project

14.5.1 Visual Receptor Sensitivity

In consideration of the visual receptor criteria set out in section 14.4.1, the main variation in the nature of views and those availing of those views, in this instance, relates to whether they are located in busy areas of the public domain such as major transport routes or quieter residential enclaves. In all cases the setting is a completely modified anthropogenic one that is mainly valued for residential amenity as opposed to scenic or naturalistic value. It is also important to remember that urban visual receptor sensitivity judgements are contained on the same spectrum as wild and remote mountain tops and rugged coastlines, for example, where values relate tourism, scenic and recreational amenity and which may be designated for protection.

On the basis of the factors outlined above, the visual receptor sensitivity of busy transport route views is deemed to be **Low** and for housing estate views the sensitivity is deemed to be **Medium-low**.

14.5.2 Magnitude of Visual Effect

The assessment of visual impacts at each of the selected viewpoints is aided by photomontages of the proposed development (see Volume 3 of the EIAR). 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
2. Montage View

Viewshed Reference Point		Viewing distance to site boundary	Direction of View
VP1	Dundrum LUAS Bridge / Stop	571m	N

Representative of:

- A major transport node

Receptor Sensitivity **Low**

Existing View

This is an elevated view from the western end of the Dundrum LUAS stop where the bridge across the Dundrum Taney Road intersection commences. It provides a worst case-scenario in terms of potential visual exposure in respect of the proposed development from Dundrum Town centre due to its elevation and relative proximity to the site. The northerly view takes in a wooded embankment and then the rear of a line of terraced dwellings.

Visual Impact of proposed development

The proposed development will not be visible from here due to a combination of both terrain screening and terrestrial screening from intervening vegetation and houses. The visual impact magnitude is **Negligible** by default and this view has been retained as an 'illustrative view. i.e. to illustrate the absence of effect from a well-known receptor.

Summary

Based on the assessment criteria and matrices outlined at **Section 14.3** the significance of residual visual impact is summarised below.

	Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
Impact Significance	Low	Negligible	**Imperceptible / Neutral**

Viewshed Reference Point		**Viewing distance to site boundary**	**Direction of View**
VP2	Mount Carmel Avenue	205m	N

Representative of:

- Local Community views
- A neighbourhood recreational amenity area

Receptor Sensitivity **Medium low**

Existing View

This is a northerly view across Rosemount Green playing pitches, which represents one of the most open views of the former CMH infirmary building and site from the surrounding area due to the absence of foreground screening. The park is flanked by two storey dwellings from surrounding housing estates and at the far end is the tall, stone perimeter wall of the former CMH site. Beyond the wall can be seen the gothic style, stone infirmary building within a general parkland setting of both mature deciduous and evergreen specimen trees.

Visual Impact of proposed development

The proposed development represents a substantial visual change to this scene and a considerable increase in the scale and intensity of development within it. There is a slightly increased sense of visual enclosure, but without the development feeling overbearing in terms of vertical scale. Residential development is now presented in both high density apartment buildings as

well as the traditional mid-to-low density terraced and semi-detached dwellings that exist around the other sides of the park. As well as the taller centrally located apartment buildings within the site, which occupy the centre of the depicted view, lower residential buildings will be seen to rise slightly above foreground existing dwellings to the left and right of the park.
Aesthetically, the proposed development presents with an array of design styles, tones, textures and finishes between each building. There are also some notable gaps between buildings, which are occupied by existing and proposed planting. These attributes serves to break down the scale and intensity of the development giving it an evolved campus feel (much like UCD). An open space courtyard at the southern extent of the site also opens and connects onto Rosemount Green. This increases the perceived extent of greenspace, providing a much more appropriate transition than the existing high stone wall. It also affords a higher degree of passive surveillance to the open space.

Whilst the degree of visual change is considerable, the factors outlined above have both negative and positive connotations for the view experienced by park users and local residents. Due to these distinct, competing factors (rather than an immaterial effect on the scene) the quality of the impact is balanced. Therefore the magnitude of effect is deemed to be **High-medium** and the quality of that effect is **Neutral** (on balance).

Seasonal effects

This view was replicated for summer and winter seasons to examine if there would be a distinction in cross-season effects (due to the altered screening effects of deciduous trees). It is not considered that there will be a material difference in effect between summer and winter.

Summary

Based on the assessment criteria and matrices outlined at **Section 14.3** the significance of residual visual impact is summarised below.

	Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
Impact Significance	Medium low	High-medium	**Moderate / Neutral**

Viewshed Reference Point		**Viewing distance to site boundary**	**Direction of View**
VP3	Mount Carmel Road	174m	N

Representative of:

- Local community views

Receptor Sensitivity **Medium low**

Existing View

This is a view near the northern end of Mount Carmel Road, which is directed towards the site. This is a relatively enclosed street scene flanked on either side by generously sized semi-detached dwellings and substantially contained in the near distance by similar dwellings on the northern side of the Larchfield Road corner. The scene is punctuated throughout by street and garden trees as well as some taller specimens within the former CMH site which rise above the Larchfield rooflines.

Visual Impact of proposed development

Proposed Apartment Block 5 will be seen rising between and just above the dwellings at the end of the street with a similar degree of the Block 4 roofline also rising into view to the right. This will result in a small, but noticeable change to the street scene in terms of general enclosure, as well as the diversity, intensity and scale of development relative to the mid-to-low rise dwellings of the foreground. However, the development is far from imposing or overbearing in this scene – even for those dwellings lining the northern side of Larchfield Road. Nor does it impart a sense of undue overlooking in respect of those dwellings partly due to the offset angle of the proposed apartment blocks.

Unlike for VP2, where a clear understanding of the eclectic, open campus style of the proposed development is readily apparent, the proposed buildings mainly contribute intensity and complexity to this scene.
Overall, the magnitude of the visual impact is deemed to be **Low** and the quality of that effect is **Negative**.

Seasonal effects

This view was replicated for summer and winter seasons to examine if there would be a distinction in cross-season effects (due to the altered screening effects of deciduous trees). It is not considered that there will be a material difference in effect between summer and winter.

Summary

Based on the assessment criteria and matrices outlined at **Section 14.3** the significance of residual visual impact is summarised below.

	Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
Impact Significance	Medium low	Low	**Slight / Negative**

Viewshed Reference Point		**Viewing distance to site boundary**	**Direction of View**
VP4	Roebuck Shopping Centre	187m	NW

Representative of:	• Local Community Node
Receptor Sensitivity	**Medium low**
Existing View	This view is from the front of the Roebuck Shopping centre, which is a neighbourhood service centre of retail premises below offices with a car park and small greenspace to the front. It is located at the corner of Larchfield Road and Farmhill Road and is enclosed by semi-detached dwellings on the opposing sides of the roads.
Visual Impact of proposed development	From here the Block 3 apartment building can just be seen partially rising into view between the roofs of intervening dwellings and in the same complex context of the foreground shopfronts. The view of the development is oblique to the general orientation of the shopping centre and its associated green space, which is the northeast. Although the proposed development only presents a very minor intrusion into this scene, the partial view of it lacks context within a setting that is otherwise dominated by mid-low intensity housing estates and their neighbourhood shops. In this regard it appears slightly ambiguous. On balance of the limited visual presence coupled with the slightly ambiguous view of the development, the magnitude of effect is deemed to be **Low-negligible** and the quality of that impact is judged to be **Negative**.
Summary	Based on the assessment criteria and matrices outlined at **Section 14.3** the significance of residual visual impact is summarised below.

	Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
Impact Significance	Medium low	Low-negligible	**Slight-imperceptible / Negative**

Viewshed Reference Point		**Viewing distance to site boundary**	**Direction of View**
VP4a	Larchfield Road	90m	NW

Representative of:	• Local community views
Receptor Sensitivity	**Medium low**

Existing View

This view is across the intersection of Larchfield Road and Friarsland Road. Its takes in a typical suburban housing estate street scene that is contained by generous, two storey, semi-detached dwellings. The view is also interspersed with an array of street and garden trees as well as tall, mature tree tops from the CMH site periphery that rise into view between the roof tops.

Visual Impact of proposed development

From here the nearest corner roof profile of the Block 4 apartment building rises just into view between the perimeter tree tops of the CMH site, which in turn are seen between intervening dwellings. In a similar manner to VP4, the proposed building represents a very minor addition to the street scene, but one that lacks a degree of context and may not be expected in this low rise residential area.

Again, the minor visual presence coupled with the slightly ambiguous view of the development results in a magnitude of effect that is deemed to be **Low** and the quality of that impact is judged to be **Negative**.

Summary

Based on the assessment criteria and matrices outlined at **Section 14.3** the significance of residual visual impact is summarised below.

	Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
Impact Significance	Medium low	Low	**Slight / Negative**

Viewshed Reference Point		**Viewing distance to site boundary**	**Direction of View**
VP5	Friarsland Road	52m	W

Representative of:

- Local community views

Receptor Sensitivity **Medium low**

Existing View

This is a view across Friarsland Road, which runs parallel to the CMH site boundary. Indeed, the perimeter wall of the site and a portion of the main infirmary building can be glimpsed between dwellings on the opposite side of the road. At this point on Friarsland Road the dwellings step down from two storey detached to detached single storey and dormer bungalows allowing a slightly greater degree of visibility towards the CMH site. There is a notable band of vegetation lining the rear boundaries of these properties, much of which is contained with the CMH site.

Visual Impact of proposed development

Apartment Blocks 2 and 3 from the proposed development will rise a short distance beyond the rear boundaries of these properties resulting in a distinct change to the street scene. There will be a more consolidated degree of enclosure as the space between pitched foreground rooflines is filled by flat roof apartments just beyond.

There is not an undue sense of overbearing from the modest height apartment buildings, which only fill space between foreground buildings rather than rising above their roof profiles when viewed from here. There is also a variation in scale and massing in the visible façade giving a sequence of solid and void. There is an initial sense of potential overlooking for the rear yards of the Friarsland properties, but on closer examination of the proposed apartment design it is clear that the main outlook and balconies of these apartments is not in the direction of Friarsland. Furthermore, the retained and supplemented boundary trees will serve as a more effective screen (due to relative scale in relation to distance) as a viewer approaches the site.

There is a minor degree of visual ambiguity relating to the partial emergence of higher density apartment blocks into a street scene that was heretofore governed by low rise mid-low density dwellings and without a stronger sense of the overall design of the development. However, it is a circumstance that currently occurs and will continue to occur within Dublin suburbs, particularly those that are a focus of essential services.

For the reasons outlined above, the magnitude of visual impact is deemed to be **Medium-low** and the quality of the effect is deemed to be **Negative**.

Summary

Based on the assessment criteria and matrices outlined at **Section 14.3** the significance of residual visual impact is summarised below.

Impact Significance

Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
Medium low	Medium low	**Moderate-slight / Negative**

Viewshed Reference Point		**Viewing distance to site boundary**	**Direction of View**
VP6	Goatstown Road / Our lady's Grove	403m	W

Representative of:

- Local Community Views

Receptor Sensitivity **Low**

Existing View

This is a view from the busy Goatstown Road at the entrance to Our Lady's Grove. It consists of a primary school on the right hand side of the entrance road and an apartment development on the school's former lands on the left hand side. Just beyond the apartments building can be seen a terraced line of two storey dormer dwellings with associated amenity planting to the fore. A focus of the Avenue view into the site is the former convent buildings, which at the time the image was captured was being refurbished (for apartments).

Visual Impact of proposed development

The upper floors of the proposed Block 3 apartment building and the roofline of the marginally nearer (and lower) Block 2 apartments can just be seen rising in the middle distance beyond and to the sides of the former convent building from Our Lady's Gove site. The dark tone of Block 3 stands in distinct contrast to the current pale colour of the convent building and also against the backdrop of sky. Due to its lighter tone and lower stature, block 2 is considerably less noticeable.

This is a varied and complex vista of a range of development types, scales and eras that has clearly changed dramatically in recent years. There is a fractional increase in the intensity of high density residential development within the background of this scene and the intervening convent building will have a slightly more complex and crowded setting. These factors are not considered to have a marked impact on visual amenity at this locality and consequently the magnitude of visual impact is deemed to be **Low-negligible**. The quality of the effect is marginally negative – i.e. **Neutral / Negative**.

Summary

Based on the assessment criteria and matrices outlined at **Section 14.3** the significance of residual visual impact is summarised below.

	Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
Impact Significance	Low	Low-negligible	**Slight-imperceptible / Neutral - Negative**

Viewshed Reference Point		**Viewing distance to site boundary**	**Direction of View**
VP7	Mulvey Park	142m	SW

Representative of:

- Local Community Views

Receptor Sensitivity **Medium low**

Existing View

This is a view across the main green amenity space of the Mulvey Park housing estate, which due to the absence of foreground buildings and vegetation affords relatively open views in the direction of the former CMH site. On the far side of the green it is contained by terraces of two storey dwellings. To the southwest can be seen the multi-chimneyed roofline of the former CMH infirmary building and mature treetops within that site rising just above the Mulvey Park dwellings.

Visual Impact of proposed development

The proposed Block 2 apartment building will be seen to rise in the middle distance above the intervening residential rooftops and vegetation just to the left of the retained infirmary building. It will be the vertical focus of an otherwise horizontally stratified view and will be a prominent feature, but without a sense of overbearing or over-scaling relative to the other elements of the view. Indeed, there is a clear terracing of height in from the former CMH boundary, which is made legible by the retention of the infirmary building as this provides a scale transition and also a distance reference.

Whilst there is something of an eclectic mix of architecture between the foreground housing estate, the infirmary building and the proposed block 2 apartments, this is generally in line with the organic design approach for the development. Furthermore, from this location there is a stronger sense of transition than from some of the previous viewpoints where proposed apartment blocks rise into view with less contextual legibility.

There is not an overt sense of overlooking generated by the proposed apartment block due to the angular and distance offset from Mulvey Park.
Overall, the magnitude of visual impact is judged to be **Low** and the quality of the effect is **Neutral / Negative**.

Summary

Based on the assessment criteria and matrices outlined at **Section 14.3** the significance of residual visual impact is summarised below.

Impact Significance

Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
Medium low	Low	**Slight / Neutral - negative**

Viewshed Reference Point		**Viewing distance to site boundary**	**Direction of View**
VP8	Entrance to Mulvey Park Housing Estate	59m	SE

Representative of:	• Local Community View
Receptor Sensitivity	**Medium low**
Existing View	This view is obtained from a slightly elevated green space at the confluence of Mulvey Park road and a pedestrian and cycle route only a short distance from the intersection with the busier Dundrum Road. The view across the green consists of car parking and terraced houses from a small crescent. The dwellings are backed by a tall and mature tree line of both deciduous and coniferous species, which rises just above the roofline.
Visual Impact of proposed development	Only a partial view of Block 10 through dense tree cover (right of centre) will be afforded from here through coniferous tree cover and beyond the roofline of foreground residences. Whilst the visual change is very subtle there is a stronger sense of the bulky presence of the substantial building just beyond the foreground setting. Nonetheless, much of the tree cover is coniferous providing year round screening and there will not be a sense of overbearing or overlooking. Aesthetically, the proposed development adds marginally to the quantum and diversity of built development within the scene thereby adding to visual complexity. The very limited view of the proposed development, whilst tempering its overall visual presence, also leads to a minor sense of contextual ambiguity in this otherwise typical housing estate scene. Overall, it is considered that the residential and visual amenity of local residents in this setting will not be unduly reduced by the proposed development. The magnitude of visual impact is deemed to be **Low-negligible** and the quality of that effect is marginally negative i.e. **Neutral-Negative**.
Seasonal effects	This view was replicated for summer and winter seasons to examine if there would be a distinction in cross-season effects (due to the altered screening effects of deciduous trees). It is not considered that there will be a material difference in effect between summer and winter.
Summary **Impact Significance**	Based on the assessment criteria and matrices outlined at **Section 14.3** the significance of residual visual impact is summarised below.

Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
Medium low	Low-negligible	**Slight-imperceptible/ Neutral-Negative**

Viewshed Reference Point		Viewing distance to site boundary	Direction of View
VP9	Glasson Court Park	142m	SE

Representative of:

- Local Community Views

Receptor Sensitivity **Medium low**

Existing View This is a slightly elevated view from Glasson Court where it abuts a small linear park. The grassed area slopes steeply down to a small stream and the linear park continues on the other side. Just beyond on the opposing slopes are a series of 2-3 storey residential and commercial buildings, which present their rear facades to the viewer because they front the Dundrum Road on the other side. There is a dense band of mature riparian vegetation flanking those buildings to the south and generating a vegetated skyline in this section of the view.

Visual Impact of proposed development The visual change here is very subtle and like for VP8 it comes more in the sense of a bulkier presence of built development through vegetation screening (marginally less noticeable in summer). This will be barely discernible in this diverse and complex setting and thus, the magnitude of impact is **Negligible**.

Seasonal effects This view was also replicated for summer and winter seasons. It is not considered that there will be a material difference in effect between summer and winter due to leaf loss from deciduous trees.

Summary Based on the assessment criteria and matrices outlined at **Section 14.3** the significance of residual visual impact is summarised below.

	Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
Impact Significance	Medium-low	Negligible	**Imperceptible / Neutral**

Viewshed Reference Point		Viewing distance to site boundary	Direction of View
VP10	Annaville Park	85m	E

Representative of:

- Local community views

Receptor Sensitivity	**Medium low**
Existing View	This is a view along Annaville park, which is a small residential enclave that runs parallel to the CMH boundary. Indeed, the stonewall perimeter boundary of the CMH site can be seen at the end of the cul-de-sac backed by several mature trees. The street is otherwise pleasantly enclosed by semi-detached dwellings and associated amenity planting within front yards.
Visual Impact of proposed development	There will be a relatively clear view of proposed Apartment Blocks 6 and 7 to the right and left of the street alignment respectively. Block 6 is the smaller of the two and is marginally closer to the site boundary, whereas Block 7 is taller and more centrally located with proposed two storey perimeter dwellings (out of view) between it and the boundary. The proposed buildings will serve to enclose the end of the street, where heretofore there had been a relative sense of openness. Nonetheless, the sense of enclosure is similar to that of the street in general and the proposed apartment buildings do not appear overbearing or generate an undue sense of overlooking. The campus style of the proposed development is apparent from here with diverse building design and a degree of visual permeability between them. It is also clear that the alignment of Annaville Park been carried into the development in the for of a treelined avenue that runs east – west through the site. In terms of physical access, there will be a pedestrian entrance into the site from Annaville Park, but the perimeter wall will remain as a visual separation between the existing and proposed residential quarters. The visual change is distinct here and there is a marked increase in the scale, intensity and form of built development. Thus, the magnitude of visual impact is deemed to be **High-medium**. In terms of the quality of the effect, it is likely that the residents of Annaville Park would prefer to retain the open / vegetated aspect at the end of the street and the sense of a tucked-away residential enclave. However, in urban design terms the proposed development addressed the alignment of Annaville Park and has a legible and diverse campus style. Whilst it falls short of opening fully onto the end of the street and interconnecting the existing and proposed residential areas physically and visually (as would likely be advocated by urban design purists), this represents a balance of retaining the more subdued residential amenity for those living in Annaville Park. On balance, the quality of effect is deemed to be marginally negative (i.e. **Neutral-Negative**)
Summary	Based on the assessment criteria and matrices outlined at **Section 14.3** the significance of residual visual impact is summarised below.

	Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
Impact Significance	Medium-low	High-medium	**Moderate / Neutral-Negative**

Viewshed Reference Point		**Viewing distance to site boundary**	**Direction of View**
VP11	Dundrum Road (adjacent to NW site boundary)	11m	E

Representative of:

- A major transport route

Receptor Sensitivity **Low**

Existing View

This is essentially a blank view of a tall and imposing stonewall that hints at protection of those within or those outside of it. Even though it is long established and familiar to those that view or pass by on a regular basis, it is still an anomalous urban feature. It represents a strong and abrupt barrier / edge that is undesirable in a predominantly residential area near a major urban node (Dundrum Town Centre). Residential dwelling line the other side of the busy Dundrum Road.

Visual Impact of proposed development

The proposed development will completely transform this view / setting by opening up sections of the existing boundary wall and incorporating ornamental railings in those spaces. There is essentially no baseline visual context beyond the wall, so all that can be assessed is whether the scale and nature of the proposed design is appropriate to this street scene. The nearest Block 10 apartment building will front the Dundrum Road with a prominent yet elegant built form incorporating a deep façade of balconies that will bring dynamism and life to this street scene. The remnants of the perimeter stone wall serves as a scale transition to the new buildings behind it as well as a partial privacy screen to ground and first floor apartments, which will be further supplemented by tree planting.

Directly across the road can be seen an internal open space that leads the eye towards the internal components of the site - corner of Block 7, Block 3, perimeter housing units and existing infirmary building. Aside from the adjacent Block 10 apartment building which unapologetically fronts the main entrance and road frontage of the site, other buildings are seen to terrace up and away from the site boundary with the tallest buildings concentrated in the middle of the site. There is a loose arrangement of diverse architectural

scale, form and finish, which lends to the campus aesthetic of the development.

For those dwellings facing the development across the Dundrum Road, there will be marked contextual change. The scale of the apartments will be more overbearing than the existing perimeter wall, but not uncomfortably so. There may also be some sense of overlooking from the road frontage apartments, but in this context it relates to front yards / facades that already abut the busy Dundrum Road. Thus, there is unlikely to be a loss of privacy.

The magnitude of visual impact on this street scene is unreservedly considered to be **High**. On balance of mainly positive factors and localised slightly negative factors, the quality of the effect is deemed to sway in the direction of Positive (**Neutral-Positive** on balance).

Summary

Based on the assessment criteria and matrices outlined at **Section 14.3** the significance of residual visual impact is summarised below.

	Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
Impact Significance	Low	High	**Moderate-slight / Neutral-Positive**

Viewshed Reference Point		**Viewing distance to site boundary**	**Direction of View**
VP12	Taney Crescent	577m	NW

Representative of:

- Local Community Views

Receptor Sensitivity

Medium low

Existing View

This is a slightly elevated view in the direction of the former CMH site along the sinuous alignment of Taney Crescent. In the immediate foreground to the right of the depicted view is a neighbourhood open space amenity area with a playground and grassed kickabout space. Otherwise the setting is contained to a modest degree by terraced and semi-detached mid- to low density housing with associated amenity planting occupying the street and front yards. To the rear of the terrace of dwellings facing the viewer is a line of mature Poplar trees.

Visual Impact of proposed development

None of the proposed development can be seen from here due to intervening screening from vegetation (winter) and buildings. Consequently the magnitude of visual impact is **Negligible** by default.

Summary

Based on the assessment criteria and matrices outlined at **Section 14.3** the significance of residual visual impact is summarised below.

	Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
Impact Significance	Medium low	Negligible	**Imperceptible / Neutral**

Viewshed Reference Point		**Viewing distance to site boundary**	**Direction of View**
VP13	Dundrum Road (adjacent to north-western site entrance)	12m	SE

Representative of:

- Local Community Views
- A major transport route

Receptor Sensitivity

Low

Existing View

This is a view from immediately opposite the site entrance into the CMH site. This consists of a vehicle step-in before tall wrought iron gates flanked on either side by imposing stone walls of 5m in height. Just beyond the gate is a stand of mature conifers which add to the sense of enclosure.

Visual Impact of proposed development

The most visible element of the proposed development will be the uppermost floors of the Block 10 apartment buildings that flank the Dundrum Road just to the south of this location. They will rise just above the remaining elements of the roadside wall and will also be partially visible through those sections of the wall that will be replaced by more permeable and less imposing railings. The existing trees inside the gate will be retained and afford considerable screening of the proposed buildings further into the site.

Whilst there will be marked visual change to the street scene, it will be less imposing without the full extent of the perimeter wall and with the life and diversity introduced by the proposed apartment buildings that from address it. Consequently, the magnitude of visual impact is deemed to be **Medium**, but the quality of that impact, **Positive**.

Summary

Based on the assessment criteria and matrices outlined at **Section 14.3** the significance of residual visual impact is summarised below.

	Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
Impact Significance	Low	Medium	**Slight/ Positive**

Viewshed Reference Point		Viewing distance to site boundary	Direction of View
VP14	Dundrum Road (adjacent to W site boundary)	0m	E

Representative of:

- Local Community Views
- A major transport route

Receptor Sensitivity **Low**

Existing View This is a view from directly opposite the perimeter wall that runs along Dundrum Road and encloses the former CMH site. Indeed this imposing stone structure (5m high) is the sole feature of the eastward view for both road users and residents on the western side of the road.

Visual Impact of proposed development There will be a fundamental change to the street scene here with a large section of the existing perimeter wall being removed (and some remaining sections being lowered) to accommodate a second entrance to the site from the Dundrum Road. A welcoming street scene into the site is presented to the viewer where the multi-modal street is flanked by five storey buildings to the north and two storey buildings to the south. The carriageway is also separated from the buildings by shrub and street tree planting and existing retained trees can be seen further along the street within the heart of the site. There is some awkwardness in the retention of much of the existing stone wall to the left of the entrance and the sense that ground floor units will look directly onto it. However, there is landscaped pedestrian access between these units and the wall, which is most notable to the north of the entrance. Furthermore, the wall is a heritage asset and it is considered a reasonable compromise of design and conservation to see much of it retained.

Whilst there will be considerable visual change, the street scene will be less imposing and bland without the full extent of the perimeter wall. The life and diversity introduced by the proposed buildings that will address Dundrum Road and the new site access road with overlooking windows and balconies brings a positive contribution to the urban form. Consequently, the magnitude of visual impact is deemed to be **High**, but the quality of that impact, **Positive**.

Summary Based on the assessment criteria and matrices outlined at **Section 14.3** the significance of residual visual impact is summarised below.

Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**

Impact Significance	Low	High	**Moderate-slight/ Positive**

Viewshed Reference Point		**Viewing distance to site boundary**	**Direction of View**
VP15	Mulvey Park north of site	125m	S

Representative of:

- Local Community Views

Receptor Sensitivity **Medium low**

Existing View This is a view across a residential street with a median of grass, street trees and parallel car parking that divides the east and west bound carriageways. On the opposite side of the road is a series of two storey terraced houses with an eclectic array of façade colours and materials. Some mature trees can be seen between the terraced dwellings, highlighting the CMH site.

Visual Impact of proposed development None of the proposed development will be visible from here due to screening by foreground buildings and vegetation and thus, the magnitude of visual impact will be **Negligible**.
Based on the wireline image, it would not appear that the proposed development will be particularly visible from within the rear yards of the dwellings on the opposite side of the road.

Summary Based on the assessment criteria and matrices outlined at **Section 14.3** the significance of residual visual impact is summarised below.

	Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
Impact Significance	Medium low	Negligible	**Imperceptible**

Viewshed Reference Point		**Viewing distance to site boundary**	**Direction of View**
VP16	Annaville Grove	41m	N/E

Representative of:

- Local Community Views

Receptor Sensitivity **Medium low**

Existing View This is a small residential enclave that is enveloped to both the north and east by the former CMH site with the most noticeable evidence of this being the stonewall at the end of the street to the east. From this location at a right-

angle bend in the street there are brief channelled views along streets of terraced, two storey dwellings to the east and north. Three storey apartment buildings rise behind the viewer immediately to the west.

Visual Impact of proposed development

The Block 10 and Block 7 apartment buildings will rise into view within the street scenes to both the north and east respectively. Even though these apartment blocks are stepped into the former CMH site beyond perimeter two storey dwellings and internal access roads, they will noticeably contribute to an increased sense of enclosure for this residential setting, which will now be surrounded on three sides by apartment buildings. Despite the increased degree of enclosure there is a sense of the internal setback and spatial separation to the apartment buildings, which prevents a sense of overbearing. This prevents an undue sense of overlooking generated by the visible windows within the development. The proposed development represents a considerable increase in the intensity and scale of surrounding built development.

Overall, the magnitude of visual impact is deemed to be **High-medium** and of a **Negative** quality.

Summary

Based on the assessment criteria and matrices outlined at **Section 14.3** the significance of residual visual impact is summarised below.

	Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
Impact Significance	Medium low	High medium	**Moderate / Negative**

Viewshed Reference Point		**Viewing distance to site boundary**	**Direction of View**
VP17	Cnr Larchfield Road and Farmhill Drive	76m	NW

Representative of:

- Local Community Views

Receptor Sensitivity

Medium low

Existing View

This is a northward view across Larchfield Road towards a line of semi-detached dwellings that otherwise truncate views further beyond. The road is also lined by street trees and the landscape planting contained within front yards.

Visual Impact of proposed development

A relatively close, but partial view of the Block 4 Apartment building is afforded between foreground dwellings and there is also a glimpse of the Block 5 roofline in another gap further to the west (left). The proposed

buildings will add to the sense of enclosure without appearing overbearing or generating an undue sense of overlooking. They will also contribute to the diversity and intensity of built form within the street scene. As the proposed buildings rise partially into view from a context that is not otherwise clear to the viewer, their contribution to the view is slightly ambiguous.

For the reasons outlined above, the magnitude of visual impact is deemed to be **Medium** and the quality of the effect, **Negative**.

Summary

Based on the assessment criteria and matrices outlined at **Section 14.3** the significance of residual visual impact is summarised below.

	Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
Impact Significance	Medium-low	Medium	**Moderate-slight/ Negative**

14.5 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. Whilst there are some negative visual impacts at particular locations, these are not deemed significant in EIA terms and specific mitigation such as screening in not likely to be either feasible or effective at reducing those effects.

14.6 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 14.4 and 14.5 and summarised in Table 14.6 below.

Table 14.6 Summary of Residual Impacts

Townscape Impacts			
	Receptor Sensitivity	**Impact magnitude**	**Significance / Quality**
Construction Stage	Medium-low	Medium	**Moderate / Negative**
Operational Stage	Medium-low	High-medium	**Moderate / Positive**
Visual Impacts			
VP1	Low	Negligible	**Imperceptible / Neutral**
VP2	Medium low	High-medium	**Moderate / Neutral**
VP3	Medium low	Low	**Slight / Negative**
VP4	Medium low	Low-negligible	**Slight-imperceptible / Negative**
VP4a	Medium low	Low	**Slight / Negative**

VP5	Medium low	Medium low	**Moderate-slight / Negative**
VP6	Low	Low-negligible	**Slight-imperceptible / Neutral - Negative**
VP7	Medium low	Low	**Slight / Neutral - negative**
VP8	Medium low	Low-negligible	**Slight-imperceptible/ Neutral-Negative**
VP9	Medium-low	Negligible	**Imperceptible / Neutral**
VP10	Medium-low	High-medium	**Moderate / Neutral-Negative**
VP11	Low	High	**Moderate-slight / Neutral-Positive**
VP12	Medium low	Negligible	**Imperceptible / Neutral**
VP13	Low	Medium	**Slight/ Positive**
VP14	Low	High	**Moderate-slight/ Positive**
VP15	Medium low	Negligible	**Imperceptible**
VP16	Medium low	High medium	**Moderate / Negative**
VP17	Medium-low	Medium	**Moderate-slight/ Negative**

14.7 Monitoring

Monitoring measures are not required in respect of Townscape and Visual effects, particularly as there are no specific mitigation measures proposed that are either ongoing or require regular monitoring.

14.8 Reinstatement

There will not be any aspects of this permanent development that will result in reinstatement or associated effects from a Townscape and Visual Perspective.

14.9 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

14.10 Cumulative Impacts

In this instance there are two cumulative scenarios to consider. The first relates to the future planning application within the former CMH site, which seeks to redevelop the hospital building in accordance with the detailed description contained in Chapter 3 of the EIAR.

The above development will be considered first in respect of the proposed site and then they will be considered together relative to other relevant developments within the surrounding study area. A cumulative scoping exercise was undertaken in respect of a wide range of cumulative developments across each of the EIA factors including Townscape and Visual. The following projects were scoped-out of further Townscape and Visual cumulative assessment on the basis that the separation distance, relative scale or nature of that development would not result in material cumulative effects with the proposed development;

1. Permitted residential development Green acres Convent Drumahill House and the Long Acre, Upper Kilmacud Road – scoped out on the basis of separation distance
2. Permitted residential development at Knockrabo, Mount Anville Road – scoped out on the basis of separation distance
3. Green Acres Convent series of residential developments – scoped out on the basis of separation distance
4. Building 5 Dundrum Town Centre – scoped out on the basis of separation distance
5. Partial permission of student accommodation at University College Dublin, Belfield - – scoped out on the basis of separation distance
6. Series of permitted student accommodation, car park and sports pitch developments, University College Dublin, Belfield - – scoped out on the basis of separation distance and the nature of the development
7. Permitted residential development at former Paper Mills site, bounded by the River Dodder – scoped out on the basis of separation distance
8. Permitted residential development at Kilmacud Road Upper. – scoped out on the basis of separation distance
9. Permitted residential development at 9/14 and 11C, Milltown Road. – scoped out on the basis of separation distance
10. Permitted student accommodation development at Cunningham House, Trinity Hall. – scoped out on the basis of separation distance
11. Permitted residential development at Marmalade Lane. – scoped out on the basis of separation distance
12. Permitted residential development at 24,26 28, Fosters Avenue, Mount Merrion. – scoped out on the basis of separation distance
13. Permitted residential development at Mount Anville Lands, Lower Kilmacud. – scoped out on the basis of separation distance

The following developments are considered relevant from a cumulative TVIA perspective;

1. Permitted Residential development at Mount Saint Mary's and Saint Joseph's Dundrum Road
2. Permitted residential development at 'Dunelm', Rydalmount, Milltown Road
3. Potential Planned Student Accommodation development at former Vector motors site, Goatstown Road
4. Permitted Student Accommodation development at Our lady's Grove, Goatstown Road
5. Permitted Residential development Highfield Park / Frankfort Castle
6. Permitted Residential development at Knockrabo
7. Potential Planned residential development Old Dundrum Shopping Centre
8. Potential Planned residential development Sommerville House Dundrum Road

14.10.2 Cumulative Impacts between CMH development and surrounding developments

As evidenced by the cumulative project list in Section 14.10.1 above, the Dundrum / Bellfield area is currently experiencing considerable infill development, generally in the form of brownfield site redevelopment for medium to high density apartment schemes and student accommodation. Strategically speaking, this is appropriate given the proximity to UCD and also Dundrum Town Centre which is a commercial and public transport hub, which is zoned for Major Town Centre use. For the same reason the proposed developments are an appropriate scale and form of infill development, so are the other listed developments. The cumulative effect is one of general intensification and increased scale of built form, which is of a modern and high quality nature in terms of design and materials. Whilst this contrasts slightly with the mid-century medium to low density residential housing estates that form the general matrix of this area, there are appropriate transitions of scale and intensity, provision of new and accessible open space and a welcome variety of compatible form and function.

In terms of cumulative visual impacts, there will be occasional views from the likes of Goatstown Road and Dundrum Road where one or more of the listed cumulative developments may rise into view in conjunction with the proposed CMH development. However, this is seldom likely to be in the same portion of the view and given the generally low order visual impacts of the development, such cumulative effects will not be significant. One of the most likely combined views will be afforded from Rosemount Green immediately to the south of the CMH site with which the proposed development will open onto. Looking south across the open space, it may be possible to also obtain views of any potential future residential development of the Old Dundrum Shopping centre site in the core of Dundrum Town Centre, albeit in the opposite direction. It is not considered that at such separation distances and in opposite viewing directions will there be a cumulative visual impact that has any material detriment to visual amenity at this location or any others where similar effects may be experienced.

For the reasons outlined above, it is not considered that the proposed development in conjunction with external permitted, proposed or future potential developments, will result in any significant townscape and visual cumulative impacts. Instead, such cumulative impacts are likely to be low.

14.11 'Do-Nothing' Effect

In this instance the do-nothing consequence for the former CMH site is that it will remain for the short term as a former institutional facility becoming progressively underutilised or used for temporary accommodation. Townscape and visual impacts will remain unchanged from the current baseline scenario, particularly as the site is contained behind a tall perimeter wall. However, the site has permission for a Strategic Housing Development of a similar scale and nature to that proposed which could be realised without further permission being sought. This could be potentially constructed in the short to medium term.

14.11 Conclusion

There will be substantial physical change to the former CMH site that will involve both the introduction of new mid to large scale buildings and associated infrastructure along with the loss /replacement of much of existing buildings, open space and trees. However, there will also be a retention of key elements within the site, which include the gatelodge, a walled garden and some of the mature specimen trees. These physical changes will result in a marked change to the character of the site and the way in which it integrates with the surrounding urban fabric, particularly in comparison to its current insular use.

Townscape effects have been assessed for both construction and operational phases and due to the intensity and rapidly evolving nature of the former, construction stage effects are deemed to be Moderate and Negative. However, once operational, the proposed development represents a marked and comprehensive change to the scale and nature of development within the site and its perception within its receiving environment. The completely insular former CMH site, which currently serves as something of a perceptual void in the townscape fabric of Dundrum, will be transformed into a modern, outwardly bold, high density residential precinct. In the wider urban context, there is a strong functional and thematic relationship between the proposed development and the nearby Dundrum Town Centre as both represent intensive contemporary design responses to the needs of a rapidly growing urban population.

The design of the development intends to strike a balance between the surrounding lower intensity residential neighbourhoods by terracing up in scale away from the site boundaries and retaining perimeter tree cover where possible. There are also direct open space connections to Rosemount Green to the south and the Dundrum Road to the northwest with sections of the imposing perimeter stone wall removed to facilitate this. The campus style of the development allows for physical and visual permeability thorough the site where tree planting can be retained and supplemented. Furthermore, the architectural design style varies between buildings giving an organic / evolved feeling that helps to integrate it more readily

with the surrounding context. It is considered that these design objectives are successful in integrating this development within its townscape setting particularly in a relative sense against the existing baseline of a 'perceptual void'. Consequently, the operational phase townscape impact is deemed to be Moderate / Positive.

In terms of visual impacts, seventeen representative viewpoints were used for the assessment from a range of viewing distances, angles and receptor contexts around the site. Most of these were within 1km as the Digital surface Model (DSM) based ZTV map (Figure 1.9) indicated that visibility of the proposed development reduces rapidly with increased viewing distance due to intervening screening from surrounding built development and vegetation. The majority of viewpoint assessments were in the lower range of visual impact magnitude due to limited visibility of the taller / closer elements of the proposed development rising just above intervening vegetation and buildings. In such cases there is not a strong sense of visual/ contextual legibility and the quality of the effects is generally considered to be Negative. The highest negative impact judgement (Moderate) occurs in the small residential enclave of Annaville Grove where there are views to both the north and east of Apartment Blocks 10 and 7 respectively rising above and between foreground roof tops. This generates a stronger sense of enclosure and intensity / scale of development, but without being overbearing or incongruous. Conversely, where the proposed development is more readily visible within its surrounding context (e.g. VP2, VP11, VP13 and VP14) and the design objectives are manifest (diverse campus style) the magnitude of impact is deemed to be in the higher range, but the quality of effect is deemed to be Neutral or Positive.

14.11 OVERALL SIGNIFICANCE OF IMPACT

Based on the assessment contained herein, the proposed development is considered to be appropriately designed to integrate a higher intensity and scale of residential development into the surrounding matrix of predominantly mid-low density residential housing estates. Where impacts are negative they tend to be in the mid to low range and of a localised nature, whereas effects tend to be more pronounced but positive where the design approach is more readily apparent. Overall, it is not considered that the proposed development will give rise to Significant Adverse townscape, visual or cumulative impacts.

14.12 Difficulties Encountered in Compiling this Chapter

There were no particular difficulties encountered in the undertaking of this Townscape and Visual impact assessment.

14.13 References

- Dun Laoghaire Rathdown County Development Plan 2022-2028.
- Dundrum Local Area Plan 2023

- Guidelines for Landscape and Visual Impact Assessment, 3rd edition, 2013, Landscape Institute and Institute of Environmental Management and Assessment.
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, 2022, Environmental Protection Agency.
- Townscape Character Assessment, Technical Information Note 05/2017, Landscape Institute.
- Urban Design Manual – A Best Practice Guide, Department of Environment, Heritage and Local Government, 2009.
- Urban Development and Building Height Guidelines for Planning Authorities, December 2018, Department of Housing, Planning and Local Government.

15.0 MICROCLIMATE – WIND

15.1 Introduction

This Chapter of the EIAR was prepared by Dr Christopher Harley from GIA. Dr Christopher Harley has over 10 years' experience of performing wind microclimate assessments, and holds an MEng in Aerospace Engineering and a PhD in Aerodynamics. This chapter assesses the impact of the Proposed Mixed-Use Development at Dundrum on the wind conditions affecting activities in areas within and surrounding the development. The Site of the Proposed Development is located at former Central Mental Hospital, Dundrum.

The proposed development comprises a ten year approval to carry out the following proposed development which is located on a total application site area of c. 9.7 ha, located on the former Central Mental Hospital, Dundrum Road, Dundrum, Dublin 14 and areas of Dundrum Road and St. Columbanus Road, Dublin 14. The development will consist of the construction of a residential scheme of 934 no. dwellings on an overall site of c. 9.7 ha. The subject site is in the immediate setting and curtilage of a number of proposed protected structures, namely the 'Asylum' (RPS No. 2072), the 'Catholic Chapel' (RPS No. 2071) and the 'Hospital Building' (RPS No. 2073). The development will consist of the demolition of existing structures associated with the existing use (3,736 sq m). The development will also consist of alterations and partial demolition of the perimeter wall. The development with a total gross floor area of c. 94,019 sq m (c. 93,941 sq m excluding retained existing buildings), will consist of 934 no. residential units. The development will also consist of 4,341 sq m of non-residential uses.

15.2 Methodology

15.2.1 Building Heights Planning Guidelines

The Dun Laoghaire-Rathdown County Council Development Plan (2022-2028), section 2.3.2 states, "Furthermore, wind funnelling, shadow patterns and sunlight reflection can create disturbing features and have a negative impact on the local microclimate. Reflected solar glare and night time light pollution require further considerations. Appropriate measures must be taken during the design to minimise these negative impacts. Development proposals can be refined and improved with the aid of physical modelling, such as computer simulations and wind tunnel tests."

Urban Development and Building Heights, Guidelines for Planning Authorities (Government of Ireland, December 2020) states "specific wind impact assessment of the microclimatic effects should be performed for 'buildings taller than prevailing building heights in urban areas'. In the same guidance, standard buildings height is considered 6-8 storeys. Above this height, buildings are considered 'taller' for Dublin standards".

15.2.1 Baseline Study Methodology

Baseline conditions were established using a high-resolution Computational Fluid Dynamics (CFD) model, extending in a 400m radius from the site. CFD is a digital modelling technique, which simulates the effect of wind for the built environment.

The assessment was performed using full-scale CFD modelling to predict the air flow patterns and wind velocities around the proposed development. The assessment was conducted using a digital model of the site and a 400m radius of its surroundings with a resolution of 0.05-0.25m around the proposed development, divided into between 57 million and 137 million "cells", and tested from 18 wind angles.

The baseline surrounds consist of buildings which are either complete or consented and started construction at the time of the planning application (2024).

15.2.2 Assessment Approach

The model was run at full scale from 18 wind angles, spaced using 10° or 30° increments such that no sector contributes more than 10% of the annual wind. The wind angles which were run are 0°,30°,60°,90°,120°,150°,180°,200°,210°,220°,230°,240°, 250°, 260°, 270°, 280°, 300° and 330°.

Wind speeds were measured at 1.5m above any surfaces expected to be used for pedestrian activity.

On-site and local wind speeds were combined with 30 years-worth of weather data for Dublin Airport, corrected for terrain local to the airport and the site, to obtain annual and seasonal frequency and magnitude of wind speeds across the model. This allows the 'grading' of the pedestrian level winds according to the Lawson Comfort Criteria, which are explained later in this EIAR chapter.

Seasonal wind roses for the airport are shown in **Figure 15-*1***. The dominant wind direction is from the south-west, with a second peak from the south-east.

Figure 15-1 Seasonal Wind Roses for Dublin Airport (1990-2021)

The correction factors between the airport (measured 10m above ground) and the site (at a reference height of 120m, chosen to represent the freestream wind speed away from near-ground obstructions) are shown in Table 15-1. It should be noted that the terrain analysis has been performed using sectors of 30°.

Table 15-1 Site Wind Correction Factors

0°	30°	60°	90°	120°	150°	180°	210°	240°	270°	300°	300°
1.32	1.36	1.35	1.33	1.39	1.41	1.49	1.44	1.41	1.41	1.32	1.32

The following scenarios were tested as part of the assessment:

- Scenario 1: Baseline for site and surrounds;
- Scenario 2: Proposed Development in baseline surrounds; and
- Scenario 3: Proposed Development with Proposed Landscaping in baseline surrounds.

15.2.3 Assessment Approach

The assessment was performed using the London Docklands Development Corporation (LDDC) variant of the Lawson Comfort Criteria. The Lawson Criteria are well-established in Ireland for quantifying wind conditions in relation to built developments and, although not an Irish 'standard', the criteria are recognised by local authorities as a suitable benchmark for wind assessments. The LDDC variant is established as the most practically applicable variant of the Lawson criteria, and is used industry wide.

Lawson devised a scale for assessing the suitability of wind conditions in the urban environment based upon threshold values of wind speed and frequency of occurrence. This guidance will be used to inform the assessment. The commonly used London Docklands Development Corporation (LDDC) method of the Lawson Criteria (as described in Lawson, T (2001), Building Aerodynamics) is set out in Table 15 2 and Table 15 3 below.

Table 15-2 Lawson Comfort Criteria (LDDC variant)

Comfort Category	Mean Wind Speed (5% exceedance)	Description
Sitting	4m/s	Acceptable for outdoor sitting use (e.g., cafes, benches, balconies).
Standing	6m/s	Acceptable for main building entrances, pick-up/drop-off points and bus stops.
Walking (leisure)	8m/s	Acceptable for strolling.
Walking (business)	10m/s	Acceptable for external pavements, walking purposefully without lingering.
Uncomfortable	>10m/s	Not comfortable for regular pedestrian access.

Table 15 3 Lawson Safety Criteria (LDDC variant)

Safety Category	Mean Wind Speed (2hrs/year exceedance)	Description
No Safety Exceedance	<15m/s	No significant risk of strong winds for any users.
S15 (distress)	>15m/s	Unsafe for frail individuals, or cyclists.
S20 (safety)	>20m/s	Wind conditions considered unsafe for all users.

For a mixed-use urban area such as one within which the site is located, the desired wind microclimate would typically need to have areas acceptable for sitting, standing (including at entrances of buildings) and walking use.

During operation, exceedance of either S15 or S20 will be classified as unsafe.

During the construction phase, it can be reasonably assumed that the site will be occupied by construction workers, who are unlikely to be frail individuals. As such, only S20 exceedances would be classified as unsafe for on-site effects during this phase.

Any areas which show up as either unsafe (annually) or uncomfortable (for winter) are considered unsuitable, unless they are in locations where pedestrian access can be controlled in the event of strong winds. This applies to all thoroughfares (for pedestrians) and roads (for cyclists) around the proposed development.

Any amenity spaces are targeted to be suitable for a mixture of sitting and standing during the summer months.

Balconies are private spaces, the use of which can be controlled by the user depending on the conditions on a specific day, so whether conditions are comfortable can be effectively managed by the individual. During winter the limiting factors for balcony use will be temperature or rain, so the target condition for balconies is that they are suitable for either sitting or standing during the summer months.

The areas immediately outside any building entrances should be suitable for standing use during winter to provide a “buffer” between the still conditions in interior spaces and the general thoroughfare. This applies both to the entrances of the proposed development and also off-site entrances.

Any bus stops should be suitable for standing use in all seasons.

15.3 Baseline Environment

Ground level wind safety for the baseline scenario is shown in **Figure 15.*2***. Ground level comfort in winter conditions is shown in **Figure 15 *3***. Ground level comfort in summer conditions is shown in **Figure 15 *4***.

Winter conditions range between sitting, standing, leisure walking and business walking. Summer conditions range between sitting, standing and leisure walking.

There are no safety exceedances on or off the site.

Conditions at the key off site entrances (marked "O" on the results figures) are suitable for sitting, standing or leisure walking in any season. Those entrances suitable for leisure walking are one category windier than required in winter.

Conditions for the Dundrum Road bus stop (to the north west of the study area, marked "B" on results figures) are suitable for leisure walking in winter and standing in summer. This is one category windier than required in winter and suitable in summer.

Conditions for Rosemount Green are suitable for a mixture of leisure walking and business walking in winter and standing in summer. This is one category windier than is required for the intended use.

Figure 15.2 Ground Level Wind Safety for Baseline Scenario

Figure 15 3 Ground Level Winter Comfort for Baseline Scenario

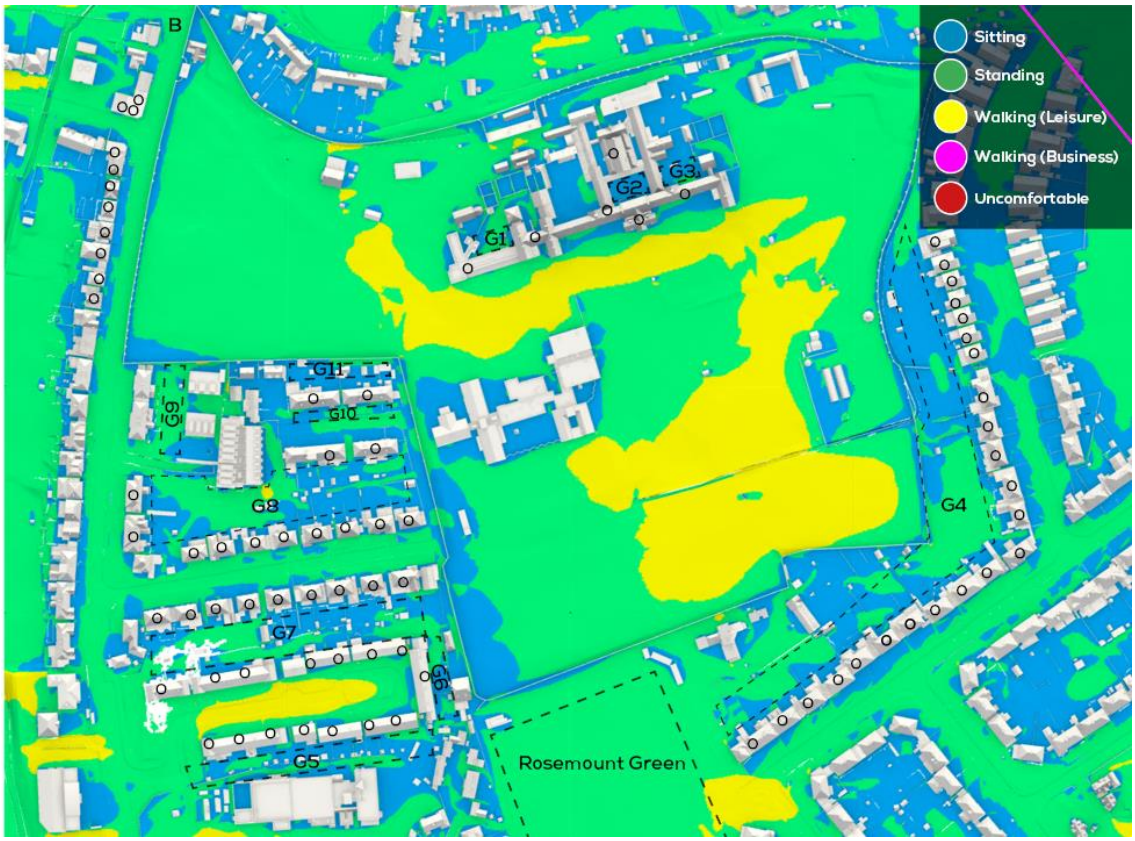

Figure 15 4 Ground Level Summer Comfort for Baseline Scenario

15.4 Characteristics of the Proposed Development

A 3D view of the Proposed Development is shown in **Figure 15 *5*** and a plan view of the Proposed Development is shown in **Figure 15 *5***.

The Proposed Development consists of 10 Blocks (B2, B3, B4, B5, B6, B7, B8, B9, B10) ranging up to 8 storeys in heights.

There are six proposed podiums (marked P1, P2, P3, P4, P5 AND P6 in **Figure 15 *6***) and three public open spaces (marked A1, A2, A3 and A4 in **Figure 15 *6***).

Figure 15 5 3D View of Proposed Development

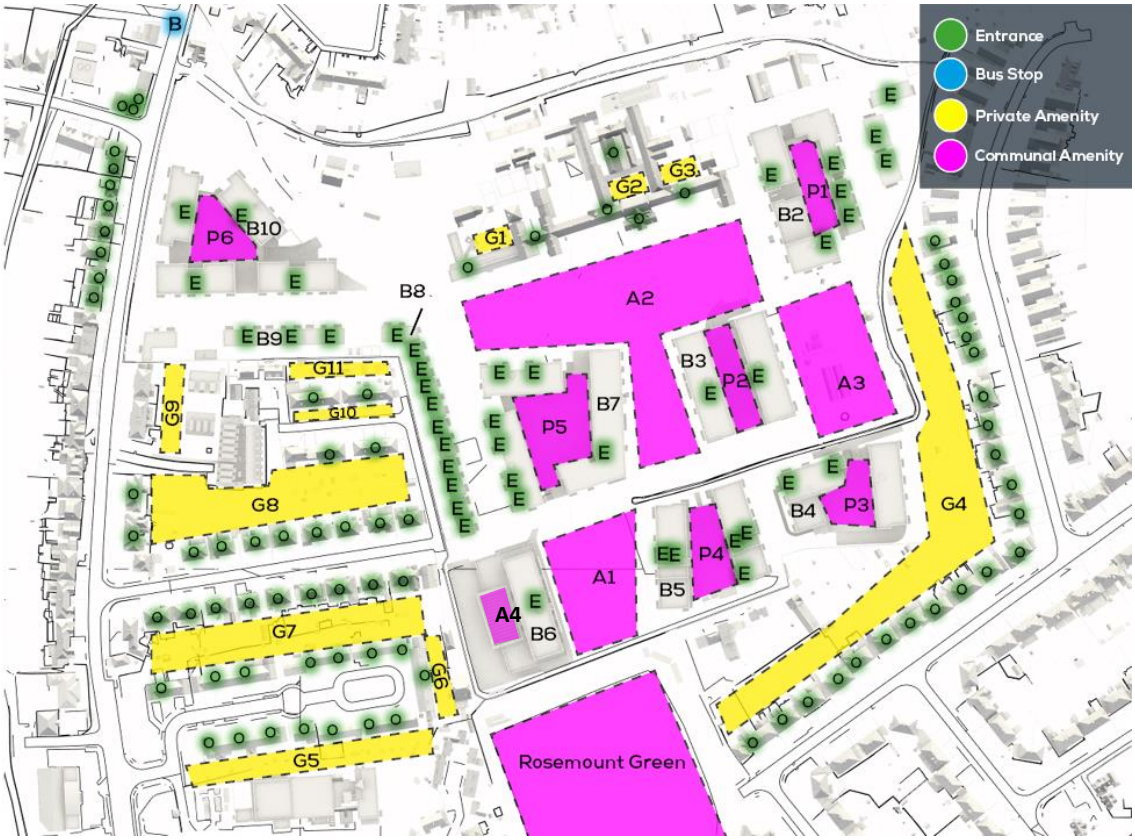

Figure 15 6 Sensitive Wind Receptors - Ground

Figure 15 7 Sensitive Wind Receptors - Balconies

15.4 Potential Impacts of the Proposed Project

15.4.1 Construction Phase

As the site of the Proposed Development is currently empty, during the Construction Phase, the conditions will gradually transition from the baseline conditions to those of the completed and operational Proposed Development.

During the Construction Phase, the on-site region will not be accessible to the general public, so will not be subject to the same expectations regarding comfort. As there are no S20 (safety) exceedances at any stage, all on-site conditions will be suitable during construction and any wind effects are negligible.

15.4.2 Operational Phase

Ground level wind safety for the Operational Phase is shown in **Figure 15 *8***. Ground level comfort in winter conditions is shown in **Figure 15 *9***. Ground level comfort in summer conditions is shown in **Figure 15 *10***.

No landscaping was included in this assessment to act as a worst case for the wind environment.

Winter conditions range between sitting, standing, leisure walking and business walking. Summer conditions range between sitting, standing and leisure walking.

Overall, the region which is suitable for business walking is of significantly lesser extent than the region of business walking recorded for the baseline scenario, and the Proposed Development is expected to make conditions calmer overall within the local area.

There are no regions of safety exceedance introduced.

Conditions for the Dundrum Road bus stop (to the north west of the study area, marked “B” on the results figures) are suitable for standing in all seasons. This is one category calmer than the baseline conditions and now suitable for the intended use so is a minor beneficial wind impact.

Conditions for Rosemount Green are suitable for standing in summer. This is one category windier than is required for the intended use but is consistent with the baseline conditions so is a negligible wind impact.

All but one onsite entrance to the proposed development is suitable for standing in winter which is suitable for the intended use. The western most entrance of block 4 is suitable for leisure walking in winter. This is one category windier than required for the intended use, which is a minor adverse wind effect and will require mitigation.

Conditions for Podium 1 (P1) are suitable for standing in winter and a mixture of sitting and standing in summer. This is suitable for the intended use and is a negligible wind effect.

Conditions for Podium 2 (P2), Podium 5 (P5) and Podium 6 (P6) are suitable for a mixture of standing and leisure walking in winter, and for a mixture of sitting and standing in summer. This is suitable for the intended use and is a negligible wind effect.

Conditions for Podium 3 (P3) and Podium 4 (P4) are suitable for a mixture of leisure walking and business walking in winter, and for a mixture of sitting, standing and leisure walking in summer. This is one category windier than required for the intended use, which is a minor adverse wind effect and will require mitigation.

Conditions for the Communal Amenity Space 1 (A1) are suitable for a mixture of standing and leisure walking and business walking in winter and a mixture of sitting and standing in summer. This is suitable for the intended use and is a negligible wind effect.

Conditions for the Communal Amenity Space 2 (A2) are suitable for a mixture of standing and leisure walking and business walking in winter and for standing in summer. It would be desirable to have some regions which are suitable for sitting in summer so this is a minor adverse wind effect which will require mitigation.

Conditions for the Communal Amenity Space 3 (A3) are suitable for a mixture of standing and leisure walking and business walking in winter and for standing in summer. It would be desirable to have some regions which are suitable for sitting in summer so this is a minor adverse wind effect which will require mitigation.

Conditions for the Communal Amenity Space 4 (A4) are suitable for a mixture of sitting and standing in winter and for sitting in summer. This is suitable for the intended use and is a negligible wind effect.

Conditions for the offsite gardens (G1, G2, G3, G4, G5, G6, G7, G8, G9, G10 and G11) are suitable for a mixture of standing and leisure walking and business walking in winter and a mixture of sitting and standing in summer. This is suitable for the intended use and is a negligible wind effect.

Conditions for the offsite entrances marked “0”, are suitable for a mixture of standing and leisure walking in winter. This is either suitable for the intended use or one category windier than is required for the intended use but is consistent with the baseline conditions so is a negligible wind impact.

Balcony wind safety for the operational phase is shown in **Figure 15 *11***. Balcony comfort in winter conditions is shown in **Figure 15 *12***. Balcony comfort in summer conditions is shown in **Figure 15 *13***.

Conditions on the balconies range between sitting, standing and leisure walking in winter, and between sitting, standing and leisure walking in summer.

There are a small number of balconies which are suitable for leisure walking in summer, which are highlighted in **Figure 15 *13***. These balconies are one category windier than required for the intended use, which is a minor adverse wind effect and will require mitigation.

15.4.2 Potential Cumulative Impacts

The cumulative list set out in Chapter 3 was reviewed, and there are no significant proposed consented schemes within the 400m radius of the study area. As such, there are no potential cumulative impacts.

Figure 15 8 Ground Level Wind Safety for Operational Phase

Figure 15 9 Ground Level Winter Comfort for Operational Phase

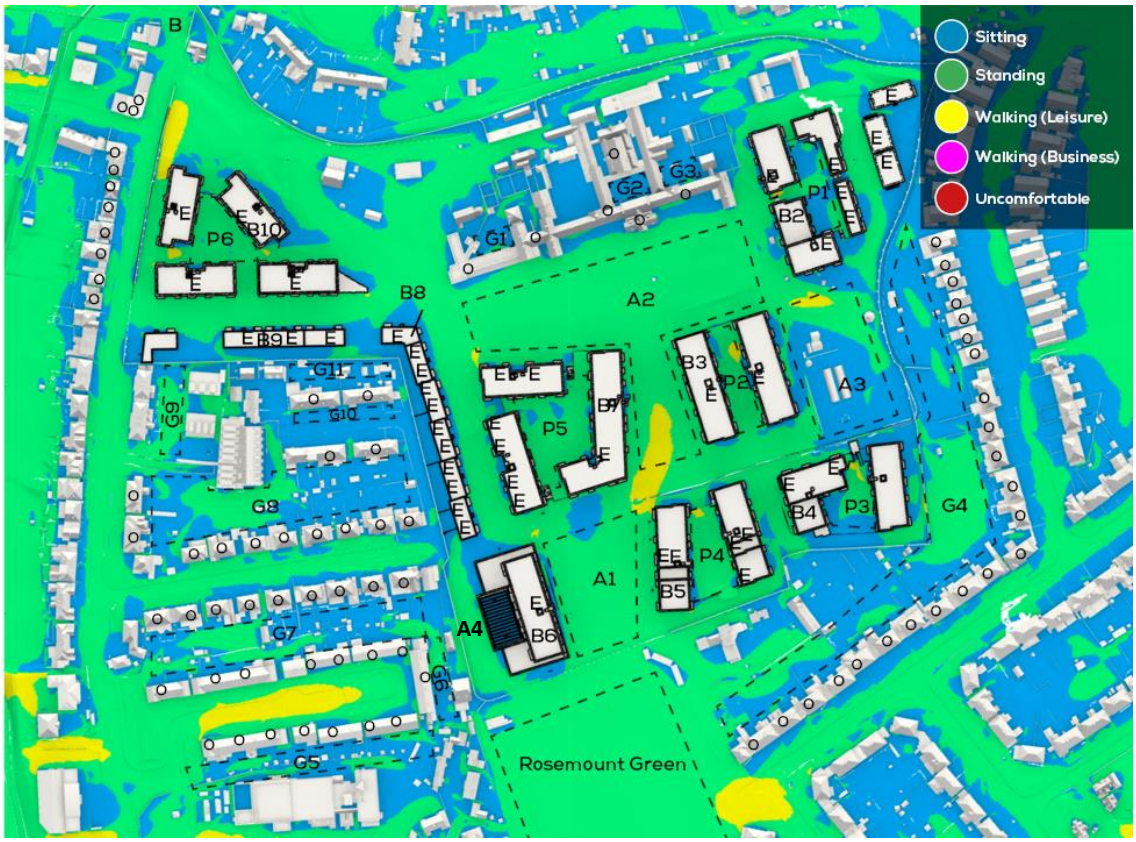

Figure 15 10 Ground Level Summer Comfort for Operational Phase

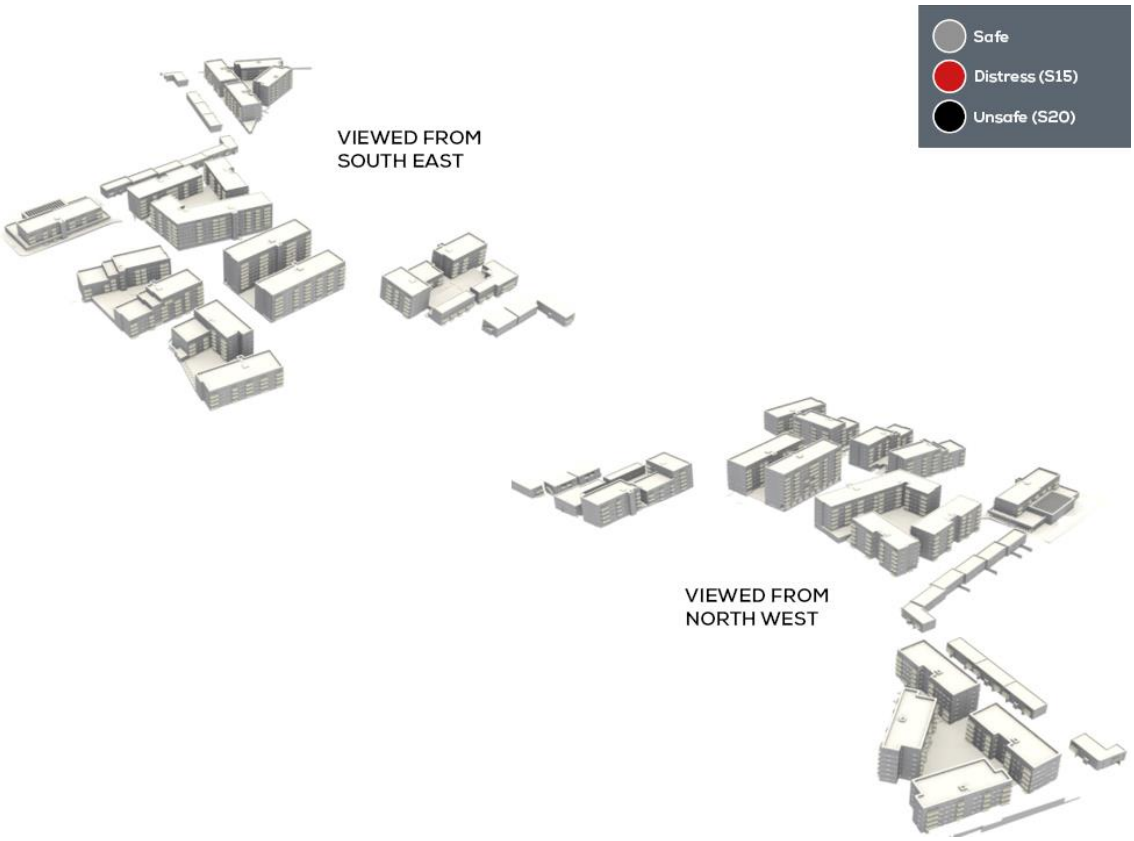

Figure 15 11 Balcony Wind Safety for Operational Phase

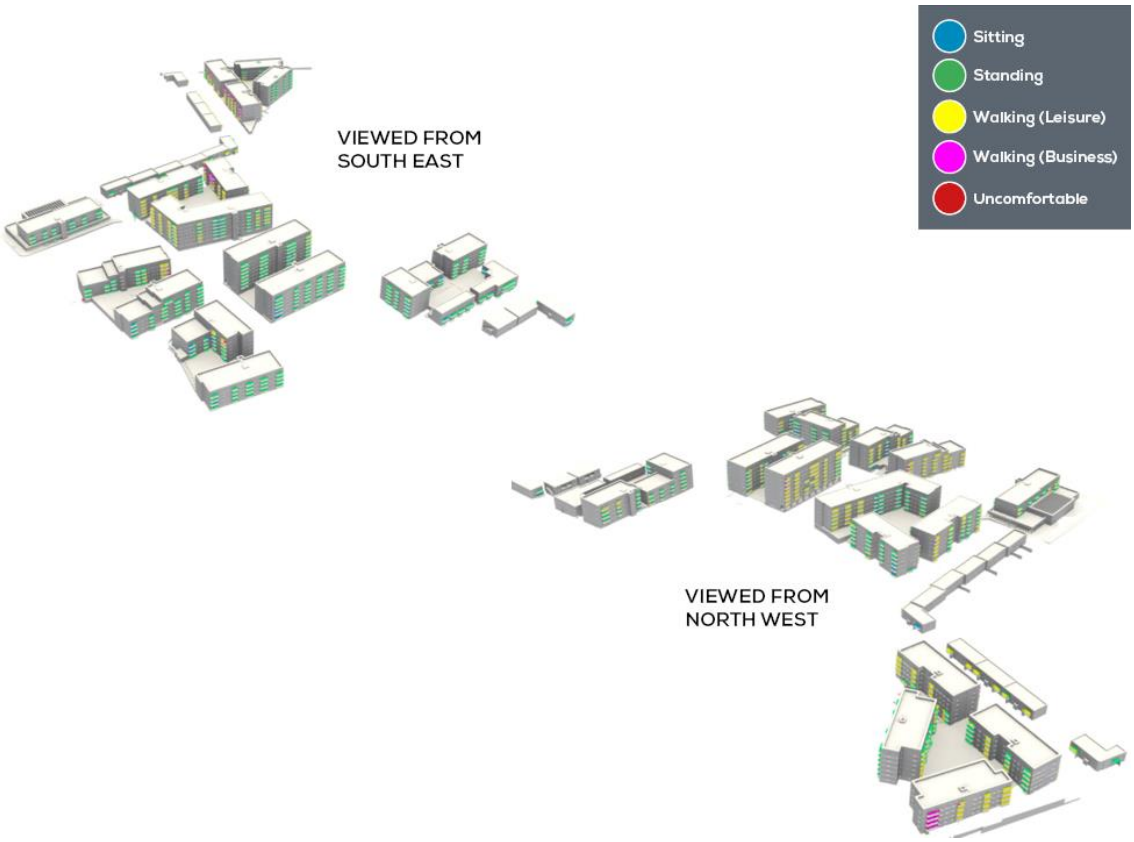

Figure 15 12 Balcony Winter Comfort for Operational Phase

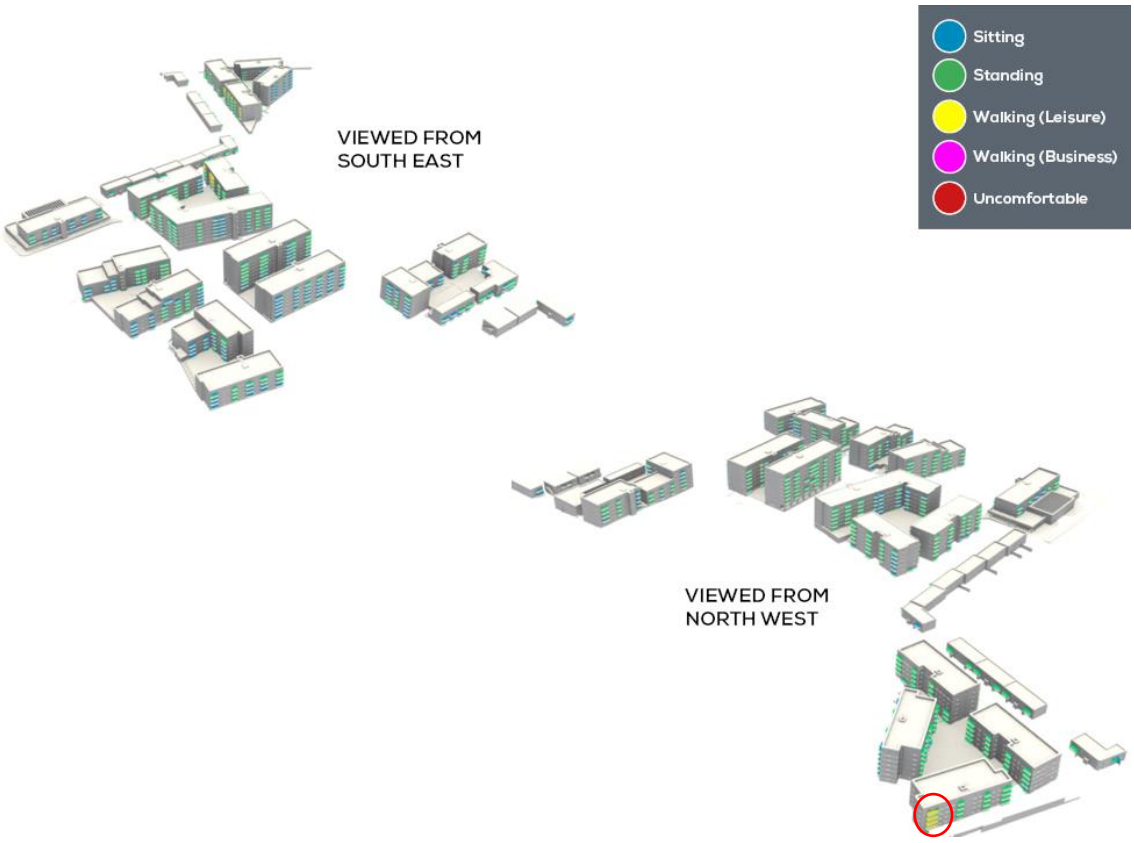

Figure 15 13 Balcony Summer Comfort for Operational Phase

15.5 Avoidance, Remedial & Mitigation Measures

15.5.1 Construction Phase

No avoidance, remedial or mitigation measures will be required during the construction phase.

15.5.2 Operational Phase

During the operation phase, the landscaping provides the necessary shelter to create suitable conditions. The landscaping plan is shown in Figure 15 14.

15.6 Residual Impacts (with landscaping included)

The landscaping plan is shown in **Figure 15 *14***. All trees within the landscaping plan were included in the assessment.

Ground level wind safety for the Operational Phase with landscaping is shown in **Figure 15 *15***. Ground level comfort in winter conditions is shown in **Figure 15 *16***. Ground level comfort in summer conditions is shown in **Figure 15 *17***.

All the locations which were suitable for Configuration 2 remained suitable for Configuration 3. Conditions for those locations which were subject to adverse effects are reported below.

All entrances are now suitable for standing in winter which is suitable for the intended use.

Conditions for Podium 3 (P3) and Podium 4 (P4) are suitable for a mixture of sitting and standing in summer. This is suitable for the intended use and is a negligible wind effect.

Conditions for the Communal Amenity Space 2 (A2) are suitable for a mixture of sitting and standing in summer. This is suitable for the intended use and is a negligible wind effect.

Conditions for the Communal Amenity Space 3 (A3) are suitable for a mixture of sitting and standing in summer. This is suitable for the intended use and is a negligible wind effect.

Balcony wind safety for the operational phase is shown in **Figure 15 *18***. Balcony comfort in winter conditions is shown in **Figure 15 *19***. Balcony comfort in summer conditions is shown in **Figure 15 *20***.

Conditions on the balconies range between sitting, standing and leisure walking in winter, and between sitting and standing in summer.

The balconies on Block 10 that were previously a category too windy, are now suitable for mixture of sitting and standing. This is suitable for the intended use and is a negligible wind effect.

There are also improvements in conditions in the Annaville Dundrum Road houses, identified by the G8, G10 and G11 areas, where conditions are improved although have the same range of wind categories.

Figure 15 14 Proposed Landscaping Plan

Figure 15 15 Ground Level Wind Safety for Operational Phase with Landscaping

Figure 15 16 Ground Level Winter Comfort for Operational Phase with Landscaping

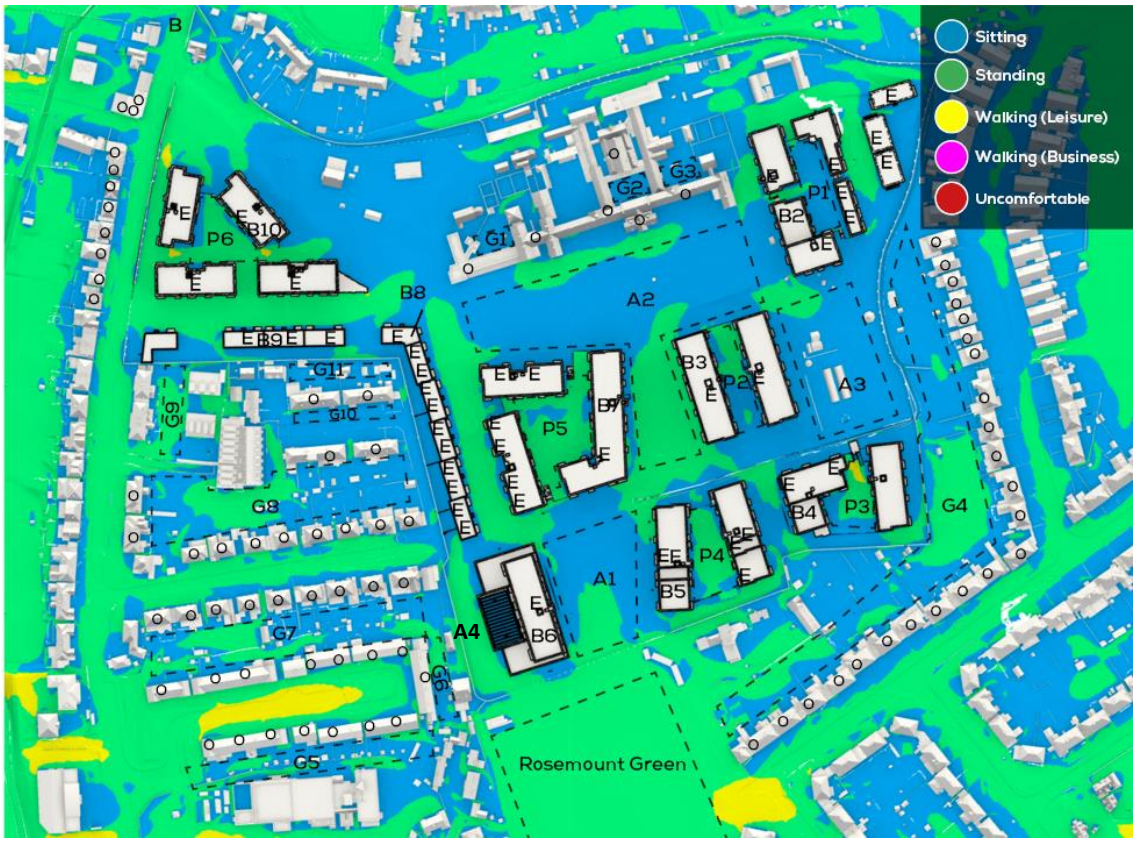

Figure 15 17 Ground Level Summer Comfort for Operational Phase with Landscaping

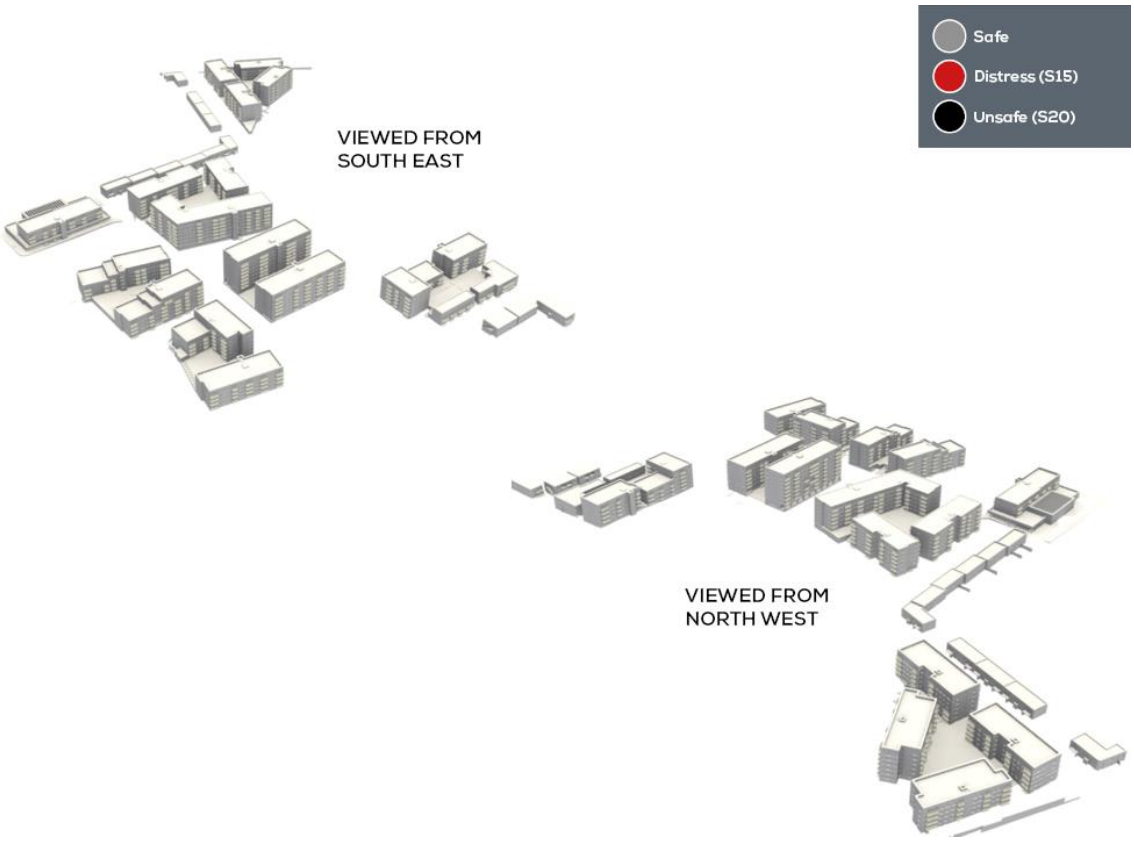

Figure 15 18 Balcony Wind Safety for Operational Phase with Landscaping

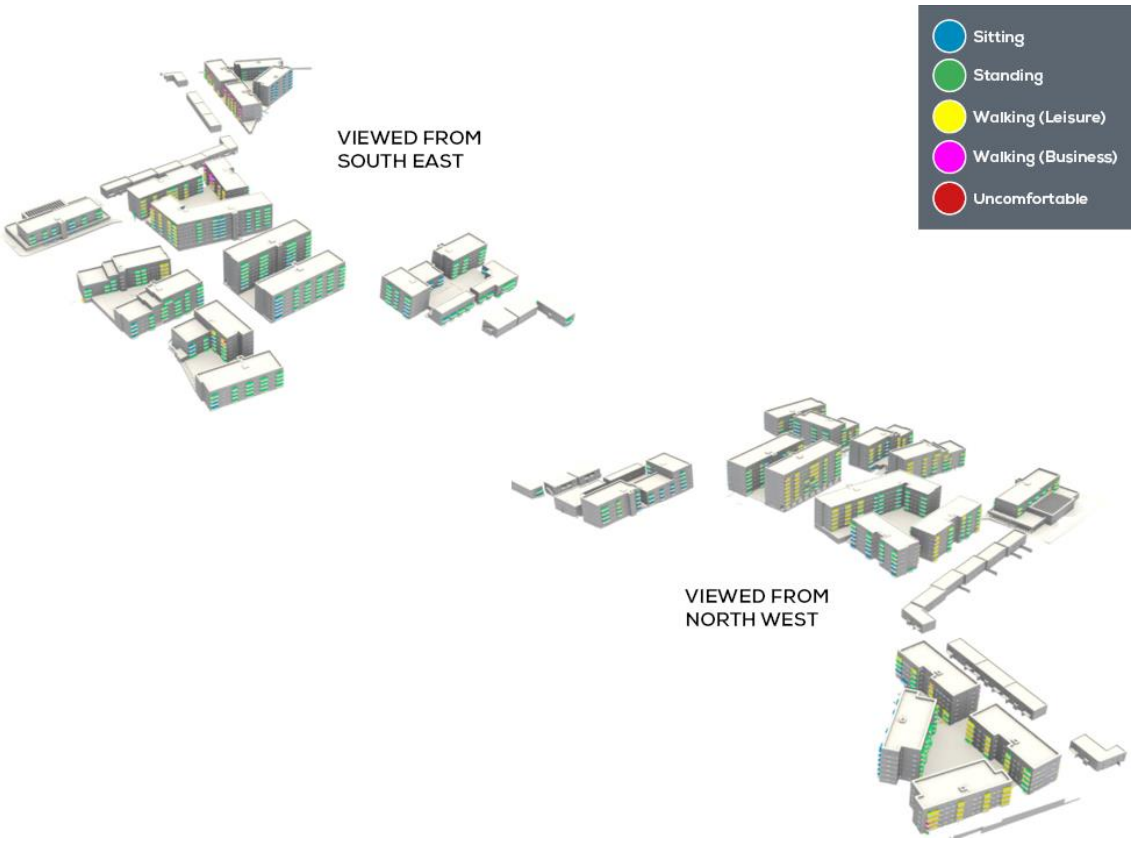

Figure 15 19 Balcony Winter Comfort for Operational Phase with Landscaping

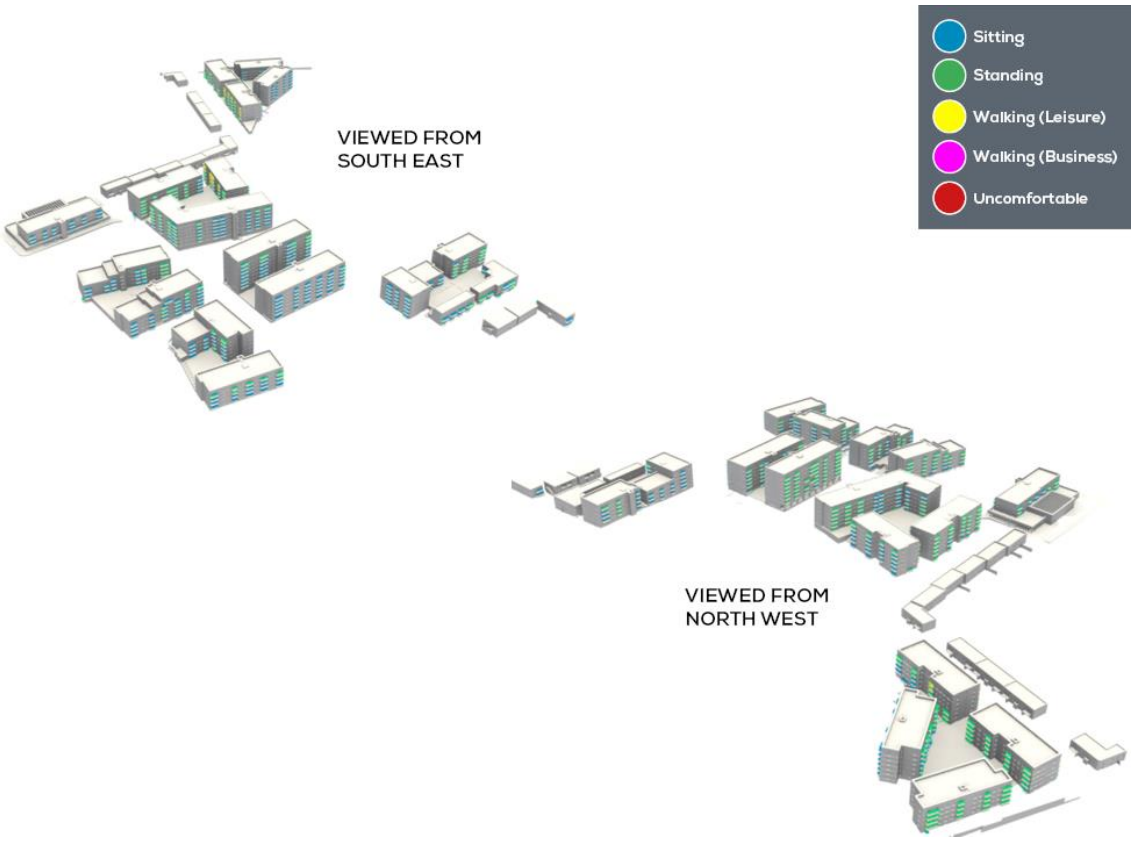

Figure 15 20 Balcony Winter Comfort for Operational Phase with Landscaping

15.6 Avoidance, Remedial & Mitigation Measures

15.6.1 Construction Phase

No avoidance, remedial or mitigation measures will be required during the construction phase.

15.6.2 Operational Phase

During the operation phase, the landscaping provides the necessary shelter to create suitable conditions.

15.7 Monitoring

15.7.1 Construction Phase

It is not considered necessary to undertake any formal wind speed and direction monitoring during the Construction Phase.

15.7.2 Operation Phase

It is not considered necessary to undertake any formal wind speed and direction monitoring during the Operational Phase.

15.8 Interaction

The main interaction relating to Wind is Population and Human Health. During the Operational Phase the Proposed Development will impact on the wind microclimate within and around the Site, which ultimately can impact positively or negatively on people's health and well-being. The wind microclimate has the potential to impact on the level of pedestrian comfort and safety within the development.

15.9 'Do-Nothing' Effect

Under a 'do-nothing' scenario there would be no change to the wind environment at the application site.

15.10 Difficulties Encountered When Compiling

No difficulties were encountered in compiling this Chapter of the EIAR.

15.11 References

- Lawson, T. Imperial College Press (2001). Building Aerodynamics
- The Dun Laoghaire-Rathdown County Council Development Plan (2022-2028)

16.0 CULTURAL HERITAGE AND ARCHAEOLOGY

16.1 Introduction

IAC Archaeology Ltd has prepared this chapter to assess the impact, if any, on the archaeological and cultural heritage resource of a proposed development at the Central Mental Hospital, Dundrum Road, Dublin. The assessment was carried out by Faith Bailey (MA, BA (Hons), MIAI, MCIfA) of IAC Archaeology. Faith has over 20 years of experience in archaeological and cultural heritage consultancy and has been responsible for the baseline production of multiple EIAR and assessments for all aspects of development nationwide.

Architectural heritage is dealt with in detail within Chapter 17.

The assessment has been informed by a programme of geophysical survey (Leigh 2021, Licence No. 21R0015) and two phases of archaeological testing (Piera 2021, Licence No. 21E0610 and Piera 2024, Licence No. 21E0610ext).

This study determines, as far as reasonably possible from existing records, the nature of the archaeological and cultural heritage resource in and within the study area of the proposed development using appropriate methods of study. The study area is defined as an area measuring c. 1km from the proposed development area. Desk-based assessment is defined as a programme of study of the historic environment within a specified area or site that addresses agreed research and/or conservation objectives. It consists of an analysis of existing written, graphic, photographic, and electronic information in order to identify the likely heritage assets, their interests and significance and the character of the study area, including appropriate consideration of the settings of heritage assets.

This leads to the following:

- Determining the presence of known archaeological/cultural heritage assets that may be affected by the proposed development;
- Assessment of the likelihood of finding previously unrecorded archaeological remains during the construction programme;
- Determining the effect upon the setting of known cultural heritage sites in the surrounding area; and Suggested mitigation measures based upon the results of the above research.

Definitions

In order to assess, distil and present the findings of this study, the following definitions apply. 'Cultural Heritage' where used generically, is an over-arching term applied to describe any combination of archaeological 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.

Consultation

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

- Department of Housing, Local Government and Heritage – the Heritage Service, National Monuments and Historic Properties Section: Record of Monuments and Places; Sites and Monuments Record; Monuments in State Care Database; Preservation Orders and Register of Historic Monuments;
- National Museum of Ireland, Irish Antiquities Division: topographical files of Ireland;
- Dun Laoghaire Rathdown County Council: Planning Section; and
- Historical and Ordnance Survey Maps.

Legislation, Policy and Guidance

The following legislation, standards and guidelines were consulted as part of the assessment.

- National Monuments Acts, 1930–2014;
- Planning and Development Act (as amended);
- Heritage Act, 1995;
- Environmental Protection Agency (EPA) 2015 Advice Notes on Current Practice (in the preparation of Environmental Impact Statements) (Draft Sept. 2015). Dublin, Government Publications Office;
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EIAR) (EPA 2022). Dublin: Government Publications Office;
- Frameworks and Principles for the Protection of the Archaeological Heritage, 1999, (formerly) Department of Arts, Heritage, Gaeltacht and Islands.

The National Monuments Act 1930, as amended by various acts including but not limited to, the National Monuments (Amendment) Act 1954, the National Monuments (Amendment) Act 1987, the National Monuments (Amendment) Act 1994 and the National Monuments (Amendment) Act 2004 (together the National Monuments Acts) make provision for the protection and preservation of national monuments, archaeological monuments and archaeological objects in Ireland. The description of the existing environment in this chapter takes account of those statutory designations and the chapter takes account of the legislative monitoring and licencing requirements as mitigation.

The Historic and Archaeological Heritage and Miscellaneous Provisions Act 2023 (the 2023 Act) was enacted by the Oireachtas in late 2023 and aims to address a range of structural issues, simplify terminology, as well as provide a single accessible piece of legislation. At the date of writing many sections of the 2023 Act have yet to commence. It is not anticipated that this will result in statutory protection being extended to any potential receptors apart from those already considered in this chapter and the chapter already identifies as mitigation the various archaeological investigations and licencing requirements that will come into force when the 2023 Act is commenced. Accordingly, the EIAR conclusions will be unchanged should the 2023 Act commence fully while the application is moving through the planning process

16.2 Methodology

Research for this assessment was undertaken in three phases. The first phase comprised a paper survey of all available archaeological, historical and cartographic sources. The second phase comprised a geophysical survey (2021) and the third phase of two phases of archaeological testing (2021 and 2024).

Desktop Resources

- 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;
- Dun Laoghaire Rathdown County Development Plan (2022–2028);
- Place Name Analysis;
- Aerial photographs; and
- Excavations Bulletin (1970–2024).

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 1930 Act. Preservation Orders make any interference with the site illegal. Temporary Preservation Orders can be attached under the 1954 Act. These perform the same function as a Preservation Order but

have a time limit of six months, after which the situation must be reviewed. Work may only be undertaken on or in the vicinity of sites under Preservation Orders with the written consent, and at the discretion, of the Minister.

The topographical files of the National Museum of Ireland are the national archive of all known finds recorded by the National Museum. This archive relates primarily to artefacts but also includes references to monuments and unique records of previous excavations. The find spots of artefacts are important sources of information on the discovery of sites of archaeological significance.

Cartographic sources are important in tracing land use development within the development area as well as providing important topographical information on areas of archaeological potential and the development of buildings. Cartographic analysis of all relevant maps has been made to identify any topographical anomalies or structures that no longer remain within the landscape.

Documentary sources were consulted to gain background information on the archaeological 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 Dun 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 files. This information is also available online (www.excavations.ie) from 1970–2024.

Geophysical Survey

Geophysical survey is used to create ‘maps’ of subsurface archaeological features. Features are the non-portable part of the archaeological record, whether standing structures or traces of human activities left in the soil. Geophysical instruments can detect buried features when their electrical or magnetic properties contrast measurably with their surroundings. In some cases, individual artefacts, especially metal, may be detected as well. Readings, which are taken in a systematic pattern, become a dataset that can be rendered as image maps. Survey results can be used to guide excavation and to give archaeologists insight into the pattern of

non-excavated parts of the site. Unlike other archaeological methods, the geophysical survey is not invasive or destructive.

A geophysical survey was undertaken within the proposed development in March 2021 (Leigh 2021, Licence No. 21R0015). A summary of the geophysical report is presented in this chapter and the full technical report is included in Appendix 16.1.

Archaeological Testing

Archaeological Test Trenching can be defined as 'a limited programme... of intrusive fieldwork which determines the presence or absence of archaeological features, structures, deposits, artefacts or ecofacts within a specified area or site on land or underwater. If such archaeological remains are present test trenching defines their character and extent and relative quality' (CIfA 2020a, 4). Two phases of archaeological testing have been carried out within the proposed development in October 2021 and March 2024. This was undertaken by Marc Piera of IAC under licence 21E0610 and 21E0610ext. Detailed results of the archaeological testing are included in this chapter and Appendices 16.2a/b.

Describing the Effects

The archaeological and cultural heritage resource within the study area has been assessed in terms of its sensitivity, the type of potential impact, magnitude of same and the potential significance of the effect/impact.

The quality and type of an impact can be classed as one of the following (as per the Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA 2022):

- Negative Impact: A change which reduces the quality of the environment, for example a change that will detract from or permanently remove an archaeological or cultural heritage site from the landscape;
- Neutral Impact: A change which does not affect the quality of the environment;
- Positive Impact: A change which improves the quality of the environment, for example a change that improves or enhances the setting of archaeological or cultural heritage site.

The below terms are used in relation to the archaeological and cultural heritage and relate to whether a site will be physically impacted upon or not:

- Direct Impact: Where an archaeological/cultural heritage feature or site is physically located within the footprint of the proposed development and entails the removal of part, or all, of the monument or feature; and
- Indirect Impact: Where a feature or site of archaeological or cultural heritage merit or its setting is located in close proximity to the footprint of a development.

Significance of Effects

Significance of Effects as defined by the Environmental Protection Agency (2022, 50) Guidelines.

- Imperceptible: An effect capable of measurement but without significant consequences.
- Not Significant: An effect which causes noticeable changes in the character of the environment but without significant consequences.
- Slight Effects: An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
- Moderate Effects: An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
- Significant Effects: An effect which, by its character, magnitude, duration or intensity, alters a sensitive aspect of the environment.
- Very Significant: An effect which, by its character, magnitude, duration or intensity, significantly alters most of a sensitive aspect of the environment.
- Profound Effects: An effect which obliterates sensitive characteristics.

16.3 Baseline Environment

The proposed development area is located within the campus associated with the Former Central Mental Hospital, directly east of Dundrum Road, County Dublin. There are no recorded monuments located within the site, with the closest being the site of an ecclesiastical enclosure located c. 540m to the southwest (DU022-016001). In addition, there are nine recorded archaeological sites within a 1km study area (Figure 16.1).

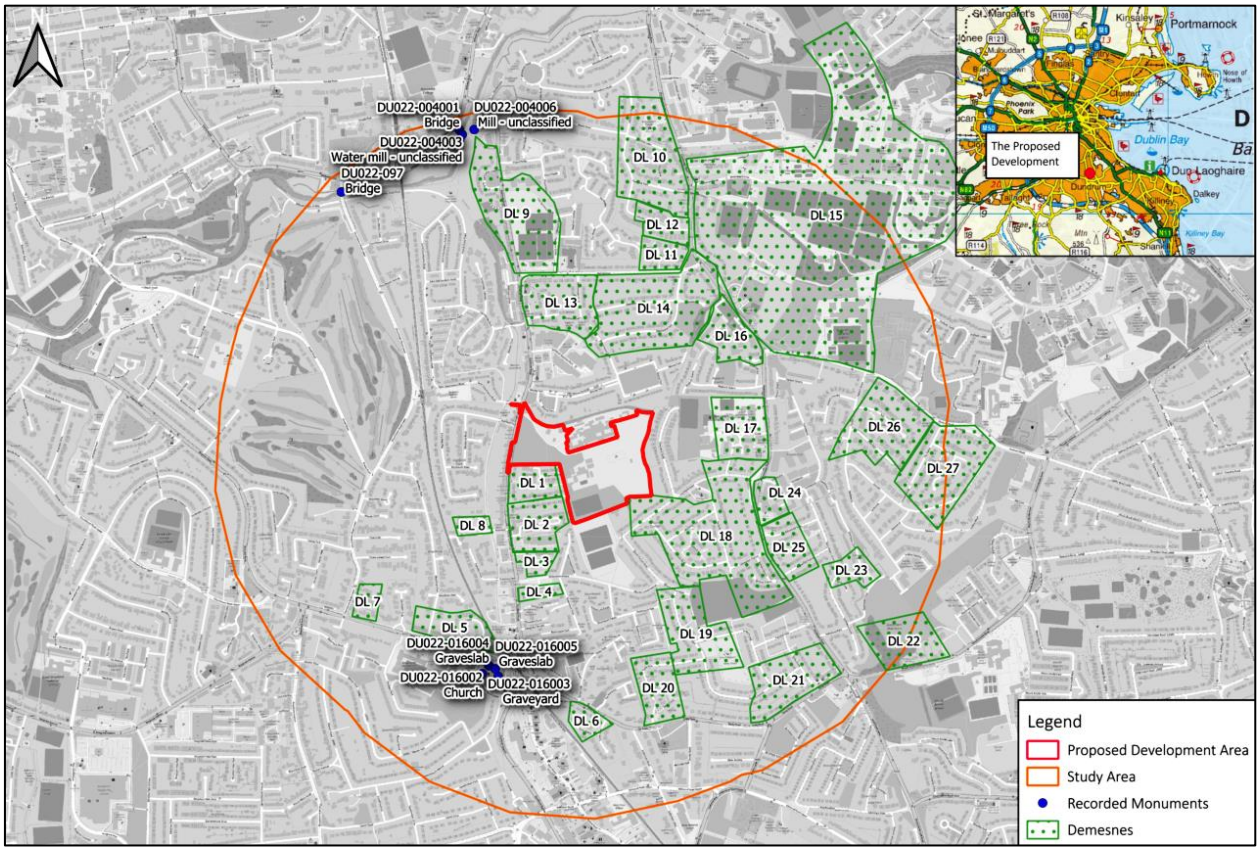

Figure 16.1: Archaeological and Cultural Heritage Sites within 1km of the Proposed Development

The proposed development area is surrounded by residential development on all sides, with a soccer pitch also located directly to the south. The site itself is occupied by a range of

buildings associated with the Hospital, with open green spaces at the east, west and south and a small formal garden towards the southeast.

Mesolithic Period (c. 8000-4000 BC)
Although very recent discoveries may push back the date of human activity by a number of millennia (Dowd and Carden, 2016), the Mesolithic period is the earliest time for which there is clear evidence of prehistoric activity in Ireland. During this period people hunted, foraged and gathered food and appear to have led a primarily, but not exclusively, mobile lifestyle. The presence of Mesolithic communities is most commonly evidenced by scatters of worked flint material, a by-product from the production of flint implements.

The current archaeological evidence suggests that the environs around Dublin were first inhabited towards the later part of this period. At this time people made crude flint tools known as Larnian (or Bann) Flakes. Small numbers of these flakes have been found along coastal areas of County Dublin such as Dun Laoghaire, Dalkey Island, and Loughlinstown and may indicate small-scale transient settlement along the riverbanks and seashores (Corlett, 1999). Several Larnian Flakes are recorded in the Topographical Files of the National Museum of Ireland from along the Dodder suggesting that the river, its tributaries and the surrounding landscape, including Milltown to the north of the proposed development area, may have been exploited for their natural resources during this time.

Neolithic Period (c. 4000–2500 BC)
During the Neolithic period, communities became less mobile and their economy appears to have become based on the rearing of stock and cereal cultivation. This transition was accompanied by major social change. Agriculture demanded an altering of the physical landscape, with forests rapidly cleared and field boundaries constructed.

There are no previously recorded Neolithic sites within the immediate vicinity of the area of the proposed development; however, a stone axehead of possible Neolithic date was found c. 225m to the north of the site (NMI No. 1935:38). This area was likely inhabited during the prehistoric period due to the proximity of the River Dodder to the north and the Slang Stream to the west.

Bronze Age (c. 2500–800 BC)
This period is marked by the use of metal for the first time. As with the transition from Mesolithic to Neolithic, the transition into the early Bronze Age was accompanied by changes in society. Megaliths were replaced in favour of individual, subterranean cist or pit burials that were either in isolation or in small cemeteries. These burials contained inhumed or cremated remains and were often, but not always, accompanied by a pottery vessel. There are no recorded Bronze Age sites located within the vicinity of the proposed development area.

Iron Age (c. 800 BC–AD 500)
There is increasing evidence for Iron Age settlement and activity in recent years as a result of development-led excavations as well as projects such as Late Iron Age and Roman Ireland (Cahill Wilson 2014). Yet this period is distinguishable from the rather rich remains of the preceding Bronze Age and subsequent early medieval period, by a relative paucity within the current archaeological record. There are no known monuments in the vicinity of the proposed development area that would suggest an active presence of Iron Age communities in this area.

Early Medieval Period (AD 500–1100)

The early medieval period is depicted in the surviving sources as an almost entirely rural based society. Territorial divisions were based on the *túath*, or petty kingdom, with Byrne (1973) estimating that there may have been at least 150 kings in Ireland at any given time. This period, with a new religious culture and evolving technologies, saw significant woodland clearance and the expansion of grassland. A new type of plough and the horizontal mill were two innovations that improved agriculture and allowed for the population to increase. Consequently, from c. AD 500 onwards, the landscape became well settled, as evidenced by the profuse distribution of ringforts, a dispersed distribution of enclosed settlements, normally associated with various grades of well-to-do farming and aristocratic classes in early medieval Ireland (Stout and Stout 1997, 20).

This area bordered by the sea to the east and Wicklow and Dublin Mountains to the west 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 (c. AD 500). 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 Dublin, their most important town, in AD 917. The development of Dublin as a major centre of trade and industry had implications on the lands to the south, which were known as *Dyflinarskiri* and extended as far as Greystones. Many Vikings settled in this area and by AD 980 most had converted to Christianity. Although there were attacks on the Vikings by the native Irish, it appears that the Scandinavians left a lasting impression within the Rathdown area, located to the immediate south of St Vincent's Hospital. Many place names such as 'Windgates' and 'Coolnagad' preserve the Norse word *gata*, meaning 'street'.

This period was also characterised by the introduction of Christianity to Ireland. An early medieval ecclesiastical enclosure is recorded c. 540m southwest of the proposed development area. Ball (1900) notes the association of this early church with St Ossian and St Lucan. The distinct curvature of its graveyard boundary (DU022-016003) may indicate the line of an early ecclesiastical enclosure (DU022-016001). An Early Christian grave slab was recently exposed in the graveyard, fragments of which are kept in the present church (DU022-016004). A portion of a Rathdown slab (DU022-016005) was also uncovered.

Medieval Period (AD 1100–1600)

The piecemeal conquest by the Anglo-Normans of Ireland, which commenced in AD 1169, had a fundamental impact on the Irish landscape. Their presence was strongest in the East of the Country, and it was mainly in this region that land was carved up and granted to the newly arrived lords who participated. The main success of the Anglo-Norman occupation was the welding of scattered territories into a cohesive unit through the introduction of the English form of shire government. The rural landscape became a network of manorial centres; these units would generally contain a castle (motte and bailey), a manorial house and a number of dwellings, with extensive surrounding acreage. During the 14th to 16th centuries, tower houses were the typical residence of the Irish gentry and were a common feature in the Irish landscape.

The earliest evidence of occupation in this area is Dundrum Castle (DU022-023002), c. 1.1km south of the development area, which was constructed in the 13th century and possibly occupies the site of an earlier *Dun* or fort from which the place takes its name. Built by Sir John de Clahull c. 1187, the earliest feature exposed during excavations in 1988-91 (O'Brien 1989) was a section of fosse. Finds included Leinster cooking ware, a buckle and a socketed arrowhead. Associated with the moat was a triple-slotted drawbridge with an entrance to a gatehouse extending from the drawbridge to part of the outer wall of the early castle.

After the landing of the Anglo-Normans in Ireland in 1169, inner and outer fortifications were established throughout Dublin. Dundrum Castle was part of this outer defence system and led to the establishment of the suburb of Dundrum itself. Following the Anglo-Norman conquest, the lands at Dundrum became the property of lay owners while those in other parts of Taney (currently Churchtown) became the property of the Church. The lands at Dundrum were assigned to the family of De Clahull, a family whose possessions extended to Kerry.

The lands at Dundrum were situated on the very extremity of the lands to the south of Dublin, afterwards enclosed within the pale and an earthwork that survives in the townland of Balally (which adjoins Dundrum to the southeast) may represent part of the Pale Boundary Earthwork. The area suffered frequently from attacks committed by enemies of the Irish Crown. Following the invasion of Edward Bruce at the beginning of the 14th century the lands around Dundrum were completely devastated. The Fitzwilliam family subsequently assumed residency in the lands around the area and remained there until the latter half of the 17th century. The next major family to occupy the area were the Dobson family who undertook the restoration of Dundrum Castle during the 18th century and during this period many of the village activities centred on the castle itself.

Post-Medieval Period (AD 1600–1800)

The 18th century witnessed a more pacified Ireland and during this time industry was developed in the landscape. In the area of Milltown to the north of the site, the waterpower of the River Dodder was utilised and fed numerous millraces to operate a multitude of mills. Deeds from 1718 and 1724 mention an ancient mill trace and watercourse leading to an iron mill at Milltown and a brass mill at Bankside Cottages that shared its water supply with a paper mill. These mills are not marked on the first edition Ordnance Survey map of 1843 and this may represent the beginning of the economic decline of the region mentioned by Lewis, possibly caused by the 1738 famine. Mills were also present along the Slang Stream to the west of the proposed development area, which is recorded on Rocque's map of 1760 (Figure 16.1).

From the beginning of the 18th century onwards, Dundrum gained a reputation as a health resort and it was noted for its numerous herds of goats which 'browsing among the mountain pastures, afford milk of very excellent quality' (Lewis 1837, 164). In 1852, the population of Dundrum had grown to 550, with its one street boasting 94 houses most of which were cottages. The opening of the Bray-Harcourt Street Railway line in Dundrum had a major economic influence on the village. Large villas were constructed on the properties around the area and Dundrum became a hub of business and social activity.

The Central Lunatic Asylum was established to the immediate north of the development area in 1850 and was the first secure hospital in Europe. The building was designed by Jacob Owen

(1778-1870) and Frederick Villiers Clarendon (1820-1904) of the Board of Public Works. It was established as a result of recommendations of a parliamentary committee set up in 1843 un the Lord Chancellor.

It is acknowledged that the original asylum structures and their associated designed landscape are of cultural heritage value, especially from a social history perspective. Specific assets include the main hospital building, perimeter wall, gate lodge, chapel, airing yards (20th century), hay barn and pig yards, farmyard buildings, walled garden including two covered entrances and the historic landscape.

The history of the hospital and associated upstanding structures are addressed in detail in the Architectural Heritage chapter (17).

Summary of Previous Archaeological Fieldwork

A review of the Excavations Bulletin (1970–2024) has revealed that a number of previous archaeological investigations have been carried out within the wider study area. These are summarised below, whilst previous geophysical survey and archaeological testing undertaken as part of this proposed development is addressed further on in the chapter.

Archaeological geophysical survey (Bolger and Harrison 2005, Licence No. 05R0063), two phases of testing (Bolger and Harrison 2005, Licence No. 05E0847 and Lohan 2007, Licence No. 06E1153) and archaeological excavation (O'Donovan 2007, Licence No. 07E0116) at Notre Dame de Missions School, Dundrum (c. 650m southwest of the proposed development area) revealed remains of a partially truncated ditch dating to the early medieval period and associated with the ecclesiastical enclosure to the east (DU022-016001). The remains of a second ditch were also identified, which was thought to date to the 12th-15th centuries (O'Donovan 2007). Subsequent archaeological monitoring for a renewed planning application in this area in 2017 did not reveal anything of archaeological significance (Bennett 2017:144, Licence No. 17E0308).

A programme of test trenching was carried out c. 465m to the southeast of the proposed development area but did not reveal anything of archaeological significance (Bennett 2019:651, Licence No. 19E0524). Nothing of archaeological significance was identified during monitoring on Churchtown Road, c. 540m south of the proposed development area (Bennett 2015:151, Licence No. 15E0231) or at Dundrum Main Street, c. 750m south of the site (Sheehan and Halpin 2012, Licence No. 12E0219).

Cartographic Analysis

William Petty, Down Survey Map, Barony of Rathdown, Parish of Donnybrook and Taney, County Dublin, c. 1655
These early maps lack detail as their primary purpose was to identify land ownership; however, significant topographical features and structures are often depicted. There is no detail shown on this map of the proposed development area. A castle (DU022-023001) is depicted in Dundrum, with a path leading to Milltown Bridge to the north. Roebuck castle (DU022-017) is indicated within the lands belonging to 'Barron of Timblestone' to the east.

John Rocque, Map of the City and County of Dublin, 1756 (Figure 16.2)

By the time of this map, it appears that the proposed development area is located across agricultural fields to the east of Dundrum Road and the Slang Stream. A paper mill is depicted along the Slang Stream, to the northwest of the site.

First Edition Ordnance Survey Map, 1843, scale 1:10,560 (Figure 16.3)
This is the first accurate historic mapping coverage of the area containing the proposed development area. The site is located across a number of agricultural fields to the east of Anna Villa and northwest of Roebuck Park and its associated demesne. There are no features of note located within the site boundary.

Ordnance Survey Map, 1872, scale 1:10,560 (Figure 16.4)
By the time of this map, the Central Lunatic Asylum has been constructed to the immediate north of the development area, with associated formal gardens extending from the building southwards into the proposed development area. The east and west sides of the site are within open ground, although, a gate lodge is annotated within the northwestern corner.

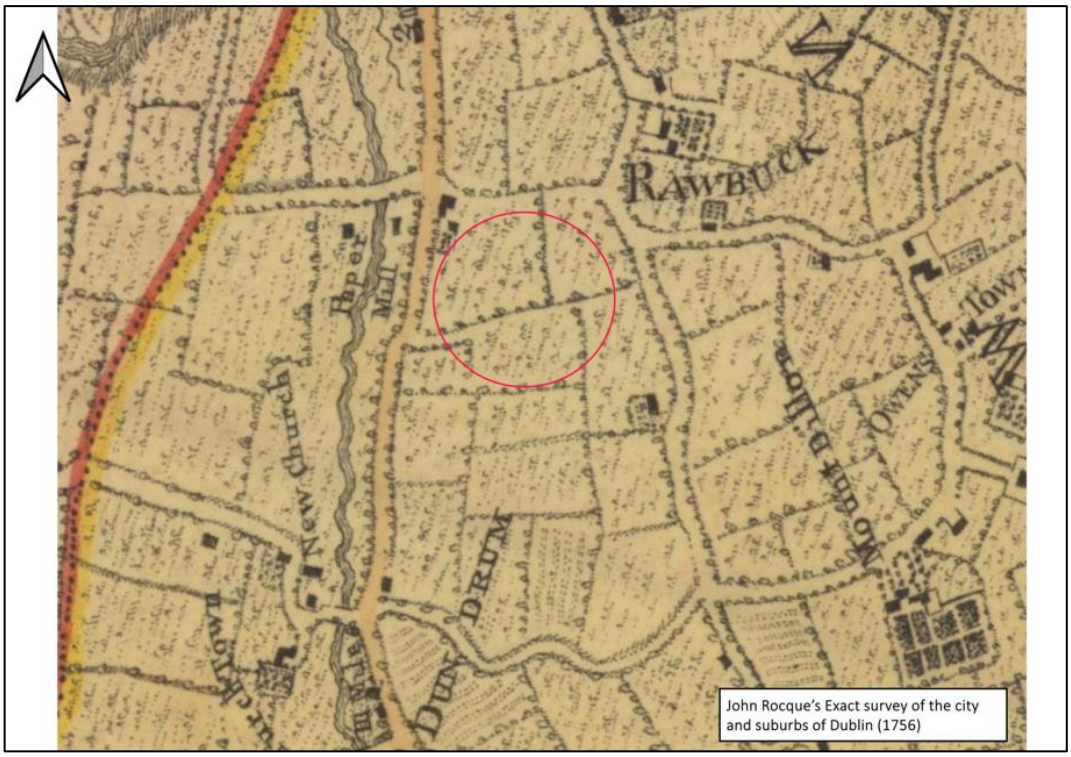

Figure 16.2: Extract from Rocque's Map of County Dublin (1760) showing the approximate location of the proposed development area

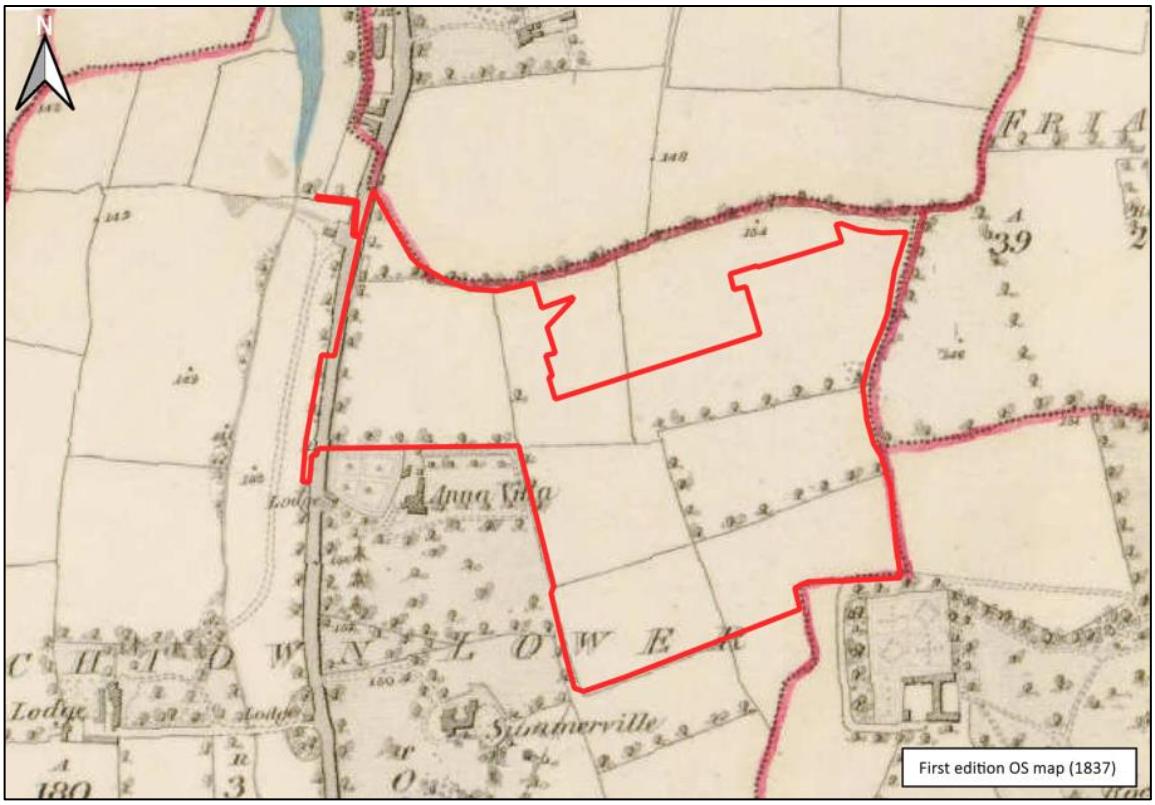

Figure 16.3: Extract from the first edition OS map (1843) showing the proposed development area

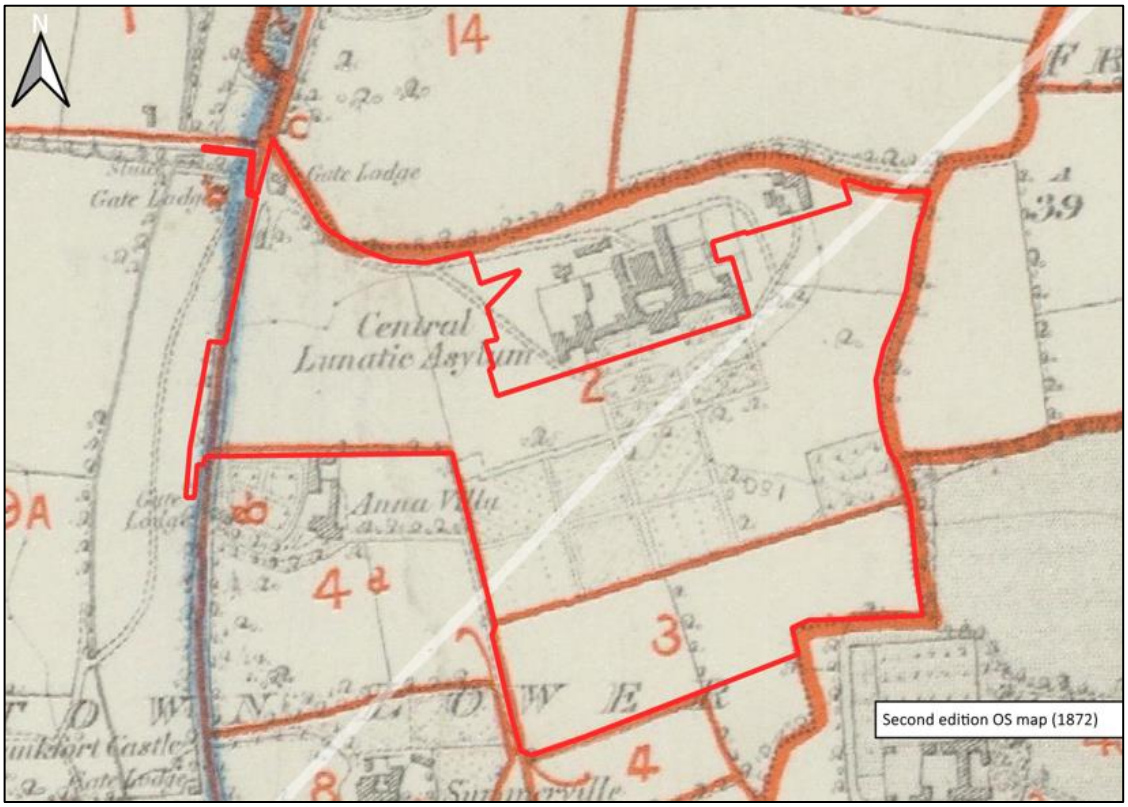

Figure 16.4: Extract from the second edition OS map (1872) showing the proposed development area

Ordnance Survey Map, 1911, scale 1:2,500 (Figure 16.5)

By the time of this map, there have been a number of additions to the Central Lunatic Asylum, including a Roman Catholic chapel to the west of the main building, extensions to the main building itself and the addition of a number of outbuildings. A mortuary building is labelled at the northwest corner of the development area to the south of the extant gate lodge and a sewage tank is shown at the northeastern corner. A new tree-lined access road has been added, which leads from Dundrum Road south-eastwards towards the Asylum, while the formal gardens at the southern end of the site appear to have been removed.

County Development Plan

The Dun Laoghaire Rathdown Development Plan (2022-2028), recognise 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. The Council endeavours to preserve in-situ all archaeological monuments, whether on land or underwater, listed in the Record of Monuments and Places (RMP) and any newly discovered archaeological sites, features, or objects.

There are no recorded monuments located within the proposed development area, with the closest being the site of an ecclesiastical enclosure located c. 540m to the southwest (DU022-016001) (Table 16.1, Figure 16.1).

Table 16.1: Recorded archaeological sites within the study area

RMP no.	Location	Classification	Distance to scheme
DU022-016001-006	Churchtown Road Upper	Ecclesiastical Enclosure	c. 540m southwest
DU022-016003	Churchtown Road Upper	Graveyard	c. 540m southwest
DU022-016005	Churchtown Road Upper	Graveslab	c. 570m southwest
DU022-016004	Churchtown Road Upper	Graveslab	c. 570m southwest
DU022-016002	Churchtown Road Upper	Church	c. 580m southwest
DU022-004006	Dundrum Road	Mill – unclassified	c. 920m north northwest
DU022-004003	Dundrum Road	Water mill – unclassified	c. 925m north northwest
DU022-097	Churchtown Road Lower	Bridge	c. 940m northwest
DU022-004002	Dundrum Road	Water mill – unclassified	c. 940m north northwest
DU022-004001	Dundrum Road	Bridge	c. 950m north northwest

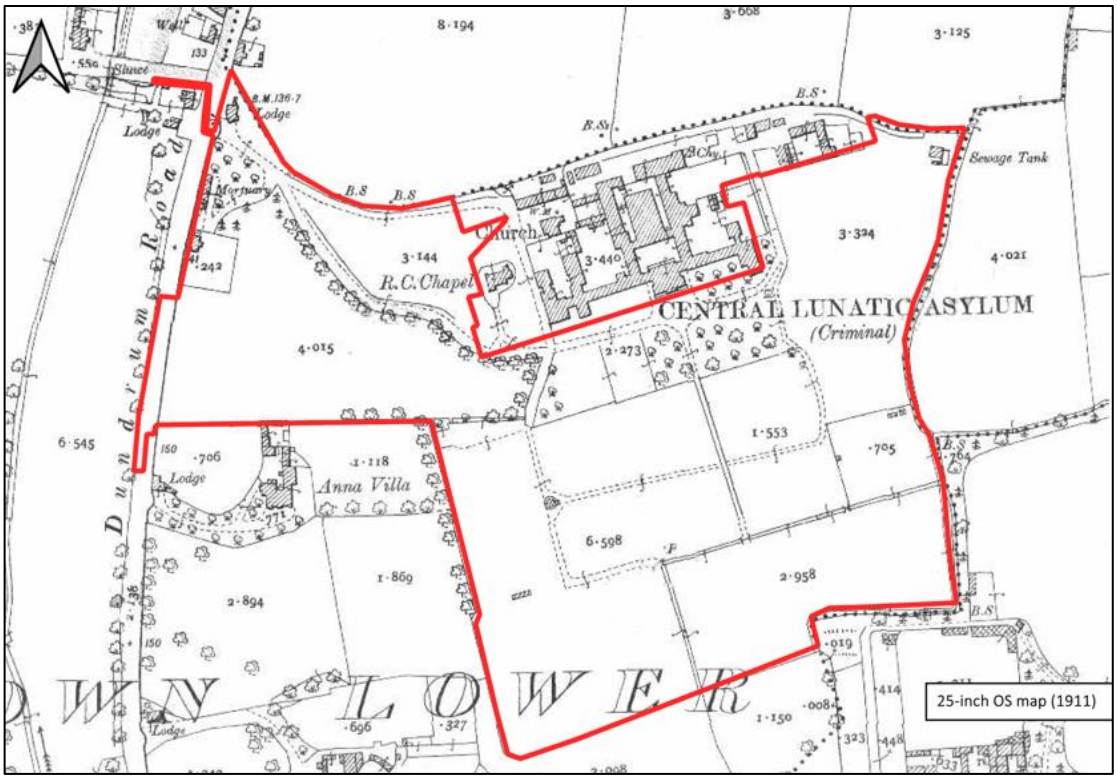

Figure 16.5: Extract from the 1911 OS map showing the proposed development area

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. One stray find is recorded from the vicinity of the proposed development area, which relates to the discovery of the stone axehead (NMI 1935:38), c. 225m north of the proposed development area.

Aerial Photographic Analysis

Inspection of the aerial photographic coverage of the proposed development area held by the Ordnance Survey (1995–2013), Google Earth (2003–2024), Bing Maps and Apple Maps has been carried out as part of this assessment. The present structures on site have remained unchanged since at least 1995. The greenfield areas of the site contain a number of small garden areas, mature trees and larger open green spaces.

Satellite imagery from 2018 (Google Earth, May 2018) shows a circular enclosure feature with a diameter of 25m in the northwest corner of the site. The slightly earlier coverage from 2016 (Google Earth, June 2016) shows the same feature accompanied by at least seven other circular features that vary in diameter from 5-20m. A sub-rectangular feature is also depicted to the northeast of the larger possible enclosure, which was also identified during the geophysical survey. It was deemed initially that the circular features may be of archaeological potential, but following the results of the geophysical survey and archaeological testing, it is likely that the anomalies were caused by decaying fungal colonies that leave circular growth

patterns within areas of pasture or lawn. Google Earth Imagery from July 2022 depicts the locations of the previously excavated test trenches from the first phase of testing in 2021.

Cultural Heritage – Placenames and Townlands

The townland is an Irish land unit of considerable longevity as many of the units are likely to represent much earlier land divisions. However, the term townland was not used to denote a unit of land until the Civil Survey of 1654. It bears no relation to the modern word 'town' but like the Irish word *baile* refers to a place. It is possible that the word is derived from the Old English *tun land* and meant 'the land forming an estate or manor' (Culleton 1999, 174).

Gaelic land ownership required a clear definition of the territories held by each sept and a need for strong, permanent fences around their territories. It is possible that boundaries following ridge tops, streams or bogs are more likely to be older in date than those composed of straight lines (ibid. 179).

The vast majority of townlands are referred to in the 17th century, when land documentation records begin. Many of the townlands are mapped within the Down Survey of the 1650s, so called as all measurements were carefully 'laid downe' on paper at a scale of forty perches to one inch. Therefore, most are in the context of pre-17th century landscape organisation (McErlean 1983, 315).

In the 19th century, some demesnes, deer parks or large farms were given townland status during the Ordnance Survey and some imprecise townland boundaries in areas such as bogs or lakes, were given more precise definition (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 townland of Churchtown Lower, County Dublin. The townland boundary between the townlands of Churchtown Lower and Farranboley forms the northern boundary of the proposed development area.

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 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 is provided in Table 16.2, and relate to land ownership, and function.

Table 16.2 Placename Analysis

Place name	Derivation	Possible meaning
Churchtown Lower	*Baile an Teampaill Íochtarach*	Church lands

Farranboley	*Fearann na Buaile*	Land of the cattle fold or summer pasture
Friarland	*Fearann na mBráthar*	Land owned by Friars
Roebuck	*Reabóg*	Dweller at the sign of the male roe deer

Demesne Landscapes

The settled political climate of 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 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 construction effort went into their creation. Major topographical features like rivers and mountains were desirable features for inclusion into, and as a setting, for the large house and parkland. Multiple demesne landscapes and large houses were established throughout County Dublin during this period, due to the proximity of the city.

A large number of demesnes landscape are recorded on the first edition OS map of 1843 (Figure 16.1); however, the majority are now occupied by modern residential developments. All demesnes within 1km of the proposed development area are shown on Figure 16.1 and listed in the Table 16.3 below.

Table 16.3: Demesne landscapes within 1km of the proposed development

Demesne No.	Name	NIAH Survey No.	Description
DL 1	Anna Villa	N/A	Site completely covered by residential development
DL 2	Summerville	N/A	Site completely covered by residential development
DL 3	Larchfield	N/A	Site completely covered by residential development
DL 4	Annmount	N/A	Site completely covered by residential development
DL 5	Churchtown Cottage	N/A	Site completely covered by residential development
DL 6	Anna Field	N/A	Site completely covered by residential development
DL 7	Lyndhurst	N/A	Site completely covered by residential development
DL 8	Frankford Lodge	N/A	Elements of small demesne remain visible.
DL 9	Casino	2396	Northern area of parkland covered by residential buildings. A complex of institutional buildings built around the site of the principal building. Playing fields occupy southern half of demesne.

Demesne No.	Name	NIAH Survey No.	Description
DL 10	Springfield	N/A	Site completely covered by residential development
DL 11	Oak Lawn	N/A	Site completely covered by residential development
DL 12	Roebuck	N/A	Site completely covered by residential development
DL 13	Farranboley Cottage	N/A	Site completely covered by residential development
DL 14	Bloomville	2401	Site completely covered by residential development.
DL 15	Roebuck and Rosemount	5675	A number of modern buildings have been constructed on this site; however, the majority of the demesne is occupied by greenfield areas used as playing pitches at the north. Some small areas of woodland survive around Roebuck Grove
DL 16	Friarland	N/A	Site completely covered by residential development
DL 17	Roebuck Grove	N/A	Site completely covered by residential and commercial development
DL 18	Roebuck Park	2404	Site completely covered by residential development
DL 19	Roebuck Lodge	N/A	Site completely covered by residential development
DL 20	Tany Hill	2403	Site completely covered by residential development.
DL 21	Farmhill	N/A	Site completely covered by residential development
DL 22	Morganville Lodge	N/A	No evidence for demesne survives
DL 23	Castleview	N/A	Site completely covered by residential development
DL 24	Rosemont	N/A	Site completely covered by residential development
DL 25	Prospect	N/A	Site completely covered by residential development
DL 26	Moorfield	2424	Site completely covered by residential development.
DL 27	Roebuck Hall	2437	Site completely covered by residential development

The proposed development area itself is formed by a 'designed landscape', established at the same time as the asylum (as was the fashion), with key features such as a recessed entrance, gate lodge, tree-lined drive, ornamental planting, footpaths and a stone perimeter wall (albeit taller than most enclosing demesne walls usually established as part of a large county house). The design of the landscape was an important part of the asylum and its function.

Cultural Heritage Sites

The term 'cultural heritage' can be used as an over-arching term that can be applied to both archaeology and architecture. It may also refer to more ephemeral aspects of the environment, which are often recorded in folk law or tradition or possibly date to a more recent period. No previously unknown cultural heritage sites have been identified during the course of this assessment that relate to the proposed development area; however, the archaeological sites within the study area, along with the remains of the original designed landscape associated with the hospital, identified above, should also be considered as cultural heritage.

Geophysical Survey

The geophysical survey undertaken in 2021 investigated six Areas (A-F) (Leigh 2021, Licence No. 21R0015) within the proposed development area (Figure 16.6, Appendix 16.1). The geophysical survey identified traces of possible penannular and rectilinear enclosures in Area A, which were previously identified as crop marks in satellite imagery. The rectilinear response measures c. 12m x 9m. No internal responses were recorded. Plough trends and drainage features in Area A were indicative of former agricultural activity. Broad responses within a clearly defined area were indicative of rubble material within Area F. Although this may be modern in origin, it is possible that a former building or structure was represented here. The remains of two former field boundaries have been recorded in Areas B and D which correlated with those depicted on Ordnance Survey mapping. A possible additional field division was also evident in Area B. Also identified across the site was a series of parallel trends, indicative of historic ploughing activity and/or drainage features.

Archaeological Testing

Phase 1 of the archaeological testing took place within the accessible parts of the proposed development area in 2021 and targeted all geophysical anomalies and open space. The programme of work revealed five localised areas of potential archaeological significance, which were designated as Archaeological Areas AA1-AA5 (Piera 2022, Licence No. 21E0610, Appendix 16.2a). These comprised two small enclosures dating to the post-medieval period (AA1-2), a kiln (AA3), an isolated pit (AA4) and a cluster of postholes with a small possible hearth (AA5) (Figure 16.6, Table 16.4). In all, 21 trenches were excavated from the 38 originally proposed trenches.

The second phase of archaeological testing took place within the proposed development area in 2024 (Piera 2024, Licence No. 21E0610ext, Appendix 16.2b). A total of 15 trenches were excavated across the site focusing on two areas located at the northwest (Area A) and south (Area B) of the site, which were not accessible in previous 2021 testing. No archaeological features were identified in these two areas.

Table 16.4: Results of archaeological test excavations (Piera 2021)

Archaeological Area	Description
AA1	Two shallow linear features were identified in this area. Small sherds of brown glazed pottery and red fabric pottery were observed from the fills, suggesting a post-medieval date. The identified features broadly

	correspond to the location of a curvilinear geophysical anomaly which was targeted in this area. The plan of the geophysical anomaly indicates a penannular feature circa 4.5-5m in diameter. This feature may represent a small post-medieval penannular enclosure of unknown function.
AA2	Two linear features were identified in this area. Sherds of pottery were observed within the fills of the features suggesting a post-medieval date. Staffordshire slipware sherds (late 17th or early 18th century in date) and a tin glazed earthenware sherd pottery (18th Century) were identified. The features broadly correspond to the location of the rectangular geophysical anomaly which was targeted in this area. It may represent a post-medieval rectangular enclosure/building footing.
AA3	An isolated kiln was identified in this area. Remnants of scorched burnt clay was observed on the edges and base of the feature and substantial quantity of charcoal was evident in the fill.
AA4	An isolated pit was identified in this area. It was filled by dark silty clay with shattered orangish red burnt stones and substantial among of charcoal. This fill consisted of material usually associated to Fulacht fiadh/Burnt mound site activity. This type of site usually comprises large spreads or low mound of pyrotechnic refuse material with a trough and pits around. While no associated mound was identified during test excavations there is a possibility of further Burnt Mound/Fulacht fiadh remains in the vicinity of the pit.
AA5	A cluster of small possible postholes and an area if in situ burning, possibly a hearth, were identified in this area. These features produced evidence of scorched burnt clay and charcoal and may indicate a localised area of burning activity.

Figure 16.5: Results of 2021 geophysical survey

Figure 16.6: Results of 2021 and 2024 archaeological test trenching

16.4 Potential Impacts of the Proposed Project

16.4.1 Construction Phase

16.4.1.1 Archaeological Heritage

There will be a direct negative and permanent impact on the archaeological features identified during the course of test trenching in AA1-AA5. AA1-2 are located within the footprint of Block 10, whilst AA3 is located in the footprint of Block 03 and AA4-5 in the footprint of Block 02. Ground disturbances associated with the construction of these blocks will truncate or remove the identified archaeological remains. The significance of effect, prior to the application of mitigation, is very significant.

There may be a direct negative and permanent impact on small or isolated previously unrecorded archaeological features or deposits that have the potential to survive beneath the current ground level and outside the footprint of the excavated test trenches. Effects may range from moderate to very significant negative dependant on the nature, extent and significance of any such identified remains. This would be caused by ground disturbances associated with the proposed development.

16.4.1.2 Cultural Heritage

The designed landscape associated with the former Central Mental Asylum will be impacted by the construction of the proposed development due to alterations to construction within what was a private designed setting. The impact on the existing landscape, from a cultural heritage perspective is considered to be direct, negative and permanent with a very significant effect.

16.4.2 Operational Phase

16.4.2.1 Archaeological Heritage

There are no predicted impacts on any archaeological assets during the operation of the proposed development. This is due to the fact that any recorded monuments within the study area are located over 500m from the proposed development and will not be indirectly affected by the operation of the development. In addition, the operation of the development will not affect any of the surrounding former demesne landscapes due to the fact that they have been fully developed and have lost their designed landscape character.

16.4.2.2 Cultural Heritage

The operation of the proposed development will have a direct negative and permanent impact on the designed landscape associated with the former Central Mental Asylum, given its change of use, the additional of modern development and change from a private complex, to one that is publicly accessible. The effect is considered to be very significant negative.

16.5 Mitigation Measures

16.5.1 Construction Phase

16.5.1.1 Archaeological Heritage

CA_1: Whilst it is acknowledged that preservation in-situ is the preferred method to conserve the archaeological resource, the layout of the proposed blocks, as designed, cannot avoid the predicted direct impacts. As such, prior to the commencement of construction, AA1-AA5 will be preserved by record through full archaeological excavation. The work will be carried out under licence to the National Monuments Service of the DoHLGH.

CA_2: 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.

16.5.1.2 Cultural Heritage

CA_3: Detailed mitigation is provided in the Architectural Heritage chapter (17) in relation to the historic landscape and is not repeated here. Aspects of the landscape have been retained as part of the proposed development, including the hospital buildings to the immediate north, access drive and gate lodge, walled gardens, farm outbuildings, chapel and the perimeter wall.

16.5.2 Operational Phase

CA_4: Detailed mitigation is provided in the Architectural Heritage chapter in relation to the historic landscape and is not repeated here. Aspects of the landscape have been retained as part of the proposed development, including the hospital buildings to the immediate north, access drive and gate lodge, walled gardens, farm outbuildings, chapel and the perimeter wall.

16.6 Residual Impacts

16.6.1 Archaeological Heritage

Following the implementation of the above mitigation measures, there would be no significant residual effects on the archaeological resource as the remains will be fully preserved by record.

16.6.2 Cultural Heritage

Following the implementation of the mitigation measures laid out in the Architectural Heritage Chapter (17), in relation to the architectural heritage resource, there would be a remaining significant negative residual effect on the cultural heritage of the original asylum designed landscape.

16.7 Monitoring

The mitigation measures recommended 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 recommended mitigation measures.

16.8 Reinstatement

Reinstatement is not applicable.

16.9 Interactions

Chapter 17 Architectural Heritage represents the key interaction. This chapter has been fully reviewed and cross referenced in this assessment, where relevant.

16.10 Cumulative Impacts

The following developments, both proposed and those granted permission, in the surrounding area have been considered in the assessment of cumulative impacts:

- ABP30943021 - 2.12 ha at Our Lady's Grove, Goatstown Road, Dublin 14. 698 no. student bedspace accommodation and associated site works. Approved.
- ABP31128721 - c.0.9ha at No. 97A Highfield Park (D14P710), and No. 1 Frankfort Castle (D14 HY03), No. 2 Frankfort Castle (D14DE72) and Frankfort Lodge (D14C9P2), Old Frankfort, Dublin 14. 115 no. apartments, creche and associated site works. Approved.
- ABP31182621 - Lands at Knockrabo, Mount Anville Road, Goatstown, Dublin 14. 227 no. apartments and associated site works. Approved.
- ABP31013821 - Mount Saint Mary's and Saint Joseph's, Dundrum Road, Dundrum, Dublin 14. Demolition of existing buildings on site and part of the granite wall along Dundrum Road, excluding Small Hall, construction of 231 no. apartments, childcare facility and associated site works. Approved.
- ABP30446919/ ABP30768320 - Greenacres, Longacre and Drumahill House, Upper Kilmacud Road, Dundrum, Dublin 14. 307 no. apartments and associated works. Approved.
- D20A/0328 - University College Dublin, Belfield, Dublin 4. Extension of car park to provide 239 no. spaces. Approved.
- TA0001 - University College Dublin, Belfield, Dublin 4. 10 year permission for 512 student accommodation units (3006 no. bed spaces) including student facility centre, car parking and all associated site works. Approved.
- ABP315883 - 'Dunelm', Rydalmount, Milltown Road, Dublin 6. Demolition of structures, construction of Build to Rent apartments comprising of 63 apartments in 2 blocks with all associated site works. Approved.
- ABP305261 - Building 5, Dundrum Town Centre, Sandyford Road, Dundrum, Dublin 16. 107 no. apartments, cafe and associated site works. Approved.
- ABP300024 - Lands at the former Paper Mills site, bounded by the River Dodder to the East, Clonskeagh Road to the West, Clonskeagh Bridge to the South West, Dublin 6. Increase in apartment units from 96 to 116 with increase in block heights from 3 to 4

storeys with 30 additional parking spaces & additional bicycle spaces & associated site works. Approved.

- ABP311439 - Site measuring 0.29ha, Bounded by Kilmacud Road Upper to the north, Drummartin Link Road to the west, and Hazelbrook Apartments to the east and south, Dublin 14. Demolition of existing disused agricultural shed structure and the construction of a residential block 3 to 6 storeys consisting of 52 dwelling units. Approved.
- ABP313048 - 9/14 and 11C, Milltown Road, Milltown, Dublin 6. The application site consists of the former Murphy and Gunn site (currently Autovision) and the former Saint Joseph's Junior Education Centre site. Construction of 97 Build to Rent apartments. Approved.
- ABP312539 - Cunningham House, Trinity Hall, Dartry, Dublin 6. Demolition of existing building, construction of 358 no. student bedspace accommodation, 4 no. staff apartments and associated site works.
- ABP312170 - Marmalade Lane, Wyckham Avenue, Dundrum, Dublin 16. 531 no. Build to Rent apartments, creche and associated site works. Approved.
- ABP309931 - 24,26 28, Fosters Avenue, Mount Merrion, Blackrock, Co Dublin. Demolition of existing buildings on site and construction of 72 no. apartments, communal open space areas, parking spaces, vehicular, pedestrian and servicing access from Foster's Avenue, ESB substation and switch room, and all associated site works. Approved.
- ABP31293522 - 0.79 ha at Sommerville House, Dundrum Road, Dublin 14. Demolition of all structures, construction of 111 no. apartments and associated site works. Applied for, under consideration.
- ABP31323522 - 0.34 hectares comprising the car sales premises currently known as Vector Motors (formerly known as Victor Motors), Goatstown Road, Dublin 14, D14FD23. Demolition of existing building on site, construction of 221 no. student bedspaces and associated site works. Applied for, under consideration.
- ABP31322022 - site 3.5335ha incorporating the old Dundrum Shopping Centre known as Main Dundrum Street Village Centre (D14K3T7). Demolition of all existing buildings on site, construction of 881 no. apartments, creche and associated site works. Applied for, under consideration.
- ABP316470 - Site of approx. 0.24 ha on lands at Frankfort Centre, Dundrum Road, Dublin 1. The construction of 64 no. apartment units in the form of a 5-6 storey apartment blocks, the provision of a ground floor retail/cafe unit, and Public Realm upgrades to Dundrum Road. Applied for, under consideration.
- And finally, the proposed adaptive re-use of the Central Mental Hospital main building, infirmary and chapel. Under development.

No cumulative effects are predicted upon the archaeological resource, as it is proposed to preserve any archaeological remains within the proposed development area by record.

No cumulative effects have been identified in relation to the cultural heritage resource.

16.11 'Do-Nothing' Effect

If the development were not to proceed, there would be no impact upon the archaeological resource.

With regards to the historic landscape, the Central Mental Hospital has now ceased to function at this location, having been relocated to a new facility in Portrane. Prior to the relocation of the hospital function, the landscape was maintained in good order. Active management has now ceased and if the development were not to proceed, there is a high risk that the landscape as a whole would deteriorate significantly.

16.12 Difficulties Encountered in Compiling the Chapter

No difficulties were encountered during the compilation of this chapter.

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17.0 ARCHITECTURAL HERITAGE

17.1 Introduction

17.1.1 Terms of Reference

Alastair Coey Architects have been commissioned by Reddy Architecture & Urbanism ('The Architects'), acting on behalf of Dún Laoghaire Rathdown County Council, in partnership with The Land Development Agency ('The Applicant'), to provide heritage-focused advice on the development of the former Central Mental Hospital in Dundrum, Dublin ('The Site'). During the design process Alastair Coey Architects has assisted the Applicant's wider design team by providing assessment of the developing masterplan, advising on the limitations inherent in working with heritage assets in an extensive and historic demesne, and drawing attention to the potential impacts of the Development on the heritage structures and landscape.

17.1.2 Scope and Extent

Alastair Coey Architects have been asked to prepare this heritage focused chapter of the Environmental Impact Assessment in support of the Part-10 Planning application for the development of the Dundrum former CMH Site ('The Development').

In this chapter, Alastair Coey Architects have set out a summary of the known history of the Site and assessed the effects of the Development. This includes the assessment of: the contribution of the Site to the immediately surrounding area; the nature and character of buildings and landscapes within the Site; Protected Structures within the site and in the wider area; the effect of the development on the Site and wider area. Requirements of local, regional and national planning policy beyond those contained in the Department of the Arts, Heritage and the Gaeltacht 'Architectural Heritage Protection Guidelines for Planning Authorities' (2011), are addressed in other chapters of this EIAR.

This chapter has been prepared by Erl Johnston, a RIAI chartered architect with over ten years' experience of working on Protected Structures in Ireland and Listed Buildings in the UK; and by Alastair Coey, a RIAI Grade 1 conservation architect with over thirty years' experience of working on Protected Structures in Ireland and Listed Buildings in the UK. Alastair holds a Master's Degree in Urban and Building Conservation from University College Dublin.

17.1.3 The Site

The site is bounded to the north by the Main Hospital complex and areas of residential housing; to the east by areas of residential housing; to the south by Rosemount Green playing fields and areas of residential housing, and to the west by areas of residential housing and the Dundrum Road (R117). The site includes two areas on Dundrum Road.

The site encloses an area of approximately 9.7 hectares within a perimeter of approximately 1800m. Please refer to architect's schedules for detailed area schedules.

Notable heritage features inside and outside the site, as referenced in figure 15.1 below, include:

1. The Perimeter Wall
2. The Main Hospital complex including ancillary buildings
3. The Gate Lodge
4. Open paddocks
5. Historic Landscape
6. Walled Garden

Figure 17.1 - Outline of the Site (in red) is illustrative only. Please refer to the Architect's drawings.

17.2 Methodology

17.2.1 Introduction

This section describes the methodology used by Alastair Coey Architects 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.

- Guidelines on the Information to be Contained in the Environmental Impact Assessment Reports, prepared by EPA, updated May 2022.

- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU) (European Commission, 2017)

17.2.2 Establishing the Baseline Condition

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 Alastair Coey Architects. These have included:

a. desktop-based research;

b. archival research at the Irish Architectural Archive and the National Archives;

c. walkover surveys of the open grounds within the site carried out in June 2020 to November 2020, April-July 2021 and May-June 2024;

d. surveys of the surrounding residential areas carried out during June 2020 and April 2021; and

e. detailed surveys of the Mental Hospital Buildings carried out in May and June 2024.

These activities have informed:

i. An understanding of the basic characteristics of the site; topography, landscape, principal structures, landscape features, access, surrounding context, views into and out of the Site.

ii. An understanding of the historical development of the site, the impetus for its creation and its relationship in design and detail to preceding and contemporary institutions in Ireland and the British Isles.

iii. An understanding of the location, significance and sensitivity to change of the Protected Structures and other buildings within and without the Site.

iv. An understanding of the interdependency between the Central Mental Hospital buildings and the historic landscape within the Site.

These elements of understanding the Site, individually and collectively, allow Alastair Coey Architects to make an 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.

17.2.3 Identifying the Heritage Assets to be Assessed

The Planning and Development Act establishes that a historic or protected structure should be evaluated on the basis that it may have special interest under one or more of the following categories:

ARCHITECTURAL INTEREST: The characteristics of architectural interest may be attributed to a structure or part of a structure with such qualities as the following:

a. a generally agreed exemplar of good quality architectural design;
b. the work of a known and distinguished architect, engineer, designer or craftsman;
c. an exemplar of a building type, plan-form, style or styles of any period but also the harmonious interrelationship of differing styles within one structure;
d. a structure which makes a positive contribution to its setting, such as a street-scape or a group of structures in an urban area, or the landscape in a rural area;
e. a structure with an interior that is well designed, rich in decoration, complex or spatially pleasing.

HISTORICAL INTEREST: The notion of historical interest underpins a general belief that it is worthwhile to preserve and conserve structures, sites and information from past centuries. The level of importance of the historical connection and its relationship to the existing fabric of the structure should be assessed. The historical interest relating to a structure or parts of a structure may be identified in various ways.

a) A structure may have historical interest as the location of an important event that occurred in, or is associated with it, or by its association with a historic personality. Some events or associations may be so important that the place retains its significance regardless of subsequent alteration. Where an otherwise unremarkable structure has historical associations, it may be more appropriate to commemorate the association with a wall-mounted plaque. Where the decision is difficult, it is helpful to discover whether other buildings connected with the personality or event still exist (and if they are protected) and to make an assessment that takes account of the value of such a group.
b) A structure may have influenced, or been influenced by, an historic figure. Important people may have lived in the structure or have been otherwise associated with it – for example its patron, designer or builder. Places in which evidence of an association with a person survive, in situ, or in which the settings are substantially intact, are of greater significance than those which are much changed or in which much evidence does not survive.
c) Historical interest can be attributed where light is thrown on the character of a past age by virtue of the structure's design, plan, original use, materials or location.
d) A structure may be a memorial to a past event;
e) A structure itself may be an example of the effects of change over time. The design and fabric of the structure may contain evidence of its former use or symbolic meaning. This may be the case with former gaols or churches that have since changed and, in so doing, illustrate a historic development.
f) Some fixtures and features may survive, for example in consistory courts and courts of law, that are important evidence of former liturgical or legal practice and may have special historical interest for that reason.
g) Some unusual structures may have historical or socio-historical interest, for example, early electricity substations, 'Emergency' era military pillboxes or sentry-boxes. Although not yet of popular heritage significance, such structures can nonetheless have special historical and social interest.
h) Special historical interest may exist because of the rarity of a structure. Either few structures of an identifiable type were built at a particular time, or few have survived. In either case, the extant structure may be one of the few

representative examples of its time that still exists in the national, regional or local area. The rarity of surviving examples of a building type can ensure that special historical interest accrues to them.

ARCHAEOLOGICAL INTEREST: Special archaeological interest is essentially defined by the degree to which material remains can contribute to our understanding of any period or set of social conditions in the past (usually, but not always, the study of past societies). The characteristic of archaeological interest in the context of the RPS must be related to a structure. Structures of special archaeological interest may also be protected under the National Monuments Acts.

Structures can have the characteristics of both archaeological and architectural interest as these are not mutually exclusive. For example, the party walls or basements of houses of later appearance may contain mediaeval fabric and reveal information of archaeological interest. The standing walls of a sixteenth-century tower-house will have both characteristics of interest. Fragments of early fabric, including carved or worked stone, may have been re-used in later buildings giving these structures archaeological significance as the current context of historically significant material. A complex of industrial buildings may have archaeological interest because of its potential to reveal artefacts and information about the evolution of industry that may be useful to archaeologists, historians and the public.

As the site does not contain any buildings identified in the Record of Monuments and Places the extent of applicability of the National Monuments Act 1930, its amendments and the Archaeological Heritage and Miscellaneous Provisions Act 2023, and the possible presence of archaeological interest in the site, is covered by Chapter 16 of this EIAR.

ARTISTIC INTEREST: Special artistic interest may be attributed to a structure itself, or to a part of a structure, for its craftsmanship, design or decoration. Examples could include:

a) examples of good craftsmanship;
b) decoratively carved statuary or sculpture that is part of an architectural composition;
c) decoratively-carved timber or ceramic-tiled shopfronts;
d) ornate plasterwork ceilings;
e) decorative wrought-iron gates;
f) religious art in a place of public worship such as the Stations of the Cross or stained-glass windows;
g) fixtures and fittings such as carved fireplaces, staircases or light-fittings;
h) funerary monuments within a graveyard;
i) the relationship of materials to each other and to the totality of the building in which they are situated, if these have been designed as an ensemble.

CULTURAL INTEREST: The characteristic of cultural interest permeates the architectural heritage and can, in the broadest terms, include aesthetic, historical, scientific, economic or social values of past and present generations. Special cultural interest apply to:

a) those structures to which the Granada Convention refers as ‘more modest works of the past that have acquired cultural significance with the passing of time’;
b) structures that have literary or cinematic associations, particularly those that have a strong recognition value;

c) other structures that illustrate the development of society, such as early schoolhouses, library buildings, swimming baths or printworks.

SCIENTIFIC INTEREST: The scientific interest, or research value, of a structure will depend on the importance of the data involved and on its rarity and/or quality. Its scientific interest should also be assessed as to how well it represents the area of research in question and the degree to which the structure may contribute further objective information. For example:

a) the results of scientific research may be seen in the execution of the structure;
b) the materials used in the structure may have the potential to contribute to scientific research, for example extinct pollen or plant species preserved in the base layers of ancient thatch roofs;
c) the structure may be associated with scientific research that has left its mark on the place, such as early Ordnance Survey benchmarks carved into stonework.

TECHNICAL INTEREST: Special technical interest in a structure relates to the art of the structural engineer in devising solutions to problems of spanning space and creating weatherproof enclosures. It may be found in structures which are important examples of virtuoso, innovative or unusual engineering design or use of materials. A structure may be of special technical interest for one or more of the following reasons:

a) it displays structural or engineering innovation evidenced in its design or construction techniques such as the use of cast- or wrought-iron prefabrication or an early use of concrete;
b) it is the work of a known and distinguished engineer;
c) it is an exemplar of engineering design practice of its time. For example, a bridge may be a masonry arch, an iron suspension or a concrete span;
d) it displays technically unusual or innovative construction or cladding materials, such as early examples of glazed curtain walling, prefabricated concrete plank cladding or Coade stone;
e) contains innovative mechanical fixtures, machinery or plant or industrial heritage artefacts that describe the character of production processes. The specifically industrial aspect of some sites like mill buildings, millponds, tailings or derelict mines can often have a technical heritage value;
f) f) purely special technical interest can be ascribed to the innovative engineering qualities of a structure, as distinct from the building's appropriateness for use, or its appearance or form.

SOCIAL INTEREST: The characteristic of special social interest embraces those qualities for which a structure, a complex or an area has become a focus of spiritual, political, symbolic or other sentiment to any group of people. A community may have an attachment to a place because it is an essential reference point for that community's identity, whether as a meeting place or a place of tradition, ritual or ceremony. The configuration, disposition or layout of a space or group of structures, where they facilitate behaviour that would otherwise be difficult or impossible, may be of social interest. This category of special interest may sometimes not be directly related to the physical fabric of a particular structure or structures and may survive physical alteration. Care should be taken to recognise the pattern or internal relations of the parts of the structure that constitute its special interest, in order to ensure that they be conserved.

The fixtures and features that testify to community involvement in the creation of a structure, or have a spatial form or layout indicating community involvement in the use of a structure, could include such elements as memorials, statues or stained-glass panels.
A structure may display vernacular traditions of construction and may be set in a group or area which illustrates the social organisation of the inhabitants. Most obviously this would include thatched cottages. In vernacular buildings, elements of the plan-form (for example, direct-entry, lobby-entry, doors opposite one another, bed outshots etc), as well as the roofing material of otherwise ordinary structures may be distinctive and have special social interest.
Types of decoration may have artistic as well as social interest, such as shell houses or the local manifestation of exuberant or ashlar stucco decoration where it is particular to a town or region.

A social interest could also be attributed to structures illustrating the social philosophy of a past age, as in the case of philanthropic housing developments. Structures which illustrate a particular lifestyle or social condition, for example holy wells, are to be found in many parts of the country. Care must be taken to ensure that there is sufficient physical fabric to such places for them to be defined as 'structures'

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.

17.2.4 Establishing Sensitivity to Change

Understanding the sensitivity of any Heritage Asset to changes introduced directly or indirectly by the Development is an important part of the assessment process. The determination of sensitivity is not a wholly empirical process, and relies to a degree on the professional judgement of the assessors. Alastair Coey Architects is a RIAI Grade 1 accredited conservation practice and have the necessary experience to make a balanced and informed judgement.

Statutory and non-statutory guidelines also play a significant role in determining the sensitivity to change. Assessing the heritage asset includes the following:

i. Is the asset listed in the Record of Protected Structures?

ii. Is the asset listed in the Record of Monuments and Places?

iii. Does the asset sit wholly or partly in an Architectural Conservation Area?

iv. Is the asset listed in the National Inventory of Architectural Heritage?

v. Do the DHLGH 'Architectural Heritage Protection Guidelines for Planning Authorities' (2011) provide specific guidance (e.g. on the curtilage of a Protected Structure)

vi. Does the National Monuments Act provide specific and relevant guidance?

It is also recognised that different groups (e.g. local residents) will have differing views on changes introduced by the Development, and differing perceptions of what might constitute significantly positive or negative changes. These different viewpoints must also be given due consideration in making a balanced assessment of sensitivity to change.

17.2.5 Establishing the Degree of Change

The degree to which a Heritage Asset is changed by the Development is a compound measure based on:

- The physical extent of the modifications to the Heritage Asset. How much of it is altered, removed or obscured? Is it being extended – to what extent?

- Do the changes reverse modifications that were made to the Heritage Asset at a date later than its original construction, and which in themselves are detracting features? Examples of this might include the reinstatement of lost features such as chimneystacks, replacement of uPVC or aluminium windows with period-appropriate timber or cast-iron windows.

- Changes to the setting and context of the Heritage Asset. What proximal changes are being introduced and how significantly do they change the context and setting? This includes views towards and from the Heritage Receptor.

- The reversibility of the changes. Can the changes introduced be reversed at a later date, with what level of difficulty and with what degree of success? Are the changes wholly irreversible?

For the purposes of comparative assessment, the degree of change can be classified as ‘low’, ‘medium’ or ‘high’. The presumed status of the change as being positive or negative is not a factor at this stage.

17.2.6 Establishing the Degree of Change

The assessment of sensitivity to change and the degree of change allows a determination of how significant the effects of the Development will be on a Heritage Receptor. It is taken as-read that the mitigation measures identified are in place.

For the purposes of comparative assessment, the effects on a Heritage Receptor are classified shown in Table 17.1 below.

Table 17.1 – Assessing the Effect of Development

EFFECT OF DEVELOPMENT	Sensitivity to Change		
Degree of Change	**High**	**Medium**	**Low**
High	Profound	V. Significant	Moderate
Medium	V. Significant	Significant	Slight
Low	Moderate	Slight	Not Significant

The definitions are derived from *'Table 3.3: Descriptions of Effects contained in the Guidelines on the Information to be Contained in Environmental Impact Assessment Reports'* prepared by the Environmental Protection Agency.

The process of determining the effect of the Development is not wholly empirical, and relies on the assessor's expert judgement of each circumstance. For that reason the grading of an effect may be higher or lower than the sensitivity of the receptor and/or the magnitude of the change might otherwise suggest.

When it is considered that effects may be negative, neutral or positive, a comparative hierarchy can be established as shown in table 17.2. However, it is important to recognise that each effect must be judged individually on its merits and that a ''trade-off' of beneficial and negative effects should not be a consideration. It must also be considered that the cumulative nature of the effects might in itself lead to a re-evaluation of each component (e.g. removing structure A or structure B might individually be assessed as having a moderately neutral effect, but in conjunction the removal of both structure A and structure B might be assessed as having a major negative effect).

Table 17.2 – Hierarchy of the effects of development

EFFECT
A profound or significant benefit is achieved
A moderate benefit is achieved
A minor benefit is achieved
There is no effect
There is a minor effect but it is neither positive nor negative
There is a moderate effect but it is neither positive nor negative

There is a profound or significant effect but it is neither positive nor negative
A minor negative effect is experienced
A moderate negative effect is experienced
A profoundly or significantly negative effect is experienced

17.2.7 Mitigation & Residual Effects

The design of the Development has been undertaken with due consideration on how the impacts to Heritage assets can be minimised. Pre-application discussions and site visits with the Conservation Officer in DLRCC have been used to guide and inform measures that can be taken to mitigate or eliminate adverse effects before the design has been finalised. Please refer to Section 6.3 of this EIAR.

Mitigation measures are defined for each adverse effect and the residual effect, once those measures have been effected, is assessed.

17.2.8 Probability and Frequency of Effects

In Heritage terms the source of change within the Development 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. For the same reason, frequency of the effects is not a consideration as it may be, for example, for air quality. The effects are considered to be permanent.

17.3 Baseline Environment

17.3.1 Introduction

This history of the Site is drawn from the Historic Landscape Analysis prepared for Alastair Coey Architects by Dr. Sarah Rutherford.

Dr Rutherford, Dip. Hort. Kew, M.A., Ph.D., is a professional historic environment consultant specializing in designed landscapes based in England and with international experience. Her MA in landscape conservation (York University) is supplemented by a Ph.D. based on pioneering research into the landscapes of Victorian and Edwardian lunatic asylums (de Montfort University, 2003). Dr Rutherford has previously carried out Historic Landscape Analysis for or the West London Mental Health Trust on Broadmoor Hospital Berkshire, the first English State Criminal Lunatic Asylum, opened in 1863, following the pioneering example of Dundrum. She is the author of books on designed landscapes and relevant subjects including 'The Victorian Asylum'.

17.3.2 Setting the Scene for the Erection of the Asylum

In 1817 a Select Committee on the Lunatic Poor in Ireland found very poor conditions for lunatics. There were few specific facilities, only the privately funded St Patrick's Hospital,

Dublin, and the publicly funded Richmond Asylum (opened 1815), two small asylums at Cork and Wexford, and some beds attached to Houses of Industry and to gaols in other large towns.

In the same year Dublin Castle's Chief Secretary, Robert Peel, instituted legislation creating the world's first system of public lunatic asylums, throughout Ireland. Planning of the Irish asylums was delegated to a central 'Commission of General Control and Correspondence', dealing with districts, locations and sites of the new institutions, and advised its architects, Francis Johnston, helped by his nephew, William Murray (1787-1849), on their design. By the mid-C19, ten district asylums provided over 3,000 beds in total.

In 1831 Hanwell Asylum opened in Middlesex. John Conolly was its influential superintendent who wrote extensively on treatment and design of asylums. This was influential on the construction of asylums and treatment of patients in Britain, Ireland and beyond. In 1847 his influential book The Construction and Government of Lunatic Asylums was published and his thoughts were firmly incorporated into the next series of Irish asylums 1845-50s.

In 1838 The Criminal Lunatics (Ireland) Act was passed, one of a series of Lunacy (Ireland) Acts passed between 1821 and 1890. When a person was detained under circumstances suggesting that they were of deranged mind and had the intention of committing a crime, then two justices were empowered to call in a physician to examine the suspect. If the physician determined that the person was a “dangerous lunatic” he could be committed to gaol until either discharged by order of two justices or removed to a lunatic asylum by order of the Lord Lieutenant.

17.3.3 Initiation of the Criminal Lunatic Asylum

A House of Lords’ committee in 1843 urged the creation of further asylum accommodation. In 1845 a seminal Act of Parliament was passed which permitted a State Criminal Lunatic Asylum to be set up in Ireland entirely funded by Government for which £6,000 was allotted. The type of institution was based on the form of the district asylums already in use, adapted to the criminal patients.

> *‘the greater proportion of the inmates … being destined to remain in it for life, it is proposed to have the structural arrangement as cheerful as circumstances will admit, so as to afford every possible facility for the recreation and occupation of the patients. It is not designed that the building should partake of the character of a ‘prison’; more especially as experience has proved that in the district asylums … such are not more inclined to attempt to escape than other patients.’*

Jacob Owen, Chairman of the Board of Works and a renowned public architect, was asked to develop plans for new types of establishments to house respectively ‘incurable lunatics’, and ‘criminal lunatics’. Plans were made for a Criminal Lunatic Asylum to contain up to 120 patients as a hospital not a prison. This was part of a campaign to build asylums in Ireland in which ‘Great care has been taken to provide for the best modern improvements in such buildings, without losing sight of economy, the expense of construction, from the necessity of classification, being very great’.

This emerging differentiation of Irish asylum care suggests that Ireland retained the leading edge over Britain in terms of asylum design. Thus a new phase enlarged the district asylum

system with 6 new establishments with a total of 1750 beds to be erected at Cork, Sligo, Killarney, Omagh, Kilkenny and Mullingar. These supplemented the 8 built in the 1820s-30s

17.3.4 Construction of the Criminal Lunatic Asylum, 1845-53

Settlement in the Dundrum area south-west of Dublin expanded after the C16. Large houses, villas and associated demesne landscapes were established from the C18 onwards making it a desirable area of countryside for the wealthy and aspiring wealthy.

In 1846 a 30 acre agricultural site was bought at Dundrum, 3 miles from Dublin for the proposed criminal lunatic asylum. This was cultivated as 7 small fields east of the main road. It stood in an area of detached villas of varying sizes in landscaped grounds, with Anna Villa, Summerville, Roebuck Park and Grove adjacent (see Figure 17.2). The north site boundary followed the Church Town Lower townland boundary.

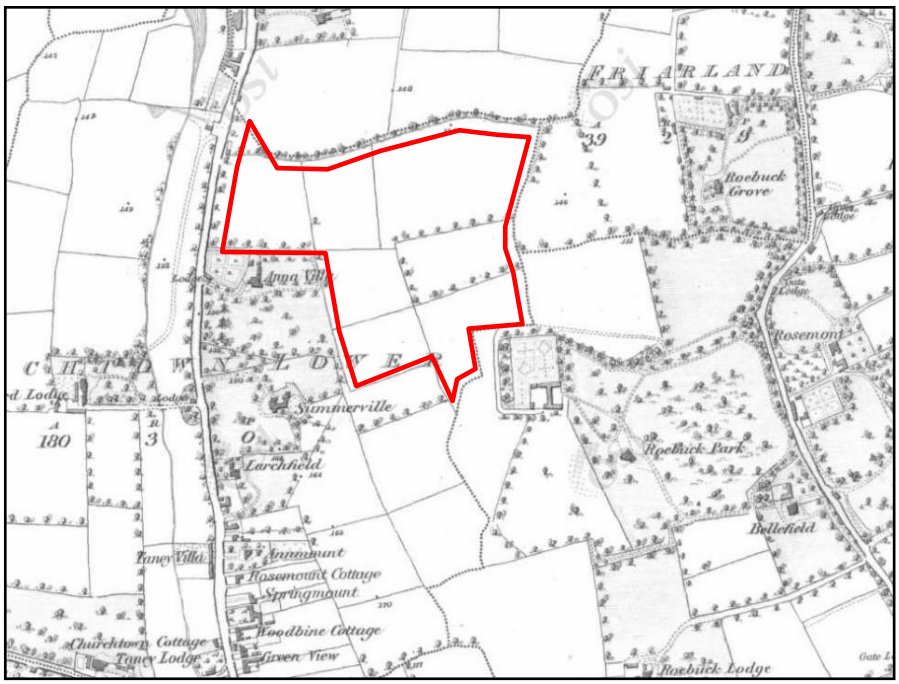

Figure 17.2 1836 1st edition 6" scale Ordnance Survey map of the site.

The isolated rural character of the site was a key consideration in the selection of the site for any Irish or British asylum at this point. Medical theory and an enlightened attitude to the housing of patients dictated that they should not be the object of ridicule or public gaze as had been the case at Bethlem in London in the C18. Thus a building in extensive grounds sited well out of the pressures of urban life was believed to be both humane and help the patients to recover, if possible with the benefit of extensive views to lift their mood. A roadside wall prevented prying eyes from the public realm, and helped ensure patients did not escape, although the whole site was not necessarily walled, particularly against agricultural land. At Dundrum the dramatic views south towards the Wicklow Mountains would have been regarded as beneficial for the patients.

Structures

Plans were prepared in 1846 for the building for 120 male and female convict lunatics by OPW Architect Jacob Owen who was regarded at the time as an 'eminent architect in Ireland'. The

planning of the asylum coincided with the publication in 1847 of the influential book by the Superintendent of Hanwell Asylum near London, John Conolly, The Construction and Government of Lunatic Asylums whose thoughts were firmly incorporated into this series of Irish asylums built in the 1840s-50s including Dundrum. The layout indicates the maturity of Irish asylum planners. Owen designed a special asylum and not a prison. It was a roughly symmetrical, three-storey building accommodating 120 lunatics. The main differences from the earlier Irish asylums were its chapel, a separate 'hospital' (infirmary) with its own yard, and increased dormitory accommodation.

Tenders were sought for the erection of the asylum building, to designs made by Owen shortly beforehand i.e. 1846-early 1847. His preliminary plans and elevations were published in 1848 and demonstrate the approach taken (Figures 17.3 and 17.4). Some differences are evident in the planned grounds around the building between the layout and that as executed, published in 1850, e.g. triangular womens' airing courts were modified by 1850 to become rectangular. By 1848, 'The buildings have been contracted for' and the works were 'proceeding satisfactorily.'

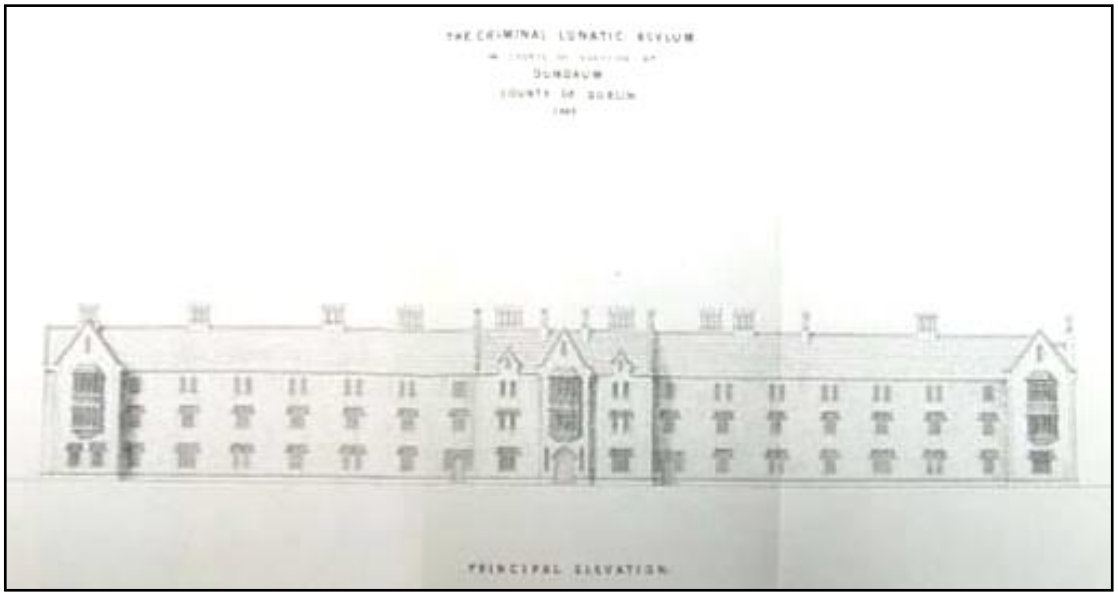

Figure 17.3 - 1848 Criminal Lunatic Asylum plan, proposed principal elevation

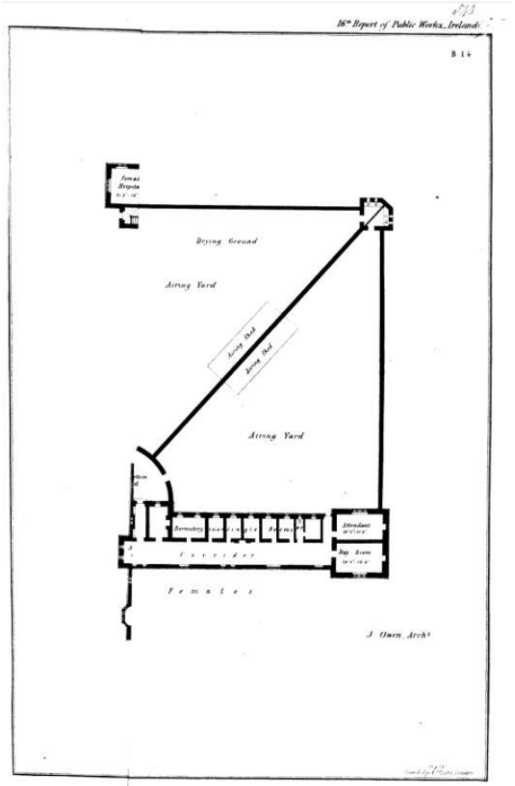

Figure 17.4 - 1848 Criminal Lunatic Asylum part plan of airing courts and yards

By 1850 the buildings had been completed. The asylum opened as the first forensic mental hospital in Britain or Ireland and possibly worldwide. The plan and view was published in 1851 (Figures 17.5 and 17.6) with a report in the periodical 'The Civil Engineer'. The asylum was intended to contain 80 male and 40 female patients at a total cost of £15,000. The main building was constructed of blackstone or Calp rubble with granite dressings, both local materials, in so-called Early English (but in reality more Tudorbethan) style. The single-storey ornamental lodge at the gateway echoed the style of the main building and was in the same materials.

Figure 17.5 - 1850, Engraving of Main Elevation, Jacob Owen Architect

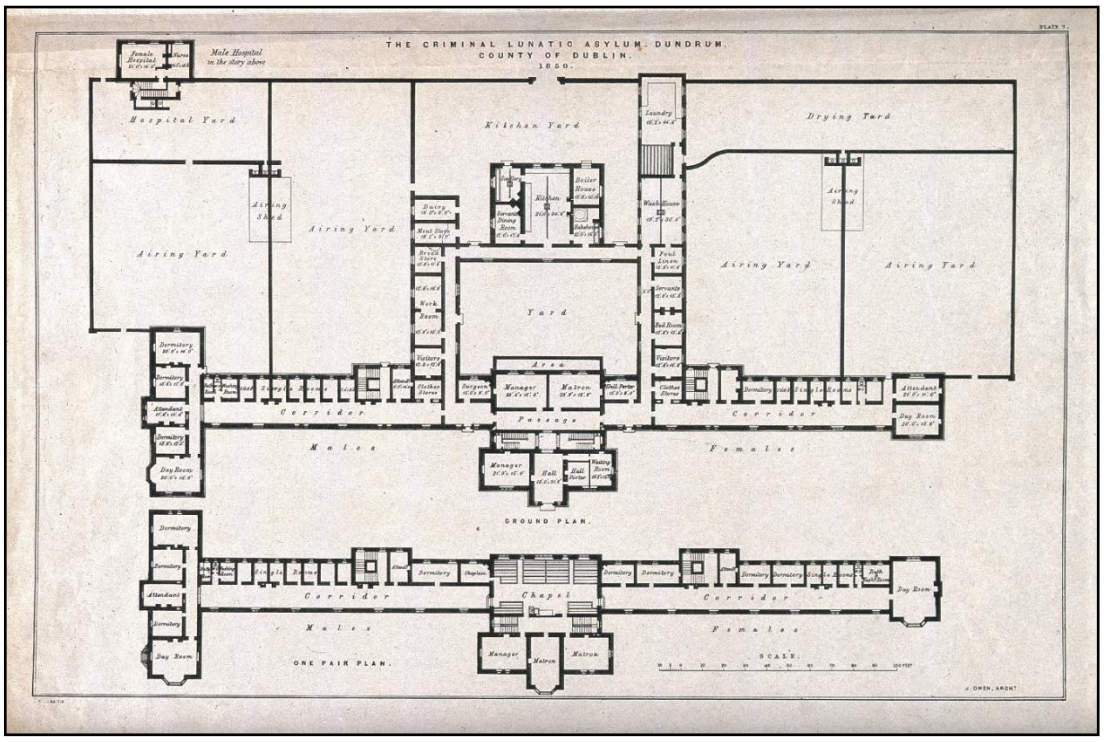

Figure 17.6 - 1850, Engraving of Floor Plan and Annotated Layout, Jacob Owen Architect

The Country House Model

The 21 acres as laid out largely reflect the components of a typical Irish district asylum of this mid-C19 period (1840s-50s), as shown on the 1871 OS (Figures 17.7 and 17.8). These were, in turn, based on the features of the well-established ornamental country house demesne adapted for therapeutic use and included many of those features recommended by Conolly in 1847. Particular features of this sort included the gateway, ornamented gate lodge, drive through parkland, forecourt, kitchen garden, farm and service areas. Adaptations for the asylum use included the disproportionately large area of the kitchen garden (c.8 acres)

designed to make the institution with its large number of residents self-sufficient in these crops, and the absence of gardens around the main building. Gardens were replaced by the airing courts to the rear, although ornamental pleasure ground-style planting enhanced the setting of the forecourt to make an ornamental arrival. The character was expansive, ornamental and therapeutic as a humane regime to encourage recovery. This contrasted with the starkly punitive layout of grounds in prisons and workhouses where the grounds were purely utilitarian and tightly drawn around the buildings.

The Layout

It is unclear who designed the wider grounds. The layout displays considerable quality and a thorough understanding of contemporary landscape principles. Owen designed the enclosed environs of the hospital including the walled spaces behind the building as shown by the published plans, but probably not the wider grounds. The quality of design and the planting suggests that a professional designer was employed, perhaps a locally based Dublin practitioner or a nurseryman.

Owen's plan (1850, Figure 17.6) shows walled spaces behind the hospital building, to the north, divided into therapeutic airing courts for secure patient exercise and functional service yards. The hospital building was divided, typically, axially into male and female halves respectively to west and east, with the related open spaces adjacent to the accommodation of the respective genders. The male side had two airing courts for different classes of patients with lean-to shelters and privies serving each class straddling a single wall (now no. 1C West Wing outdoor area). This was reflected on the female side (now no. 1J East Wing outdoor area). The airing court layout, both spaces and structures are of great significance as one of the most specific, defining features of a C19 asylum.

North of the male courts was the detached yard serving the adjacent infirmary, serving both sexes. North of the female airing courts was the drying yard serving the adjacent laundry in which the female patients worked. Adjacent to the west of the drying yard was the kitchen yard, again a preserve of female patients and adjacent to the kitchen. A central yard behind the main entrance was enclosed by buildings. The courts and working yards were enclosed by walls to prevent escapes. Further analysis is required to establish the survival of the original pattern of courts and yards and associated structures.

The position of the airing courts differed from the model used in England as they were north of the building rather than to the south which was favoured in England in order to maximise patients' exposure to long views, fresh air and sunshine. Furthermore the airing courts were walled where in England the preference was instead to use sunk walls and banks known as ha-has against open boundaries to provide a secure area which allowed the uninterrupted views into the wider landscape and if possible beyond. The arrangement at Dundrum may have been a more secure adaptation to the criminal occupants, but other Irish District Asylums of this period had a similar arrangement with airing courts to the north, such as Sligo, Kilkenny and Mullingar.

A medical journal noted that the situation of the asylum was 'most cheerful and picturesque, and its whole management most ably and humanely conducted …' The need for a similar asylum in England was noted, following the example of Ireland and a resolution was passed to this effect by the Association of Medical Officers.

The 1851 Civil Engineer report noted 15 acres of grounds to be tilled by the patients, presumably including the kitchen garden and perhaps in the East Paddock. This was typically both for economic and therapeutic purposes for those male patients who were well enough to work. The drains emptied into a tank distant from the building, and were then discharged by pipes over a considerable portion of the grounds.

As the whole of the 30 acres that the Board was 'obliged to purchase was not required for the immediate use of the asylum, it had not been enclosed within its boundary walls.' Nine acres [to the south] was to be let for 7 years at a rent of £45 a year after which the ground could again be disposed of, or added to that for the use of the asylum, should it be required. Although this area was not brought into the site until considerably later (by 1908) it always formed the open frame for the views beyond the kitchen garden of the distant mountains and was later laid out with the current playing fields.

Works to the grounds continued and by 1853 the ornamental entrance lodge (now the gatehouse) was completed within the wall at the north-west corner, along with other works which had been 'postponed until the experience in working the institution proved the necessity for them'.

17.3.4 Development in the 1850's and 1860's

The asylum had reached capacity by 1863 when a 50 bed extension was proposed. In 1863 building works included many to the main building. In the grounds alterations were made to the 'out-offices and enclosure walls' for a total sum of over £4,000. In 1866 a chapel for Protestant patients was built within the main complex. In 1868 part or all of the boundary was rebuilt.

Meanwhile in England in 1863 the English State Criminal Lunatic Asylum opened at Broadmoor, Berks, designed by prison architect Joshua Jebb, but again modelled on the established district (in England known as County) asylum precedent.

The first detailed published plan of the layout of Dundrum asylum is the Ordnance Survey 2nd edition at 6" scale, surveyed c.1871 (Figures 17.7 and 17.8). It shows the original layout completed c.1850 and reflects building alterations executed in the 1860s.

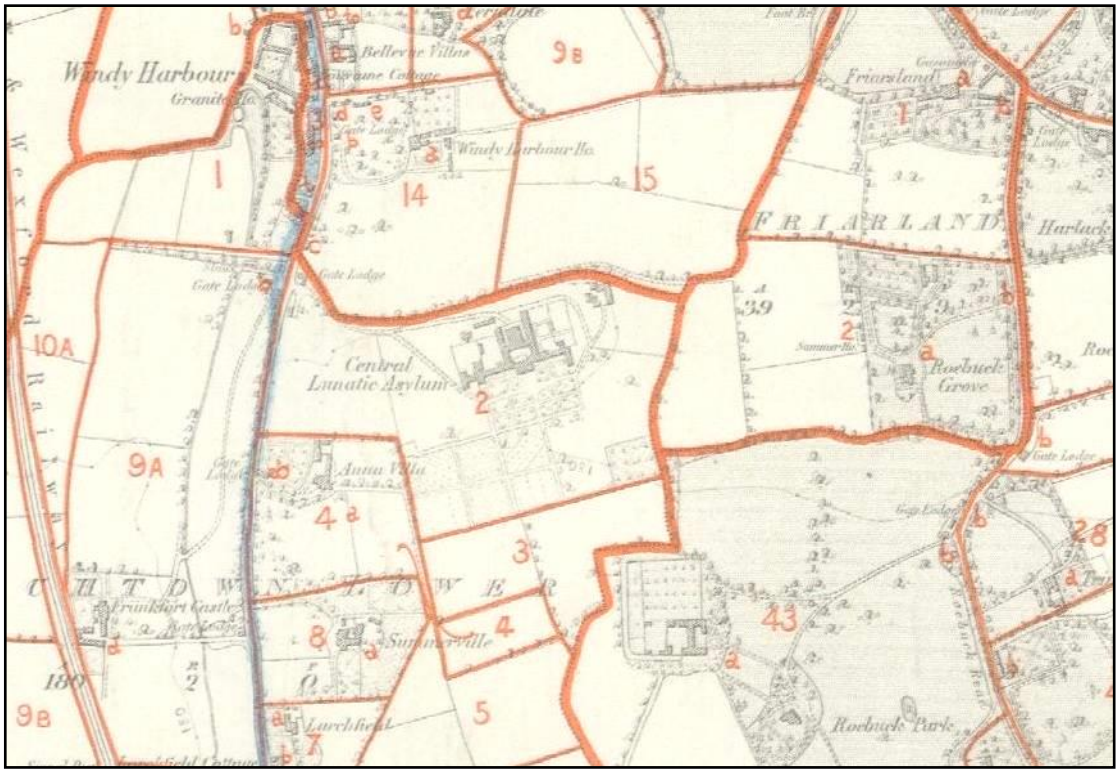

Figure 17.7 - 1871, 2nd edition 6" scale Ordnance Survey.

Typically the 30 acre grounds were divided into several main areas as follows:

1. The approach to the hospital building from the gateway and the lodge off Dundrum Road along a drive sweeping through the west paddock. The lodge was in fashionable Picturesque style, single storey with ornamented barge boards and other features. The drive led to the forecourt and ornamental grounds on the south side in front of the building, giving access to the main entrance. Leading south from the main entrance the central axial path was framed by woody planting and enjoyed a view of the distant mountains, a key view which survives.

2. Walled airing courts for secure patient exercise to the north of the building, and working yards reflecting domestic activities. Each court had a lean-to shelter against the wall (called Airing Sheds on the 1850 plan) for the patients as well as privies.

3. Productive kitchen gardens and walled orchard in the south section of the hospital site.

4. Further parkland east of the building an including the East paddock.

5. Service areas north and east of the yards and airing courts including farmstead and stables with yards and gateways in the north-east corner. As well as having a productive purpose for the institution, male patients would have worked on the farm for therapeutic purposes.

6. Farmland south of the productive gardens. This 9 acres remained let to a farming tenant.

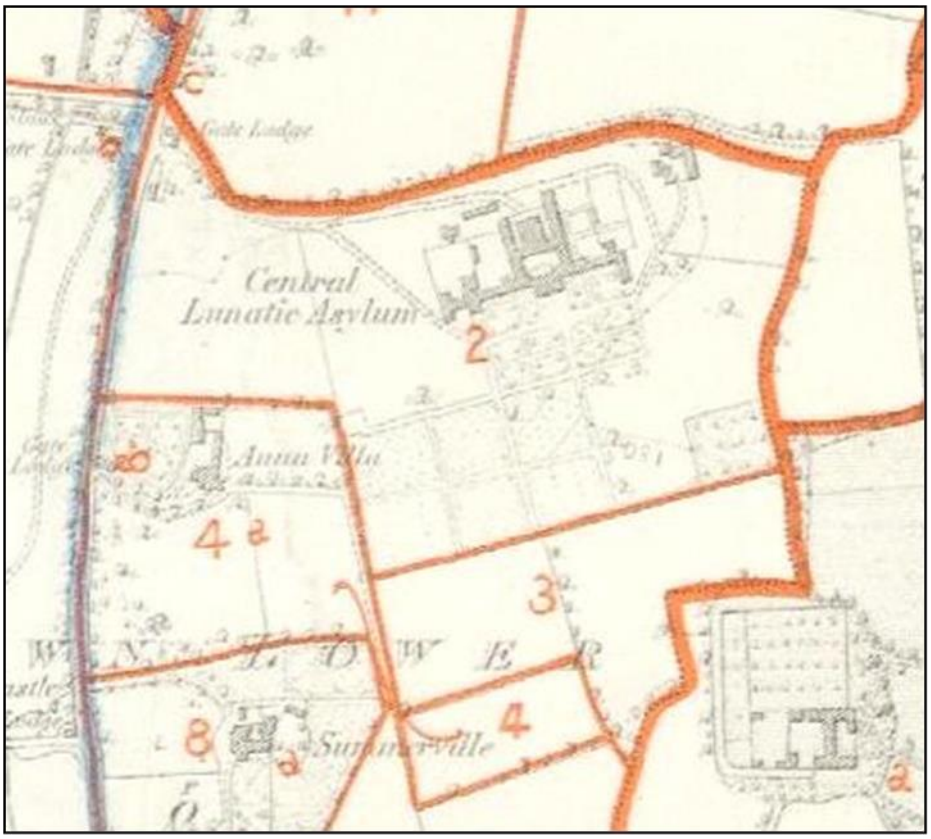

Figure 17.8 - 1871, 2nd edition 6" scale Ordnance Survey, detail of grounds.

The BMJ in 1874 noted the similarity of the criminal asylum with a district asylum as, '*there is nothing distinctive in its general aspect from what is observable in ordinary hospitals for the insane; … the grounds of 28 acres may be considered quite open, surrounded by a wall of from 8 to 10 feet. …Up to the present time, but 6 patients permanently escaped*'. This indicates that the originally tenanted land to the south (now playing fields) had been incorporated into the main site and the wall extended around it.

17.3.5 Further Development Phase, 1860's to c1908

The layout is shown in greater detail on the 1908 OS surveyed in 1908 (Figures 17.9). By this point the landscape design had reached its zenith. It remained largely as shown on the 1871 OS with some differences, one major, but the rest relatively minor, including:

1. The greatest change was to move the drive south-west away from the north boundary on a new line to give a more sweeping serpentine approach to the south front of the building and forecourt. This avoided the detached Catholic chapel in the parkland which formed a feature along this new line of the drive. The drive was lined on the south side by a line of specimen trees. It is likely that it was realigned c.1901 when the chapel was built.

2. A circular or octagonal gazebo had been added towards the west end of the kitchen garden. This may have been relocated to its present position (no. 35, the bandstand) and if so it echoes those found in the airing courts at Broadmoor.

3. The boundary wall reached its current configuration, including the construction of a section along the realigned south boundary where the formerly tenanted farmland had been taken into the hospital grounds.

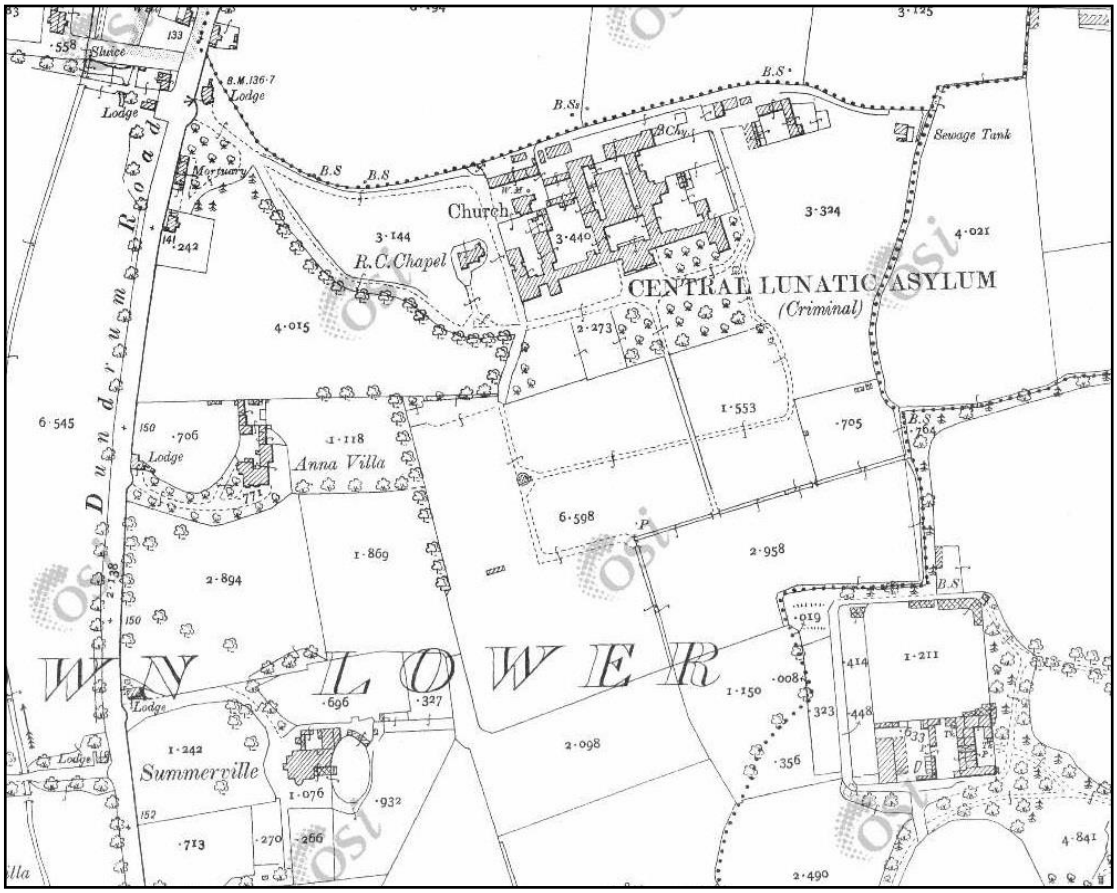

Figure 17.9 - 1908, 1st edition 25" scale Ordnance Survey.

17.3.6 Development in the c20 and c21

After World War II various buildings were added to the grounds. The largest were localised in a group on the west half of the former kitchen garden. These, while damaging, did not irreversibly damage the special qualities of the original character or layout, nor obscure the important south axis from the entrance to the main hospital that bisected the kitchen garden and offered dramatic views of the distant Wicklow Mountains. Various smaller structures were erected but these did not greatly damage the overall significance.

A car park was laid out on the east half of the former kitchen garden. Most of the historic buildings and features were left in situ. Losses included the mortuary against the roadside wall and a small building nearby to the south. The circular or octagonal building in the west half of the kitchen garden, in the area now built on, seems to have been relocated to a position north of the walled garden (no. 35, Bandstand), but has recently been relocated off site.

Today, many of the key buildings, features and spaces survive reflecting the layout and character established by c.1910 to a considerable degree.

17.3.6 The Site as found in 2024

The site as it has existed in the period 2018 to the time or writing in July 2024 has been extensively photographed and surveyed. Those surveys of particular relevance to the Heritage Assets (including the Historic Landscape) include but are not limited to:

- Topographical survey carried out in 2018.
- Aerial photography from drone surveys carried out in June 2020.
- Photography from walk-round surveys carried out in June 2020 and July 2021.
- Photography and written survey notes from inspection of the Main Hospital Buildings in May and June 2024.

In addition to the historic landscape, a quantity of eight heritage structures have been identified in the site, or sufficiently close it, to potentially be affected. These are identified in Figure 17.10 (with site boundary outlined in red) and scheduled in Table 17.3.

Table 15.3 – Heritage Assets

ID	Description	Image
1	Main Hospital Building	
2	Perimeter Wall	

3	Gate Lodge	
10	Chapel	
24	Airing yards (20th Century)	
26	Hay Barn & Pig Yards	

27	Farmyard buildings	
39	Walled Garden including 2x covered entrances	 
45	Historic Landscape	

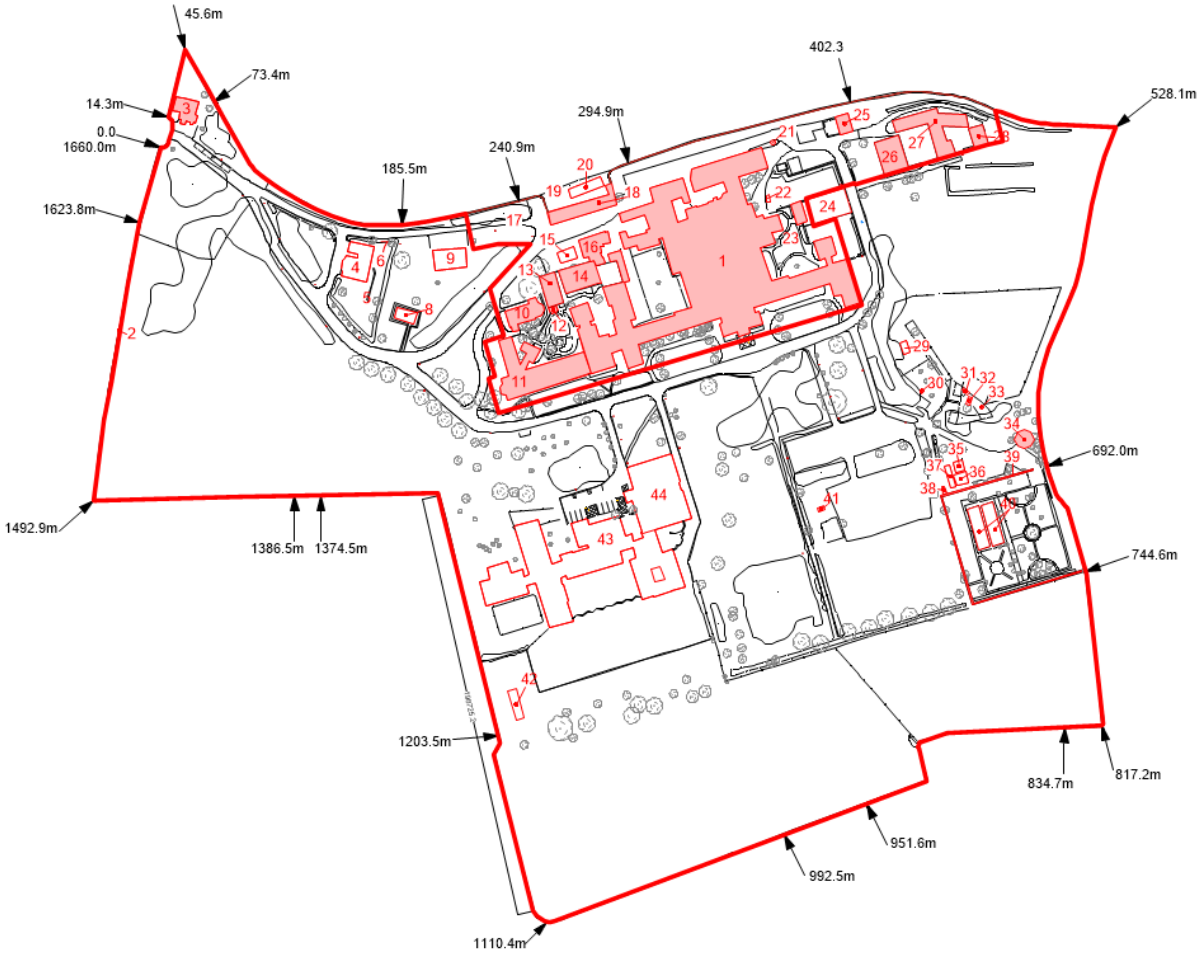

Figure 17.10 – Location of Heritage Assets

17.4 Potential Impacts of the Proposed Project

17.4.1 Structure No.1 – Main Hospital Building

Figure 17.11 – Main Hospital Building

15.4.1.1 Baseline Condition

The Main Hospital Building is recorded in The National Inventory of Architectural Heritage (NIAH) under reference 60220001 and is assessed to have National importance (on a scale of International, National, Regional and Local). An extent of the hospital building, as identified in Figure 17.12, is included in the Register of Protected Structures as No. 2072.

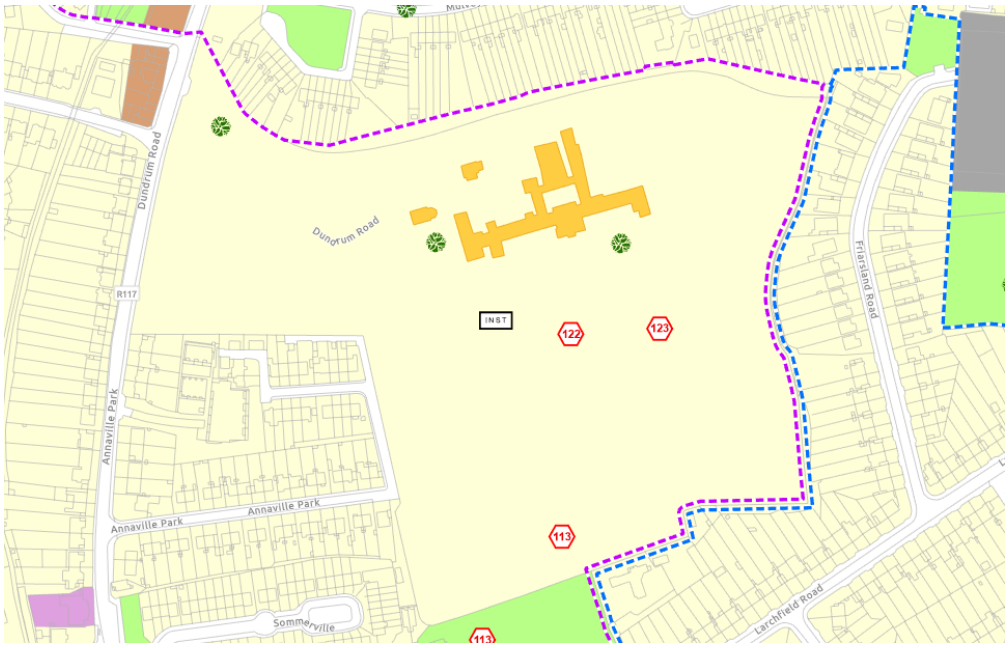

Figure 17.12 – Extent of Protected Structures on the site (orange fill)

The value attached to the Main Hospital Building arises from it being a rare example of the typical asylum provision of this period as adapted for criminal patients. As a dedicated and purpose-built criminal lunatic asylum it predates Broadmoor Hospital by some 15 years, making it among the first (if not the first) institution of its type in the world. It is a tangible representation of a major shift in the approach to criminality and mental illness in Ireland, and of an emerging new institutional design.

The Main Hospital Building has a strong association with a number of eminent architects – Jacob Owens and Frederick Villiers Clarendon. The built form is a development of the district lunatic asylum model, with the symmetrical layout and cellular form almost completely intact (full internal surveys have not been completed).

The Group Value that the Main Hospital Building and Historic Landscape have derive from their being conceived and executed as holistic approach to the treatment and recovery of those suffering from mental illness. The combination of the two elements provided not just for therapeutic treatments, but also for recreational and vocational activities intended for the enjoyment of the patients – all for the benefit of their recovery.

Until 2022 the hospital fulfilled the role for which it was designed and, although modified and extended as described in the site history, remains substantially intact. It demonstrates a continuous approach to the therapeutic treatment of a very specific sector of Irish citizenry, uninterrupted in the 170 years from its inception to the relatively recent closure.

17.4.1.2 Sensitivity to Change

The Main Hospital Building is assessed to have a HIGH sensitivity to change. This assessment derives from the following factors:

- It is included in the National Inventory of Architectural Heritage and the Register of Protected Structures.
- Its principal elevation is largely unaltered from its originally built form.
- It performed its primary function of treating the criminally insane from c1850 to 2022.
- It has substantial Group Value with the Historic Landscape, and therefore sensitive to changes not just to itself but to other elements of the group.

17.4.1.3 Degree of Change

The Development is assessed as having the potential to cause an overall change to the Main Hospital Building which is MEDIUM in degree. This assessment derives from the following factors.

- The hospital building itself lies outside the red-line for the Development and is not therefore modified in itself. However, elements of the Development are directly adjacent to the building and therefore change its setting (and ergo, views to and from the building). The changes comprise the construction of residential apartment blocks directly adjacent to the Main Hospital Building. Figure 17.13 illustrates.

- Although it is technically possible that the Development might at some future date be reversed, the probability of that happening is assessed as being so low as to be negligible. The changes are therefore considered to be permanent with no possibility of reversal.

- The Main Hospital Building enjoys Group Value with the Historic Landscape. The degree of change to that landscape that is introduced by the development is high.

- When the proposed Development is realised the Main Hospital Building will transition from being set in a private demesne to being set in a public landscape.

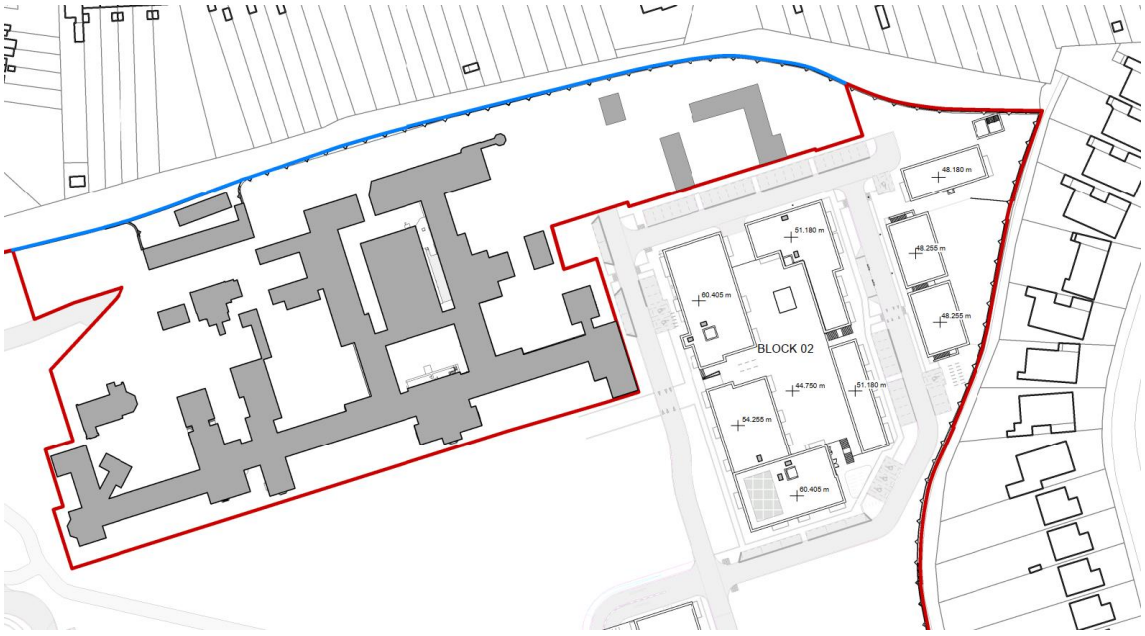

Figure 17.13 – Apartment Block Construction to east of Main Hospital Building

17.4.1.4 Potential Effect of the Development (Before Mitigation)

As the sensitivity of the Main Hospital Building to change is assessed as HIGH, and the degree of that change assessed as MEDIUM, the potential effect of the Development on it is therefore assessed to be VERY SIGNIFICANT.

17.4.2 Structure No.2 – Perimeter Wall

Figure 17.14 – Perimeter Wall and Entrance on Dundrum Road

Figure 17.15 – Internal face of Perimeter Wall to west of the Site

17.4.2.1 Baseline Condition

The perimeter wall (also referred to as the boundary wall) is part of the first phase of development of the site, being constructed soon after the Main Hospital Building. With the exception of the main entrance to Dundrum Road, a gateway into the maintenance yard and some minor blocked pedestrian gateways, the wall is complete and to the greater extent unaltered. A section at the south-east has been replaced in mass concrete, and some sections have been given additional height in concrete blockwork, but these are isolated sections of limited extent.

At the time of survey the wall was found to be in excellent structural condition. The inside face of the wall had been comprehensively maintained to a high standard during the tenure of the Health Services Executive, and since vacation of the site has suffered only minor encroachment of vegetation. External faces of the wall (where observable in detail) were also sound but not uniformly as well maintained as the inner face.

Although the wall would likely have originally had a complete cleared perimeter on the outside face, to facilitate inspection and repair, this situation does not currently exist. A high proportion of the residential properties constructed directly outside the wall have subsumed the space between their presumed rear boundary and the wall.

17.4.2.2 Sensitivity to Change

The Perimeter Wall is assessed to have a MEDIUM sensitivity to change. This assessment derives from the following factors:

- It is unbroken save for the openings which are consistent with its role as the boundary of a criminal lunatic asylum. This degree on intactness is a direct result of the CHM having been in continuous use as a secure mental hospital from its inception some 170 years ago until 2022.

- It represents a very clear and all-but impermeable boundary between the Site and the surrounding residential areas.

- It screens the existing site from the C20/C21 developments surrounding the site, maintaining the nature of the site as a private demesne.

17.4.2.3 Degree of Change

The Development is assessed to have the potential to cause an overall change to the Perimeter Wall which is MEDIUM in degree. This assessment derives from the following factors.

- A substantial section of the wall on Dundrum Road must be taken down or reduced in height to accommodate the necessary vehicular and pedestrian entrances to the site and to improve visual connectivity into/from the site.

- A substantial section of the wall is to be taken down to facilitate free access to the existing Rosemount Green playing fields and the proposed public amenity space adjacent to it within the Site.

- Openings for pedestrian and cyclist access are to be made adjacent to Mulvey Park and Annaville Grove.

15.4.2.4 Potential Effect of the Development (Before Mitigation)

As the sensitivity of the Perimeter Wall to change is assessed as MEDIUM, and the degree of that change assessed as MEDIUM, the potential effect of the Development on it is therefore assessed to be SIGNIFICANT.

17.4.3 Structure No. 3 – Gate Lodge

Figure 17.16 – The Gate Lodge

17.4.3.1 Baseline Condition

Construction of the Gate Lodge followed very quickly the commencement of construction of the Main Hospital Building and it was present by 1853. Ornamental in character and constructed in the same material palette of dark grey calp stone with granite dressings.

The picturesque quality that the Gate Lodge undoubtedly possessed on its original construction has been eroded by the cumulative effect of poor maintenance, inappropriate repairs and the many accretions it has gained in terms of inappropriate extensions and signage. It does however retain to a large extent its original form and construction.

17.4.3.2 Sensitivity to Change

The Gate Lodge is assessed to have a MEDIUM sensitivity to change. This assessment derives from the following factors:

- Beneath the inappropriate accretions it retains its original form and construction.
- The presence of a Gate Lodge speaks very clearly to the 'County House' model that had been adopted for the creation of the asylum.

17.4.3.3 Degree of Change

The Development is assessed to have the potential to cause an overall change to the Perimeter Wall which is MEDIUM in degree. This assessment derives from the following factors.

- The Gate Lodge will undergo a conservation-led refurbishment and re-purposing into a café.

17.4.3.4 Potential Effect of the Development (Before Mitigation)

As the sensitivity of the Gate Lodge to change is assessed as MEDIUM, and the degree of that change assessed as MEDIUM, the potential effect of the Development on it is therefore assessed to be SIGNIFICANT.

17.4.4 Structure No.10 – Chapel

Figure 17.17 – The Chapel

17.4.4.1 Baseline Condition

The Chapel is recorded in The National Inventory of Architectural Heritage (NIAH) under reference 60220002 and is assessed to have Regional importance (on a scale of International, National, Regional and Local). The chapel is a Protected Structure with reference No. 2071.

The value attached to the Chapel arises from its Communal and Historical associations, but additionally from its Architectural quality and associations. It was constructed in 1901 to a design by James Franklin Fuller, an eminent Dublin architect who was prolific, particularly in respect of his ecclesiastical work. The exposed timber structure of its roof is noted in the NIAH as being of technical interest for its adoption of the scissor-truss.

The Chapel and Main Hospital Building derive Group value from their representing a holistic approach to the treatment and recovery of those suffering from mental illness, the presence of a Chapel being a notable development from earlier Irish asylums.

The Chapel remains substantially intact and unmodified. Prior to vacation of the site its condition was found to be very good, with continuous maintenance evident in the evident

absence of serious deterioration. With the site now vacant the Chapel is receiving only basic maintenance and is therefore at risk.

17.4.4.2 Sensitivity to Change

The Chapel is assessed to have a MEDIUM sensitivity to change. This assessment derives from the following factors:

- It is included in the National Inventory of Architectural Heritage.
- It is a Protected Structure.
- It is largely unaltered from its originally built form.
- During occupation of the site it continuously performed its primary function as a place of worship.
- It has substantial Group Value with the Main Hospital, and therefore sensitive to changes not just to itself but to other elements of the group.

17.4.4.3 Degree of Change

The Development is assessed as having the potential to cause an overall change to the Chapel which is LOW in degree. This assessment derives from the following factors.

- The Chapel itself lies outside the red-line for the Development and is not therefore modified in itself.
- The new-construction building in closest proximity to the Chapel (Building 08) is at a significant distance (62m) and separated from the Chapel by retained elements of the Historic Landscape.

17.4.4.4 Potential Effect of the Development (Before Mitigation)

As the sensitivity of the Chapel to change is assessed as MEDIUM, and the degree of that change assessed as LOW, the potential effect of the Development on it is therefore assessed to be SLIGHTLY NEGATIVE.

17.4.5 Structures No. 26 & 27 – Hay Barn, Pig Pens and Farmstead Buildings


Figure 17.18 – Hay barn and pig-pens


Figure 17.19 – Farmyard Buildings

17.4.5.1 Baseline Condition

The farmstead would have served the dual purposes of providing fresh food for the institution and providing a therapeutic activity for male patients.

The farm buildings retain much of their original form and fabric, though in various states of dilapidation.

17.4.5.2 Sensitivity to Change

The Farmyard Buildings are assessed to have a MEDIUM sensitivity to change. This assessment derives from the following factors:

- They are largely unaltered from their originally built form.

- The component parts of the farmstead have group value with each other – the assemblage retains all of the original components (hay barn, pig-pens, potato stores, stables and other machinery/produce stores).

17.4.5.3 Degree of Change

The Development is assessed as having the potential to cause an overall change to the Farm Buildings which is LOW in degree. This assessment derives from the following factors.

- The Farm Buildings lie outside the red-line for the Development and are not therefore modified in themselves.

17.4.5.4 Potential Effect of the Development (Before Mitigation)

As the sensitivity of the Farm Buildings to change is assessed as MEDIUM, and the degree of that change assessed as LOW, the potential effect of the Development on it is therefore assessed to be SLIGHTLY NEGATIVE.

17.4.6 Structure No. 39 Walled Garden

Figure 17.20 – Walled Garden

17.4.6.1 Baseline Condition

The walled garden to the east of the Site would have been originally an orchard, though it now exists primarily as an enclosed area of ornamental landscaping.

The garden is enclosed by a wall having two ornamental gateways surviving. Overall condition of the lands and wall is good.

17.4.6.2 Sensitivity to Change

The Walled Garden is assessed to have a MEDIUM sensitivity to change. This assessment derives from the following factors:

- Its enclosure is largely intact and in good condition.
- Although no longer an orchard it has not been infilled with construction and therefore still a component of the designed landscape.

17.4.6.3 Degree of Change

The Development is assessed as having the potential to cause an overall change to the Walled Garden which is LOW in degree. This assessment derives from the following factors.

- The enclosure is to be retained.
- The enclosed area will continue in its current role of ornamental landscape.
- The context of the garden will be changed by the proposed adjacent apartment blocks (see figure 15.20).

Figure 17.21 – Apartment blocks in proximity to Walled Garden

17.4.6.4 Potential Effect of the Development (Before Mitigation)

As the sensitivity of the Walled Garden to change is assessed as MEDIUM, and the degree of that change assessed as LOW, the potential effect of the Development on it is therefore assessed to be SLIGHTLY NEGATIVE.

17.4.7 Asset No.45 – Historic Landscape

Figure 17.22 – Historic Landscape

15.4.7.1 Baseline Condition

The Historic Landscape within the site was largely established by 1910, and subsequent modifications were generally to the detriment of that (e.g. addition of the 20th century admissions block, creation of the main car-park, etc).

Significant group value attaches to the Historic Landscape with the Main Hospital Building. As a group they display the emergence of an enlightened attitude to the treatment of the criminally insane, with the practice of situating the hospital buildings in an ornamental landscape as a direct therapeutic measure. Comparable asylum complexes in Ireland that survive intact to such a degree as Dundrum are extremely rare, with the district asylums in Cork and Killarney being examples.

17.4.7.2 Sensitivity to Change

The Historic Landscape is assessed to have a HIGH sensitivity to change. This assessment derives from the following factors:

- With a few notable modifications such as the addition of the admissions unit and the car-park, the layout and un-developed nature of the grounds as designed still remains.

- The ornamental sweeping approach to the Main Hospital Building, flanked with mature trees, offering views across an open landscape and formally introducing the

built forms of the Chapel and Main Hospital is a significant element of landscape design.

- The south-facing and principal elevation of the Main Hospital Building derives the key element of its setting and context from the Historic Landscape.

17.4.7.3 Degree of Change

The Development is assessed as having the potential to cause an overall change to the Historic Landscape which is HIGH in degree. This assessment derives from the following factors.

- The largely un-developed context of the grounds will be permanently lost.
- The evident role of the Historic Landscape as a therapeutic element of the former hospital site will be permanently compromised.
- Views of, and from, the Main Hospital Building will be changed by the proposed adjacent apartment blocks.

17.4.7.4 Potential Effect of the Development (Before Mitigation)

As the sensitivity of the Historic Landscape to change is assessed as HIGH, and the degree of that change assessed as HIGH, the potential effect of the Development on it is therefore assessed to be VERY SIGNIFICANTLY NEGATIVE.

17.4.8 Structure No. 24 – Airing Yards (20th Century)

Figure 17.23 – Airing Yards

17.4.8.1 Baseline Condition

These exercise areas or 'airing yards' are a later addition to the site, not apparent on the 25" 1st Edition OS maps of 1908. Constructed in rendered brickwork, partially atop earlier masonry walls, they speak to the historic operating procedures of the hospital, though obviously disused for some considerable period of time prior to the abandonment of the complex.

17.4.8.2 Sensitivity to Change

The Airing Yards are assessed to have a LOW sensitivity to change. This assessment derives from the following factors:

- They are later additions to the site and are not a primary reference for understanding the evolution of the hospital.
- The quality of execution is low and the present condition poor.

17.4.8.3 Sensitivity to Change

The proposals seek to remove these airing yards in their entirety. The degree of change is therefore assessed as HIGH.

17.4.8.4 Potential Effect of the Development (Before Mitigation)

As the sensitivity of the Airing Yards to change is assessed as LOW, and the degree of that change assessed as HIGH, the potential effect of the Development on it is therefore assessed to be MODERATELY NEGATIVE.

17.5 Mitigation Measures

17.5.1 Operation Phase

17.5.1.1 Structure No.1 – Main Hospital Building

As the Main Hospital Building is outside the Development site no measures are available to reduce its sensitivity to change.

The degree of change to which the Main Hospital Building will be subjected has been mitigated by the following measures:

CH_1: The heights of Block 2 to the immediate east of the Main Hospital Building have been set to ensure that the dominance of the Main Hospital Building is retained.

CH_2: The historic landscape to the immediate south of the Main Hospital Building will be retained and enhanced. The main car-park and the C20 swimming-pool building are both proposed for removal and the areas of landscaping reinstated.

It is assessed that these mitigation measures reduce the effect that the Development has on the Main Hospital Building from very significant to a residual level of MODERATELY NEGATIVE.

17.5.1.2 Structure No.2 – Perimeter Wall

The degree of change to which the Perimeter Wall will be subjected has been mitigated by the following measures:

CH_3: Where sections of the wall are being removed, and where it is feasible to do so, the wall will not be removed in full but reduced to a height of 1200mm.

CH_4: Where sections of wall are being removed completely, and where it is feasible to do so, the former position of the wall will be indicated in the landscaping by use of natural stone as the paving material.

CH_5: Where sections of the wall are removed completely, the retained sections will be terminated in such a fashion as to indicate that the wall did not merely terminate there but has been purposely interrupted, e.g. by the use of sensitively and appropriately detailed piers in masonry, concrete or metal.

It is assessed that these mitigation measures reduce the effect that the Development has on the Perimeter Wall from to a residual level of MODERATELY NEGATIVE.

17.5.1.3 Structure No.3 – Gate Lodge

As the potential effect of the development on the Gate Lodge is assessed to be positive, no mitigation measures are deemed necessary.

It is therefore assessed that the effect of the Development on the Gate Lodge is SIGNIFICANTLY BENEFICIAL.

17.5.1.4 Structure No.10 – Chapel

As the Chapel is outside the Development site no measures are available to reduce its sensitivity to change.

The degree of change to which the Chapel will be subjected has been mitigated by the following measures:

CH_6: The historic landscape in the immediate environs of the Chapel will be retained and enhanced.

CH_7: Changing the site from being a private demesne to a publicly accessible area brings with it the possibility of the Chapel acquiring a larger congregation and playing a productive part in the lives of more people.

It is assessed that these mitigation measures will reduce the effect that the Development has on the Chapel to NEGLIGIBLE or SLIGHTLY BENEFICIAL.

17.5.1.5 Structure No.26 & 27 – The Farmstead

As the Farm Buildings are outside the Development site no measures are available to reduce their sensitivity to change.

The degree of change to which the Farm Buildings will be subjected has been mitigated by the following measures:

CH_8: The proposed road alignment in proximity to the farmstead preserves the ability to view and appreciate the complex of buildings.

It is assessed that these mitigation measures will reduce the effect that the Development has on the Farm Buildings to NEGLIGIBLE.

17.5.1.6 Structure No.39 – The Walled Garden

The degree of change to which the Walled Garden will be subjected has been mitigated by the following measures:

- Currently present features which detract from the overall presentation of the area as ornamental landscaping will be removed and the landscaping enhanced.

It is assessed that these mitigation measures will reduce the effect that the Development has on the Walled Garden to NEGLIGIBLE.

17.5.1.6 Asset No.45 – The Historic Landscape

The degree of change to which the Historic Landscape will be subjected has been mitigated by the following measures:

- The ornamental sweeping approach road, one of the key aspects of the designed landscape, will be retained.

- The detrimental effect of the admissions unit and the main car-park will be reversed, with the area of landscaping to the south of the hospital being significantly enhanced.

- The walled garden, as noted above, will be retained and enhanced.

It is assessed that these mitigation measures will reduce the effect that the Development has on the Historic Landscape to MODERATELY NEGATIVE.

17.5.1.6 Asset No.24 – The Airing Yards (20th Century)

The degree of change to which the Historic Landscape will be subjected has been mitigated by the following measures:

- The airing yards will be thoroughly recorded before removal. The contribution that they make to the understanding of the development and operation of the hospital complex will therefore be preserved. Retention of their physical aspects, beyond this, would add a limited amount when weighed against the benefits accrued from developing the site.

It is assessed that these mitigation measures will reduce the effect that the Development has on the 20th Century airing sheds to SLIGHTLY NEGATIVE.

17.6 Residual Impacts

The summary of potential impacts before and after mitigation are summarised in Table 17.3

Table 17.3 – Impacts before and after Mitigation Measures

Asset	Impact Before Mitigation	Impact After Mitigation
1 – Main Hospital Building	Very Significantly Negative	Moderately Negative
2 – Perimeter Wall	Significantly Negative	Moderately Negative
3 – Gate Lodge	Significantly Beneficial	Significantly Beneficial
10 – Chapel	Slightly Negative	Slightly Beneficial
26/27 – Farmstead	Slightly Negative	Negligible
39 – Walled Garden	Slightly Negative	Negligible
45 – Historic Landscape	Very Significantly Negative	Moderately Negative
24 – c20 Airing Sheds	Moderately Negative	Slightly Negative

Residual impacts of a Moderately Negative nature do remain after the implementation of the mitigation measures, applying to the Main Hospital Building, Perimeter Wall and Historic Landscape. These impacts arise from the unavoidable and fundamental change from the site as a 'closed-world' private demesne to a public site largely characterised by residential development.

The justification for the acceptance of these residual impacts on the historic structures and landscape, quite apart from the substantial social gain accrued form the provision of affordable and social housing, is grounded in an assessment that the 'do-nothing' option exposes the historic structures to considerable and ongoing risk. Disuse of historic structures invites increasing levels of dereliction, from which recovery becomes exponentially more difficult. Accepting change as part of adaptive re-use, whether that applies to Protected Structures or their attendant grounds, has consistently been proven as a necessary compromise to protect the most significant aspects for the appreciation of future generations.

17.7 Monitoring

Unlike other potential impacts, such as adverse effects to flora or fauna, the mitigation measures proposed for architectural heritage are deemed to fully achieve their intended effect when implemented. They are fully deterministic – e.g. in mitigation measure CH_1 the height of Block 2 is not subject to variability outside the control of the design and delivery team.

Mitigation measures as they relate to Architectural Heritage do not therefore require monitoring as they might do, say, for air-quality or hydrology.

17.8 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. Mitigation measures in respect of Biodiversity are discussed in Chapter 5 of this report.
- 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. Mitigation measures in respect of surface water are discussed in Chapter 7 of this report.
- 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.

17.10 Cumulative Impacts

In respect of Heritage Assets, a cumulative impact would arise where there was:

- Clustering of developments in close proximity to a protected structure or a complex of protected structures.
- Clustering of developments in close proximity to a structure or site listed in the Record of Monuments and Places.
- Clustering of developments in an area of noted and historic townscape character (e.g. in an area where a substantial number of structures were identified on the National Inventory of Architectural Heritage)

A number of projects in the area of the Development require inclusion in an assessment of cumulative impact. These are below, status indicated at time of writing:

- ABP30943021 - 2.12 ha at Our Lady's Grove, Goatstown Road, Dublin 14. 698 no. student bedspace accommodation and associated site works. Approved.
- ABP31128721 - c.0.9ha at No. 97A Highfield Park (D14P710), and No. 1 Frankfort Castle (D14 HY03), No. 2 Frankfort Castle (D14DE72) and Frankfort Lodge (D14C9P2), Old Frankfort, Dublin 14. 115 no. apartments, creche and associated site works. Approved.
- ABP31182621 - Lands at Knockrabo, Mount Anville Road,, Goatstown, Dublin 14. 227 no. apartments and associated site works. Approved.
- ABP31013821 - Mount Saint Mary's and Saint Joseph's, Dundrum Road, Dundrum, Dublin 14. Demolition of existing buildings on site and part of the granite wall along Dundrum Road, excluding Small Hall, construction of 231 no. apartments, childcare facility and associated site works. Approved.
- ABP30446919/ ABP30768320 - Greenacres, Longacre and Drumahill House, Upper Kilmacud Road, Dundrum, Dublin 14. 307 no. apartments and associated works. Approved.
- D20A/0328 - University College Dublin, Belfield, Dublin 4. Extension of car park to provide 239 no. spaces. Approved.
- TA0001 - University College Dublin, Belfield, Dublin 4. 10 year permission for 512 student accommodation units (3006 no. bed spaces) including student facility centre, car parking and all associated site works. Approved.
- ABP315883 - 'Dunelm', Rydalmount, Milltown Road, Dublin 6. Demolition of structures, construction of Build to Rent apartments comprising of 63 apartments in 2 blocks with all associated site works. Approved.
- ABP305261 - Building 5, Dundrum Town Centre, Sandyford Road, Dundrum, Dublin 16. 107 no. apartments, cafe and associated site works. Approved.
- ABP300024 - Lands at the former Paper Mills site, bounded by the River Dodder to the East, Clonskeagh Road to the West, Clonskeagh Bridge to the South West, Dublin 6. Increase in apartment units from 96 to 116 with increase in block heights from 3 to 4 storeys with 30 additional parking spaces & additional bicycle spaces & associated site works. Approved.
- ABP311439 - Site measuring 0.29ha, Bounded by Kilmacud Road Upper to the north, Drummartin Link Road to the west, and Hazelbrook Apartments to the east and south, Dublin 14. Demolition of existing disused agricultural shed structure and the construction of a residential block 3 to 6 storeys consisting of 52 dwelling units. Approved.
- ABP313048 - 9/14 and 11C, Milltown Road, Milltown, Dublin 6. The application site consists of the former Murphy and Gunn site (currently Autovision) and the former Saint Joseph's Junior Education Centre site. Construction of 97 Build to Rent apartments. Approved.
- ABP312539 - Cunningham House, Trinity Hall, Dartry, Dublin 6. Demolition of existing building, construction of 358 no. student bedspace accommodation, 4 no. staff apartments and associated site works.
- ABP312170 - Marmalade Lane, Wyckham Avenue, Dundrum, Dublin 16. 531 no. Build to Rent apartments, creche and associated site works. Approved.
- ABP309931 - 24,26 28, Fosters Avenue, Mount Merrion, Blackrock, Co Dublin. Demolition of existing buildings on site and construction of 72 no. apartments,

communal open space areas, parking spaces, vehicular, pedestrian and servicing access from Foster's Avenue, ESB substation and switch room, and all associated site works. Approved.

- ABP31293522 - 0.79 ha at Sommerville House, Dundrum Road, Dublin 14. Demolition of all structures, construction of 111 no. apartments and associated site works. Applied for, under consideration.
- ABP31323522 - 0.34 hectares comprising the car sales premises currently known as Vector Motors (formerly known as Victor Motors), Goatstown Road, Dublin 14, D14FD23. Demolition of existing building on site, construction of 221 no. student bedspaces and associated site works. Applied for, under consideration.
- ABP31322022 - site 3.5335ha incorporating the old Dundrum Shopping Centre known as Main Dundrum Street Village Centre (D14K3T7). Demolition of all existing buildings on site, construction of 881 no. apartments, creche and associated site works. Applied for, under consideration.
- ABP316470 - Site of approx. 0.24 ha on lands at Frankfort Centre, Dundrum Road, Dublin 1. The construction of 64 no. apartment units in the form of a 5-6 storey apartment blocks, the provision of a ground floor retail/cafe unit, and Public Realm upgrades to Dundrum Road. Applied for, under consideration.
- And finally, the proposed adaptive re-use of the Central Mental Hospital main building, infirmary and chapel. Under development.

These developments have been assessed against the aforementioned criteria, with a conclusion that.

- With the exception of the planned redevelopment of the hospital buildings themselves, there is no contribution to clustering of developments in close proximity to a protected structure or a complex of protected structures.

- There is no clustering of developments in close proximity to a structure or site listed in the Record of Monuments and Places.

- With the exception of the planned redevelopment of the hospital buildings themselves, there is no clustering of developments in an area of noted and historic townscape character (e.g. in an area where a substantial number of structures were identified on the National Inventory of Architectural Heritage)

Of these, the proposed development of the Central Mental Hospital buildings and their immediate grounds is therefore only one that requires cumulative assessment in the context of Architectural Heritage. At the time of writing no application for this development has been lodged and the scope and extent is therefore subject to change, but it is understood in outline that the proposals may include:

a. Removal of a number of secondary structures within the curtilage of the Main Hospital Building, Chapel and Infirmary/Church.

b. Refurbishment, limited alteration, and re-purposing of the Main Hospital Building, Chapel and Infirmary/Church.

c. Creation of additional roadways and other civil works.

d. The construction of a number of apartment blocks to the North of the Main Hospital Building.

Taking each of the potentially affected structures in turn:

17.10.1 Structure 1 – Main Hospital Building

As noted in 17.4.1 above, the Main Hospital Building's sensitivity to change from the Housing Development arises from its relationship to the Historic Landscape. This landscape lies almost wholly to the south of the building, the north of the building comprising airing yards and other ancillary/service structures. The development of those lands to the north would not therefore alter the impact of the proposed development and the cumulative effect would therefore be unchanged.

17.10.2 Structure 2 – Perimeter Wall

As noted in 17.4.2 above, the Perimeter Wall's sensitivity to change arises from its unbroken continuity and the proposals in the Housing development to remove sections of it for vehicular access and visual connectivity. On the basis that there is no anticipation that the degree of wall removal will be changed by the other development, the cumulative impact is unchanged.

17.10.3 Structure 3 – Gate Lodge

As noted in 17.4.3 above, the Gate Lodge's sensitivity to change arises from its role as a point of entry to the demesne and its architectural character. Development of the lands north of the hospital will not further affect the Gate Lodge beyond the Housing development and the cumulative impact is therefore unchanged.

17.10.4 Structure 10 – Chapel

As noted in 17.4.4 above, the Chapel's sensitivity to change arises from its unaltered form and purpose and its group value with the Main Hospital Buildings. This relationship with the hospital buildings is unaltered by the Housing Development but has the capacity to be eroded by the proposed development of the Main Hospital Buildings. That development, of the hospital buildings and their immediate curtilage including that of the chapel, have the potential to negatively affect the chapel. However, the contribution to the cumulative impact would arise solely from that development, and the contribution of the Housing Development would remain unaltered. At the time of writing no application for the main hospital buildings has been formalised, and quantification of the possible impact is therefore not possible.

17.10.5 Structures 26/27 – Farmstead

As noted in 15.4.4 above, the Farmstead's sensitivity to change arises from the largely unaltered form and the relationship that the components have to each other. On the understood basis that the Farmstead is to be retained, refurbished and repurposed there is no cumulative impact with the Housing Development.

17.10.6 Structure 39 – Walled Garden

As noted in 17.4.5 above, the sensitivity to change of the walled garden arises from its intact nature and continuity of purpose. The development of the Main Hospital Buildings would make no material change to the impact of the Housing Development and the cumulative impact would therefore be unchanged.

17.10.7 Heritage Asset 45 – Historic Landscape

As noted in 17.4.7 above, the sensitivity to change of the Historic Landscape arises from its intact nature and the relationship that it has with the Main Hospital Buildings. With development of the building being limited to refurbishment, internal alteration and repurposing there will be no material change to the impact of the Housing development and the cumulative impact would therefore be unchanged.

17.11 'Do-Nothing' Effect

The effects on the identified Heritage Assets from doing nothing are assessed to be:

- The function of the Central Mental Hospital has now moved to NFMHS Portrane. With the exception of some temporary asylum-seeker accommodation in the grounds, the CMH(Dundrum) grounds as a whole, including the application site, have become disused. There exists a very significant risk of the Heritage structures suffering deterioration from lack of use and maintenance, and from the increased susceptibility of the site to vandalism.

- The Historic Landscape of the site survives through active management, which has now ceased with the abandonment of the site.

- If the Housing Development does not procced, the identification of a new and sustainable function for the Main Hospital Building and associated protected structures becomes more difficult.

17.12 Difficulties Encountered in Compiling the Chapter

None

17.13 Conclusions

The Development has been assessed in terms of the potential impacts on Heritage Receptors within and external to the site boundary. Particular relevance has been attributed to the 'Country House Demesne' model that had been adopted for the complex, an important aspect of the site's pioneering attitude to the treatment of the criminally insane, and a model which survives to a significant extent. The elements within that demesne have been assessed in terms of their sensitivity to change and the degree to which the Development will effect change to them. In some instances the development of the lands results in the potential for a negative impact on the Heritage Receptors.

Mitigation measures have been proposed which will in all instances reduce the severity of the impact to Heritage Receptors, in some instances rendering the impact negligible, null or positive.

The 'Do Nothing' effect has highlighted that abandonment of the site by the HSE attaches real risks to the Heritage Receptors, as they require active management to preserve their physical condition and their significance.

Residual impacts on the historic structures and landscape do remain, though these are assessed to have been reduced to a 'Moderately Negative' level. Quite apart from the substantial social gain accrued form the provision of affordable and social housing, the 'do-nothing' option exposes the historic structures to considerable and ongoing risk. Historic structures require active management to preserve their physical condition and their significance, and dis-use invites increasing levels of dereliction, from which recovery becomes exponentially more difficult. Accepting change as part of adaptive re-use, whether that applies to Protected Structures or their attendant grounds, has consistently been proven as a necessary compromise to protect the most significant aspects for the appreciation of future generations.

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18.0 MATERIAL ASSETS - ROADS AND TRAFFIC

18.1 Introduction

This Chapter of the Environmental Impact Assessment Report (EIAR) has been prepared by ILTP Consulting (ILTP) 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 Christy O'Sullivan and Ben Waite of ILTP. Christy O'Sullivan is the Managing Director of ILTP and qualified as a Civil Engineer (BEng.) from University College Cork (UCC) in 1982. He is a Chartered Engineer (CEng.) with 30+ years of experience in traffic and transport engineering and planning and is a Fellow of the Chartered Institution of Highways and Transportation (FCIHT).

Ben Waite is a Senior Transport Analyst; he holds a BA (Hons.) in Geography and an MSc. (Hons) in Geographic Information Science and a Member of the Chartered Institution of Highways and Transportation (MCIHT) and has over 15 years' experience in traffic and transport design, analysis and planning.

18.2 Methodology

The following methodology has been adopted for this assessment:

ILTP coordinated traffic count surveys undertaken on 25th April 2024 order to collate the full set of traffic and public transport data considered necessary to support the planning application for the proposed development. The results of the surveys undertaken in April 2024 were found to be in line with the data used in the previous planning application and was deemed suitable for use in this Traffic and Transport Assessment.

Additional check traffic surveys were carried out on 28th August 2024, in order to further ensure that the data used in the assessment was reflective of the typical traffic situation in the area.

All traffic surveys were carried out in accordance with the Transport Infrastructure Ireland's (TII) *Project Appraisal Guidelines Unit 5.2 - Data Collection (PE-PAG-02016)* Dec 2023.

ILTP conducted an assessment of available information on projected traffic trends, including the Greater Dublin Area Transport Strategy 2022-2024, the current Dun Laoghaire Rathdown Development Plan 2022-2028 and the National Sustainable Mobility Policy (2022) document.

ILTP calculated the estimated trip rates from the proposed development and added these figures to the base flows. A LinSig analysis was also undertaken to assess the capacity of the proposed new signalised access onto Dundrum Road (R117).

Picady and LinSig Traffic Signal Junction modelling software was also utilised to assess the capacity of the adjacent junctions with the proposed development in place. The Picady software package was used to calculate RFC (ratio of flow to capacity) factors for the approaches to a junction. This industry standard software is often used to assess capacity of

priority junctions. This measures the observed flow of a link against the theoretical capacity of the link. RFC is calculated thus;-

$$\% \text{ RFC} = \frac{\text{Observed Flow}}{\text{Link capacity}} \times 100$$

In transport Terms, RFC values of 85% or less are considered satisfactory, meaning at levels of RFC below 85% the junction is normally deemed to be operating within the design capacity and that no significant delays or queues arise.

LinSig is an industry standard software which allows the modelling traffic signals and their effect on traffic capacities and queuing. As well as modelling the effects of traffic signals LinSig also optimises signal timings to reduce delay or increase capacity at a junction or group of interlinked junctions.

The results of LinSig models are presented in terms of Degree of Saturation (the proportion of how saturated a lane is compared to its capacity), which for an urban signalised junction should be below 90%.

From the results of the traffic modelling a conclusion could be drawn as to the impact that the development will have on the overall traffic flows. Once modelling results were available ILTP 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 existing public transport capacity in the area and the likely usage of public transport services by residents and visitors to the new development.

The Traffic & Transport Assessment (TTA) undertaken included a 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 and sustainable travel in the immediate area. The MMP is a live document that is periodically updated to ensure that the mitigation measures are monitored and updated as appropriate over time.

ILTP also assessed the construction stage traffic impacts of the proposed development on the wider road network.

In terms of projecting future year traffic scenarios beyond the 2024 Base Year, the assumed Opening Year of the proposed development was taken to be 2027, with the Design Year taken as 2042. The Opening Year refers to the anticipated year of first occupation of the development, the Design Year is 15 years post Opening Year. This is in accordance with TII's *Traffic and Transport Assessment Guidelines (PE-PDV-02045)* May 2024. Future year traffic growth was calculated using the central growth rates as specified in TII's *Project Appraisal Guidelines for National Roads Unit 5.3 - Travel Demand Projections (PE-PAG-02017)* October 2021.

Discussions also took place with Dun Laoghaire Rathdown County Council (DLRCC) on the proposed access strategy. The proposed access layout and proposed cycle and pedestrian link through the site are fully in accordance with the Dundrum LAP (2023) an extract from same is included as Figure 18-1.

18.3 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.

18.3.1 Site Location

The site of the proposed development is in Dundrum, Dublin 14. The planning application site is approximately 9.7Ha in area and located approximately 5km from Dublin City Centre. The area is largely residential with established schools, community and social facilities in the vicinity.

The proposed Former Central Mental Hospital site is located in a well-established residential area and close to schools, University College Dublin, major retail facilities including Dundrum Town Centre, and local amenities. It is also within a short walk of the Luas Green Line and a variety of Bus services.

18.3.2 Existing Cycling and Pedestrian Facilities

Pedestrian facilities including footpaths are provided on the R117 adjacent to the proposed development. There is an existing pedestrian and cycle crossing on the R117 at the junction with St. Columbanus' Road, which facilitates pedestrian and cycle access to the closest Windy Arbour Luas stop.

There are also cycle lanes along St. Columbanus' Road to the immediate west of the site, which facilitate direct cycle connectivity between the subject site and the closest Windy Arbour Luas stop.

In addition to the pedestrian facilities adjacent to the existing road network, there are pedestrian routes in the adjacent Rosemount Green to the south which can be linked into from the proposed development.

There are no dedicated cycle provisions on the R117 Dundrum Road. The R825 Goatstown Road to the east is also located within 350m of the eastern boundary of the site and has dedicated cycle lanes in place.

18.3.3 Public Transport

The subject site is to the east of the Luas Green Line running from Brides Glen to Broombridge via the City Centre, with the Windy Arbour stop in closest proximity. This stop is within a 10-minute walk from the centre of the subject site.

Current Luas services to and from the city centre typically operate at an average of 3 minute intervals during peak periods.

There are regular bus services routing to and from the city centre on Dundrum Road, on Goatstown Road to the east and also bus services leaving Dundrum Village to the south. The closest bus stop is located on Dundrum Road approximately 200m walking distance from the centre of the site. This stop is served by the 44 and 44D bus services. Bus routes 142 and S4 also serve the next bus stop to the north on Dundrum Road, which is in the vicinity of Bird Avenue. The closest bus stops to the east of the site on Goatstown Road are served by the 11 bus route.

18.3.4 Public Transport Capacity and Frequency

The new Luas 55m trams have a theoretical capacity of 408 passengers/tram. This increased the tram capacity from 319 passenger/tram, which is over 25% of an increase.

The new improvement works to the line have also allowed for increased frequencies on the line. Based on the new capacity of the Luas trams the estimated Luas line capacity in persons per direction per hour (pdph) at peak periods based on the following frequencies are:

- 408 @ 5min frequency = 4,896 pdph
- 408 @ 3min frequency = 8,160 pdph
- 408 @ 2min frequency = 12,240 pdph

It's assumed an 80% operational capacity 367 passengers/tram can readily be accommodated on the new Luas 55m trams. Passengers on a Luas are not assigned a specific seat and the maximum capacity that each tram can accommodate can vary. Therefore, the operational capacity is taken as 80% of the maximum capacity, which is an industry norm.

Based on the operational capacity of the Luas trams the estimated Luas line capacity in person per direction per hour(pdph) at peak periods based on the following frequencies are:

- 367@ 5min frequency = 4,404 pdph
- 367@ 3min frequency = 7,340 pdph
- 367@ 2min frequency = 11,010 pdph

The Luas system is also future proofed to accommodate 2minute frequencies. This means that additional capacity can be added to the Luas to meet future growth demands on an incremental basis.

ILTP also undertook on-site surveys to determine the up-to-date frequencies of the Luas services on 25th April 2024. The frequency of northbound Luas trams in the AM peak period was recorded at the Windy Arbour Luas stop. In addition, the numbers boarding each Luas tram were also recorded.

The surveys were carried out in accordance with the TII's Project Appraisal Guidelines Unit 5.2 - Data Collection (PE-PAG-02016) Dec 2023.

Additional check surveys were undertaken on Wednesday 28th August 2024. The data recorded during the check surveys was consistent with the data recorded in April 2024, ensuring that the original surveys were robust and reflective of the existing conditions in the vicinity of the proposed development site.

The surveys also noted that all the trams on the line were the new 55m trams. It was also observed that there was sufficient capacity available on the Luas to accommodate the demands at the Luas stop.

Data for southbound trams were also recorded. These show lower frequencies southbound in the AM peak hour, which is to be expected as demand on the Luas is far greater that on the Luas northbound in the AM peak.

Based on the results of the surveys in the AM peak hour the city bound Luas theoretical capacity was 8,160pdph (408*20) and approximately 6,606pdph using the assumed operational capacity. The recorded inbound frequency was just over 3 minutes for inbound trams in the AM peak hour.

ILTP also undertook a review of bus services in the area based on the existing timetables which are now in operation. The survey showed that there are currently a variety of bus services available to supplement the Luas service currently in place.

These bus services serve a wide variety of destinations that further enhance public transport in the area. These bus services are available to serve the existing and new development in the area. In total there are 19 buses along these routes. The average operating capacity of an urban bus is approximately 90 passengers per bus. The capacity of the existing bus services in the area are summarised in Table 18-1.

Table 18-1: Estimated Passengers Capacity AM Peak hour

Estimated Passengers Capacity AM Peak hour (08:00 - 09:00)			
Bus Service To/From	No. Buses per hour	Operational Capacity (passengers per bus)	Total Capacity(passengers per bus)
Dundrum Road	9	90	810
Goatstown Road	6		540
Dundrum Village	4		360
TOTAL	19		1710

These bus services are set to be enhanced through the BusConnects projects and bus capacity increases are planned to be increased by 25% over the coming years. Therefore, bus service capacity and network will be improved further over the period to 2030.

The bus surveys undertaken on 25Th April 2024 adjacent to the proposed showed a relatively low usage level. This is not surprising given the proximity of the LUAS stop which provide more frequent and reliable service and serves a wider catchment area. The relatively low usage is bus services was also observed during the check surveys carried out in August 2024.

18.3.4 Proposed Transport Infrastructure and Ongoing Improvements to Cycle, Luas and Bus services

There are improvements planned for the bicycle network in the vicinity of the subject lands. The planned improvements are set out in the NTA Greater Dublin Area Cycle Network Plan (2022).

The Dundrum Local Area Plan (LAP) came into effect in late 2023. The LAP contains proposed access and movement strategy for the area surrounding the CMH lands. This strategy has been reproduced as Figure 18-1.

Figure 18-1: Dundrum Local Area Plan Access Strategy

The key transport initiatives, in respect to the subject site, within the LAP include a new cycle/ped route through that area that includes a link through the subject lands, linking Mulvey Green to Rosemount Green. It also included a pedestrian/cycle link to Annaville from the subject site and a single all movement access on to Dundrum Road.

The concept of filtered permeability was applied to the overall design rational. Filtered permeability describes a design approach to urban streets and the urban realm that allows through journeys for selected modes of transport, typically walking and cycling (but sometimes also buses) and removes or restricts through routes for motor traffic. In this case the overall design approach achieves this requirement through the removal of any through traffic, while allowing pedestrian and cycle permeability through the development lands, which also provides improved access to existing public transport services, open spaces, and

other local services. The filtered permeability also benefits the wider community through the provision of a new route through the development lands for walking and cycling.

The NTA published the new Dublin Area Bus Network, which is currently being implemented on a phased basis as part of the BusConnects project. This includes a series of primary Spine routes classified as 'A' routes, with additional Radial, Orbital, Local and Peak-Only / Express routes.

The Government in March 2022 approved funding of €4bn for the BusConnects project and this is proposed to increase bus capacity for the city by 23% by 2030. As part of the BusConnects Network Redesign, a number of new routes operated by Dublin Bus and Go Ahead recently opened. Services commenced operation on November 26th, 2023 and will provide much improved bus services to the area. A number of these routes pass near the subject lands, namely:

- S4 Liffey Valley Shopping Centre – UCD (via Bird Avenue to the north)
- S6 Tallaght – UCD – Blackrock Station (via Taney Road to the south)

In addition, there are a number of new local and orbital routes that serve Dundrum Shopping Centre using Dundrum Luas Stop transport interchange:

- 74 Dundrum Luas – Marlay Park – Coombe Hospital – Eden Quay
- L25 Dundrum Luas – Dún Laoghaire

The new bus services will further improve the connectivity of the subject lands by public transport. The S Orbitals run quite frequently, which is every 10-20 minutes during peak hours. The majority of these frequencies remain the same on weekends. During weekdays the L25 runs every 15 minutes. Route 74 usually runs every 30 minutes on both weekdays and weekends.

The Luas Green line has been upgraded resulting in significant capacity increases on the Luas Green Line and is also future proofed to accommodate future demand on the line to 2030.

18.3.5 Existing Traffic Conditions

There are a number of junctions along Dundrum Road in the vicinity of the proposed development. The junctions are either priority or signal controlled. There are traffic two signal-controlled junctions at Bird Avenue and at Taney Road. The remainder of the junctions along Dundrum Road are priority junctions and these mainly serve local residential areas.

18.4 Potential Impacts of the Proposed Project

18.4.1 Construction Phase

Typical construction working hours on site are expected to be as follows:

- Mondays to Fridays – 8.00am to 7.00pm
- Saturday – 8.00am to 2.00pm
- Sundays and Public Holidays – No activity on site

Construction traffic movements were calculated based on the information provided in the Construction & Environmental Management Plan (CEMP) prepared by Barrett Mahony Consulting Engineers (BMCE).
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 R117 Regional Road which means that all HGV movement associated with the construction stage of the proposed development can be required to only use the regional and national road networks to the south of the proposed development.

The proposed Haul Route for the construction works for the proposed development is shown in Figure 18-2.

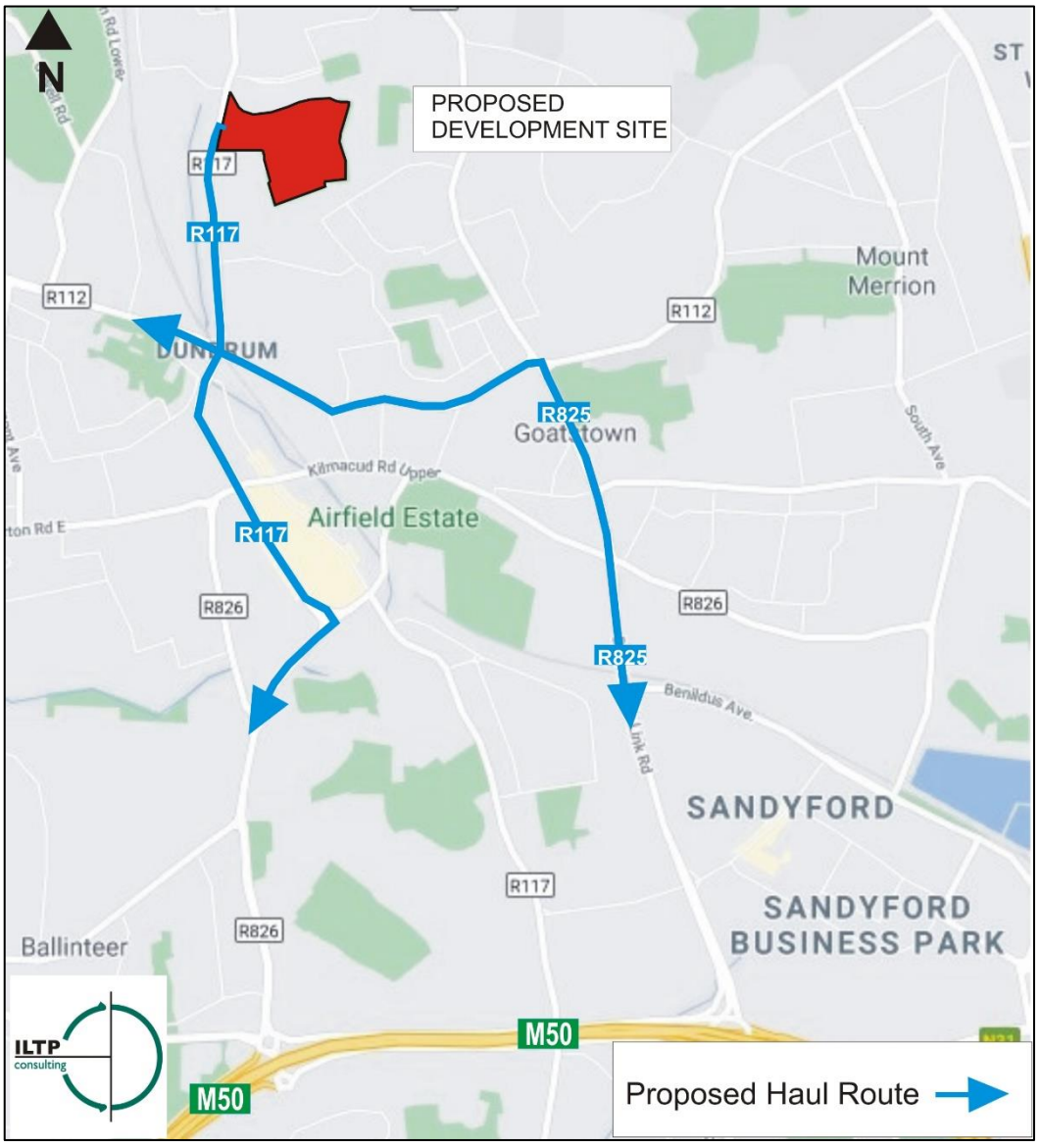

Figure 18-2: Proposed Haul Route

Construction traffic will access the site from Dundrum Road. 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 300 to 400 construction workers on site during typical construction period, with a maximum of 800 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 before the 17:00 - 18:00 evening peak hour.

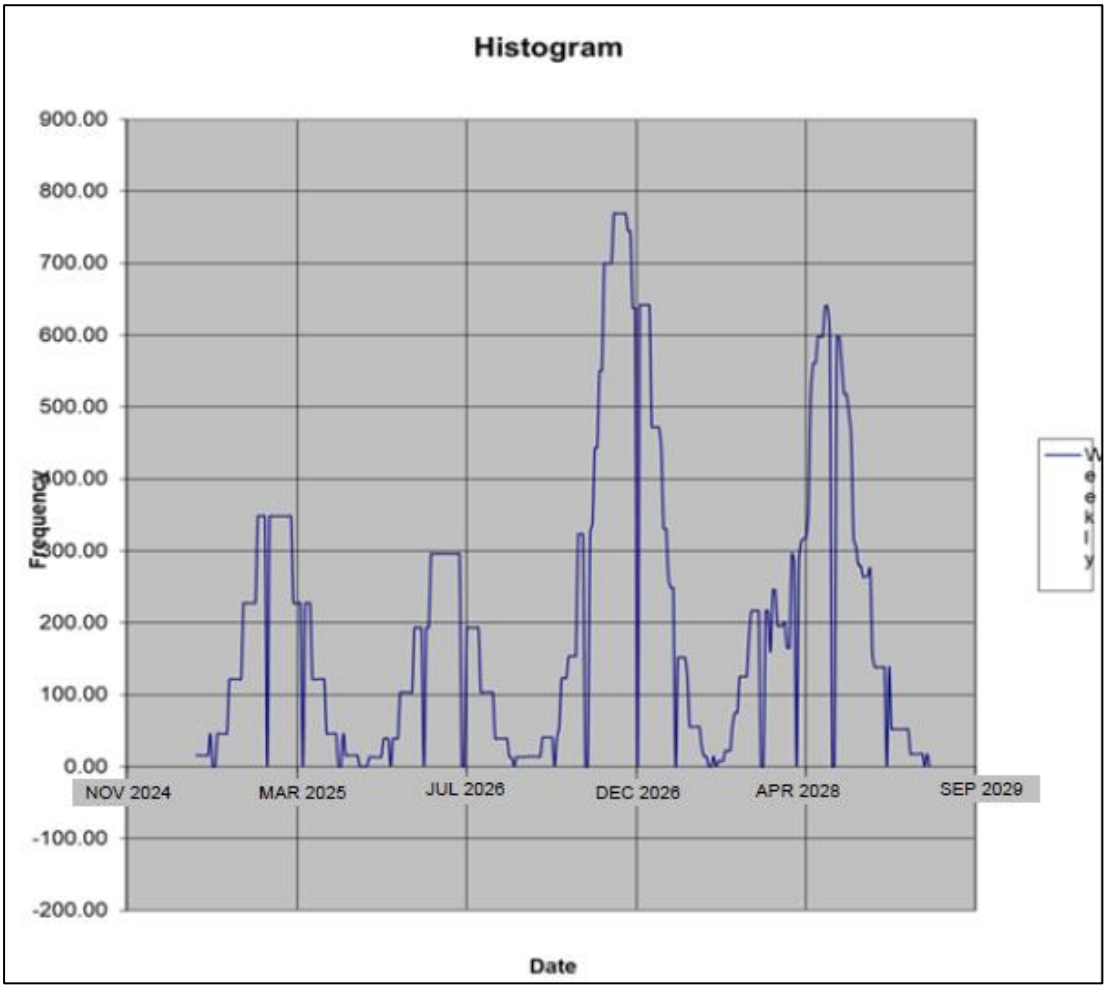

Figure 18-2: Approximate Weekly Construction Workers Daily Trip Movements To/From Site (Source: CEMP Report)

The CEMP has proposed a number of measures to minimise construction staff vehicle movements such as the promotion of car sharing and the supply of public transport information during staff induction. It also states that the majority of staff will access the site before 07:00, which is in line with ILTP's estimates set out above. Based on the measures set out in the CEMP and given the proximity of the subject site to high frequency public transport, ILTP estimated the likely vehicular movements carrying construction personnel to and from the proposed development site during the AM peak hour as follows:

800 peak staff working on site (Max):

- 40% arrive during AM Peak hour 320
  - 30% arrive via public transport, walk or cycle 96
  - 70% arrive via car/van 224
- Average Car Occupancy = 2.2 (including driver) 2.2

- Maximum additional movements AM 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.

Systematic Definition of Effects

The likely effect of the proposed development during the construction phase will be:

1. Additional HGV traffic along the proposed designated haul route 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 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 and works to Dundrum 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.

18.4.2 Operational Phase

Traffic Projections for Proposed Development

ILTP prepared estimates of the overall Traffic increases that would result from the proposed development.

ILTP have estimated trip generation figures for the proposed development based on their experience in Ireland and having regard to the range of trip rates from the Trip Rate Information Computer System (TRICS) database. The traffic impact from other planned and committed developments in the area were also assessed using the data contained in the planning application documentation accompanying these relevant developments. Each individual planning application contained a Traffic and Transport Assessment (TTA) report and the projections used in these reports were used in ILTPs cumulative impact calculations.

The cumulative impact of these developments is set out later in the section 18.9. These developments were also assumed to be in place in advance of the proposed development and were added to the opening year traffic assessments to give a robust assessment of the development. 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 TTA.

Future Year Scenarios – Without and With Proposed Development
No further growth in background traffic is assumed between the 2027 Opening Year and 2042 Design Year. For the purposes of traffic assessments, background traffic can be defined as the existing traffic volume on the road network. It serves as a baseline to assess what impacts the proposed development may have on the existing road network.

The assumption that there will be no further background traffic beyond the 2027 Opening Year is consistent with the overall transport trends and strategy for the Dublin area and other national and local policy objectives such as the Climate Action Plan 2024 (CAP) and the Dundrum LAP (2023). CAP targets include a 20% reduction in total vehicle kilometres travelled by 2030. It is also an objective of the Dundrum LAP to: *"transition Dundrum Road to a neighbourhood street, using traffic calming and public realm improvements to create a safer, more accessible and attractive environment for local residents."* - Dundrum LAP Objective T19

Therefore, for the 2042 Design Year, it was assumed that the 2027 traffic volumes estimated without and with the proposed development would persist, which would represent a worse-case scenario.

Projected Trip Generation for Proposed Development
For EIAR and TTA evaluation purposes ILTP have however assumed that some growth in background traffic would arise over the short term and that the development itself will generate additional traffic movements on the road network, which represents a worse-case scenario in terms of evaluation methodology. 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 which is an industry standard. Using TRICS, ILTP estimated the total number of person-based trips each individual element of the development is likely to produce and combined to produce gross trip rates. These person base trips also allowed us to calculate public transport demands to and from the new development.

It should be noted that the additional trips used in the traffic assessments can more accurately be defined as trip ends, as each trip has both an origin and a destination. If all trip ends were assumed to be new trips and these were applied to all developments, this would result in a doubling of forecasted trips on the wider network. The traffic assessment assumed all the trips to and from the proposed development were additional trips which represent a very robust assessment of traffic movements.

The Dundrum LAP (2023) states that Dundrum is well served by public transport and has higher than average usage of non-car based modes of transport. ILTP allocated the persons trips to the various modes of travel to create the modal split.

Modal split refers to the distribution of different modes of transport used by people in a given area or for a specific journey. It shows the percentage of travellers using each mode, such as cars, public transport, walking, cycling, etc. In transportation planning, modal split analysis helps understand travel behaviour and informs decisions to promote sustainable transport options.

The final modal split was calculated based on a combination of data from TRICS and with reference to the CSO data provided in the Dundrum LAP (2023). The final modal split used in trip generation calculations is as follows:

- Car (Driver) 40%
- Car (Passenger) 5%
- Pedestrian & Cycle 25%
- Bus 5%
- Luas 25%

Given the mix of uses proposed in the development not all trips will be external as many of the proposed facilities will be used by the residents. ILTP have assumed that internal trips to and from the creche, retail uses and other facilities would account for 15% of the overall residential trips and have assumed that the external trips would account for 85%.

Similarly the trips to and from the retail and the other facilities provided on site would be mainly used by the local residents, but 20% were assumed to be external trips. In addition, estimates were also included for the likely development quantum on the balance of the lands within the CMH boundary but not included in this planning application. The trip rates used for the future application lands are assumed to be 90% external with 10% coming from with the development.

Table 18-3: Proposed Weekday Peak Hour Trip Generation Volumes on Adjoining Road Network

Part 10 Application	AM Trips		PM Trips	
Residential	Arr	Dep	Arr	Dep
Apartments	32	157	110	54
Assisted Living Units	0	1	1	0

Non-Residential	Arr	Dep	Arr	Dep
Creche	4	1	1	3
Retail Cluster	6	7	8	8
Café	0	1	0	0
Restaurant	1	1	1	1
Community	1	1	1	1
Medical	1	1	1	1
Management Suite	0	1	0	0

Future Application	AM Trips		PM Trips	
	Arr	Dep	Arr	Dep
Enterprise	38	2	3	36

	AM Trips		PM Trips	
	Arr	Dep	Arr	Dep
Total	**83**	**173**	**126**	**103**

The Trip Generation assessment yields an estimate of an additional 83 no. inward and 173 no. outward trips for the AM peak hour (08:00 – 09:00). An additional 126 no. inward trips and 103 no. outward trips were estimated for the PM peak hour (17:00 – 18:00) for the entire masterplan lands.

As the AM and PM peak hours are the times of the day with the highest level of traffic volumes it can be assumed that if the road network can perform effectively at these times, it will meet all demands placed upon it at other periods.

Junction Capacity Assessments

A LinSig traffic modelling analysis was undertaken for AM and PM peak weekday periods to assess the capacity of the proposed new signalised access junction onto Dundrum Road with the proposed development traffic in place.

The LinSig analysis found that the approach arms of the proposed access junction will operate at or below 70% capacity with the peak hour development traffic in place. This confirms the proposed access junction has more than adequate capacity for the proposed development. Further details of the LinSig traffic modelling analysis are included in the Traffic and Transport Assessment & Mobility Management Plan report, included separately.

ILTP also conducted a LinSig (signalised junction) capacity assessment of the existing R117-Bird Avenue junction.

The LinSig model results for the junction showed that by even applying robust traffic generation figures, the junction had ample capacity during peak weekday periods with the proposed development in place.

For further details of the traffic analysis and wider traffic impact assessment refer to the Updated Traffic and Transport Assessment & Mobility Management Plan report, included separately with the wider response to the Further Information Request for the proposed development.

Systematic Definition of Effects

The projected increases in traffic as a result of the proposed development have been assessed with regard to the vehicle movement threshold levels above which a Transport Assessment is automatically required, as defined in *the TII Traffic and Transport Assessment Guidelines* (May 2014), which include:

- *"Traffic to and from the development exceeds 10% of the traffic flow on the adjoining road.*

- *Traffic to and from the development exceeds 5% of the traffic flow on the adjoining road where congestion exists, or the location is sensitive."*

For the purposes of this assessment, 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 new signalised junction on the R117 will have a significant long-term impact in the immediate vicinity of the proposed development on Dundrum Road. Traffic flows along Dundrum Road in the immediate vicinity of the proposed access are estimated to increase by 9% over exiting levels which will have a moderate long-term effect on the adjoining section of Dundrum Road. Traffic flows on the wider road network are estimated to increase by less than 5% and will therefore have a slight traffic impact on the wider road network.

The opening year mode share is anticipated to be 25% using Luas. It is estimated that 80% of persons leaving the proposed development by Luas in the AM Peak will travel towards to City Centre. These estimates are based on the results of the public transport survey carried out in April 2024 where 82% of passengers boarding the Luas at the Windy Arbour stop boarded citybound trams. A similar distribution was observed during the check surveys in August with approximately 85% of passengers boarding city bound trams.

Based on current frequencies of 20 trams per hour, this equates approximately 4 to 5 additional person per tram city bound in the AM peak, which can be accommodated by the existing Luas services.

Based on current bus frequencies on the buses in the area and a mode share of 5% proposed development would result in an additional 2 passengers per bus during the AM peak hour period.

The improved walk and cycle facilities included in the development including a new pedestrian and cycle route linking Mulvey Green with Rosemount Green, would further improve connectivity to the bus and Luas service in the area for both new and existing resident of the area. The site is within 800m of the Windy Arbour Luas stop. The site is therefore within walk distance of a high capacity and high frequency public transport.

The proposed pedestrian and cycle routes through the proposed development would have significant long-term positive effects regarding reduced walking and cycling travel times to public transport services and improved permeability and connectivity to amenities in the area.

18.5 Mitigation Measures

18.5.1 Construction Phase

In order to reduce the potential impacts of traffic associated with construction on the roads in the immediate vicinity of the proposed development and the wider road network, remedial and mitigation measures will be implemented as set out below and in the Construction 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.
In order to reduce the impact of additional HGV traffic along the proposed dedicated haul route.

RT_2: The applicant shall at all times keep all public and private roads and footpaths entirely free of excavated materials, debris and rubbish.
In order to reduce the impact of additional HGV traffic along the proposed dedicated haul route.

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.
In order to reduce the impact of additional traffic along the proposed dedicated haul route.

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.
In order to reduce the impact on pedestrian and cycle movements on roads in the vicinity of the proposed development.

RT_5: All construction workers will be encouraged to use public transport, and also to car share where appropriate. On site staff car parking can also be provided to ensure no construction workers will be required to park on adjacent roads or streets.
In order to reduce the impact of additional construction personnel car l light vehicle movements on the local road network.

RT_6: No daytime or night-time parking of site vehicles or construction staff vehicles will be permitted outside agreed areas.
In order to reduce the impact of additional construction personnel car / light vehicle movements on the local road network.

RT_7: 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.
In order to reduce the impact of additional HGV traffic along the proposed dedicated haul route.

RT_8: 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.
In order to reduce the impact of additional HGV traffic along the proposed dedicated haul route.

RT_9: Properly designed and designated access and egress points to the construction site will be used to minimise impact on external traffic.
In order to reduce the impact of additional HGV traffic along the proposed dedicated haul route.

RT_10: Firm, level, and well-drained pedestrian walkways will be provided.
In order to reduce the impact on pedestrian and cycle movements on roads in the vicinity of the proposed development.

RT_11: Adequate visibility will be provided at the proposed access point to the proposed development off Dundrum Road.
In order to reduce the impact of additional HGV traffic along the proposed dedicated haul route.

In order to reduce the impact on pedestrian and cycle movements on roads in the vicinity of the proposed development.

RT_12: Footpaths will not be blocked resulting in pedestrians having to step onto the carriageway.

In order to reduce the impact on pedestrian and cycle movements on roads in the vicinity of the proposed development.

RT_13: The final Construction Traffic Management Plan with be submitted and agreed with the planning department prior to the commencement of any development.
In order to reduce the impact of additional HGV traffic along the proposed dedicated haul route.

18.5.2 Operational Phase

The following traffic mitigation measures shall be implemented for the operational phase of the development in order to reduce the impact of additional traffic generated by the proposed development on the roads in the immediate vicinity and the surrounding road network:

RT_14: A Mobility Management Plan has been prepared for the proposed development which includes recommended 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. It is projected that successful implementation of the mobility management plan measures included will reduce the vehicular trip generation from the proposed development below that included for in the Traffic Impact Assessment for the proposed development.
In order to reduce the impact of additional traffic on roads in the vicinity of the proposed development.

RT_15: The MMP is a live document and is intended to be reviewed and updated on an annual basis. Post occupation the Management Company will appoint a Mobility Manager responsible for the delivery of the programme and to act as an interface between the various stake
In order to reduce the impact of additional traffic on roads in the vicinity of the proposed development.

RT_16: A Stage 2 Road Safety Audit (RSA) will be undertaken at the detailed design stage 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.
In the interest of Road Safety and in order to reduce the impact of additional traffic on roads in the vicinity of the proposed development.

18.6 Residual Impacts

18.6.1 Construction Phase

Due to the proposed mitigation measures outlined above, the impact of the proposed development will be temporary and slight during the construction stage.

18.6.2 Operational Phase

There will be a moderate long-term increase in the use of the road network by private vehicles in the immediate vicinity of the proposed access. A mobility management plan will promote more sustainable forms of transport and will mitigate some of these impacts. In addition, the implementation of policy at national (Climate Action Plan) and local levels (Dundrum LAP) will reduce traffic levels on the R117 in the future, which will in turn further lessen the impact of the traffic generated by the proposed development.

There will be an increase in the number of pedestrians and cyclists in the surroundings of the development. However, footpaths and cycling paths are provided as part of the development, thus, impact should be minimal.

18.7 Monitoring

18.7.1 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 planning 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.

18.7.2 Operational Phase

As part of the 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 ideally 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.

18.8 Interactions

18.8.1 Construction Phase

A Construction Traffic Management Plan will be put in place and agreed with the planning 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 18.5.1.

18.8.2 Operational Phase

The estimated 2024 Base Year, 2027 Opening Year and 2042 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 Mobility Management Plan measures. Further details of the Noise and Air Quality assessments are set out in the respective EIAR chapters.

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.

A Quality Audit (*Stage 1 Road Safety Audit* and *Cycle and Pedestrian Audit*) will be undertaken and will accompany the proposed Part 10 planning application. *Stage 2 - Detailed Design* and *Stage 3 - Post Construction* Road Safety Audits will also be undertaken to ensure that road safety remains part of the overall design and delivery process up to scheme completion.

A Mobility Management Plan will also be agreed and implemented to encourage more sustainable travel modes. Further details of the Human Health assessment are set out in Chapter 7 of this EIAR.

18.9 Cumulative Impacts

18.9.1 Construction and Operational Phase Cumulative Impacts

The potential cumulative impacts of the proposed development on Traffic and Transportation have been considered in conjunction with developments in the surrounding area having regard to overall transport policy at national and local level. We outline the status of each project and the expected cumulative impacts associated with this development.

- **ABP31317622 – Lands at Former Central Mental Hospital, Dundrum Road, Dublin 14.**
  The proposed development site at the Former Central Mental Hospital, Dundrum Road, Dundrum, Dublin 14 was granted planning permission in 2023. This planning application is on the same lands and if granted and development would replace this permitted development, so it was not included in the cumulative impact assessment. It should be noted that the proposed application on the lands has in overall terms slightly less traffic impact when compared to the existing permitted development on the same lands.

- **ABP31013821 – Mount Saint Mary's and Saint Joseph's, Dundrum Road, Dundrum, Dublin 14.**
  The proposed site is approximately 770m away from our proposed development. The additional traffic from this development on Dundrum Road was allowed for in the traffic assessment and this development was assumed to be in place in advance of the CMH development.

- **ABP31128721 – c0.9ha at No. 97A Highfield Park (D14P710), and No. 1 Frankfort Castle (D14 HY03), No. 2 Frankfort Castle (D14DE72) and Frankfort Lodge (D14C9P2), Old Frankfort, Dublin 14.**
  The proposed site is approximately 400m away from our proposed development. The additional traffic from this development on Dundrum Road was allowed for in the traffic assessment and this development was assumed to be in place in advance of the CMH development.

- **ABP 312935-22 – Sommerville, Dundrum Road, Dundrum, Dublin 14.**
  This development has been recently submitted for planning and is currently awaiting decision. The proposed site is approximately 300m away from our proposed development. The additional traffic from this development on Dundrum Road was allowed for in the traffic assessments and this development was assumed to be in place in advance of the CMH development.

- **ABP 316470 – Frankford Centre, Dundrum, Dundrum, Dublin 14.**
  This development has been recently submitted for planning and is currently awaiting decision. The proposed site is approximately 300m away from our proposed development. The additional traffic from this development on Dundrum Road was allowed for in the traffic assessments and this development was assumed to be in place in advance of the CMH development.

- **CMH Future Planning Application – Lands at Former Central Mental Hospital, Dundrum Road, Dublin 14.**
  The traffic assessment undertaken for the proposed CMH development includes for the likely development and traffic generation of these lands that will form part of a separate planning application and therefore has been included for in at both the construction and operational stages.

The cumulative traffic impacts of the proposed development are summarised in Table 18-5, immediately to the south of the southern entrance on Dundrum Road. This is where the largest traffic impact of the proposed development will arise. The projected increase to traffic on Dundrum Road, as a result of these developments, has been calculated based on best predictions using all available information and in keeping with recognised standards.

Table 18-5: Cumulative Impact of Adjacent Developments

	Additional Two-way Trips Immediately South of Proposed Access - Vehicles Per Hour	
	AM Peak	**PM Peak**
ABP31013821 (Mount St. Mary's SHD)	16	18
ABP31128721 (Highfield/Frankfort SHD)	16	5
ABP312935-22 (Sommerville SHD)	7	10
ABP316470 (Frankford Centre)	5	-1
Total Additional Trips	**44**	**32**
Existing Peak Hour Flows	1213	961
Percentage Increase	3.6%	3.3%
Less Existing CMH Traffic	-2	-3
Net Increase	**3.3%**	**3.0%**

Table 18-5 shows that the cumulative traffic impact of other developments assessed have a cumulative traffic impact of 3.3% and 3.0% of the 2027 base year traffic in both the AM and PM peak hours respectively. To account for these potential cumulative impacts the 2024 opening year traffic was factored by 3%. In addition, the reductions in traffic that will arise with the closure of the existing CMH facility would further reduce the cumulative traffic impact on the surrounding road network. However, to ensure a robust assessment these reductions were not included in the traffic assessments undertaken on the road network.

The operational stage of our development was estimated to generate an additional 256 movements (83+173) in the AM peak hour, while the construction traffic was estimated to generate a maximum of an additional 112 (10 +102) movements in the AM peak hour.

The cumulative construction stage traffic impact of the other developments along Dundrum Road and in the vicinity of the proposed development is forecasted to be lower than the operational stage traffic impact. If the construction of these other developments is ongoing, during either the construction or operational stages of our development, then the construction stage cumulative traffic impact would be less than the cumulative traffic impact of the operational stage of these other developments. Therefore, there was no necessity to undertake a separate detailed traffic assessment of the cumulative traffic impact for the construction stage.

18.9.2 Conclusion

The cumulative traffic impact of other proposed developments in the area was considered and included for in the traffic assessments undertaken. The traffic impact of the balance of the CMH lands was also included in the assessment of the Part 10 development. This provided for a robust assessment of the cumulative traffic impact of overall CMH proposed lands.

18.10 'Do-Nothing' Effect

If the lands were to remain undeveloped then there would be no direct traffic impact on the surrounding area. 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.

18.11 Difficulties Encountered in Compiling the Chapter

The bus service and routes are currently in the process of being upgraded as part of the NTA BusConnects and it was difficult to get definite information as to when new service or routes may come into operation going forward. Further increases in Luas capacity can be delivered over time, but precise timelines for frequency upgrades were difficult to define.

18.12 References

Glossary of Terms

AADT	Annual Average Daily Traffic
CDP	County Development Plan
CEMP	Construction & Environmental Management Plan
DLRCC	Dun Laoghaire Rathdown County Council
GFA	Gross Floor Area
HGVs	Heavy Goods Vehicles
ILTP	ILTP Consulting
LAP	Local Area Plan
MMP	Mobility Management Plan
NTA	National Transport Authority
LinSig	Traffic Signal Modelling and Optimisation Software

PICADY	Priority Intersection Capacity and Delay
PDPH	Per Direction Per Hour
RSA	Road Safety Audit
TRICS	Trip Rate Information Computer System
TTA	Traffic & Transport Assessment

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19.0 MATERIAL ASSETS – WASTE MANAGEMENT

19.1 Introduction

This chapter was prepared by Chonaill Bradley (Bsc ENV,PG Dip Circ Econ, AssocCIWM) of AWN Consulting. Chonaill Bradley is a Principal Environmental Consultant in the Environment Team at AWN. He holds a BSc in Environmental Science from Griffith University, Australia and a Postgraduate Diploma in Circular Economy Leadership for the Built Environment from the Atlantic Technological University, Galway. He is an Associate Member of the Institute of Waste Management (AssocCIWM). Chonaill has over nine years' experience in the environmental consultancy sector and specialises in sustainability and resource & waste management.

This chapter evaluates the likely impacts, if any, which the proposed development may have on Material Assets (related to waste management) as defined in the EIA Directive (Directive 2011/92/EU as amended by Directive 2014/52/EU) and the Environmental Protection Agency (EPA) Guidelines on the information to be contained in Environmental Impact Assessment Reports (2022).

This chapter has also been prepared to address the issues associated with waste management during the construction and operational phases of the proposed development as described in Chapter 5 (Description of Proposed Project).

A site-specific Resource Waste Management Plan (RWMP) has been prepared by AWN Consulting Ltd (ref CB/247501.0042WMR01) to deal with waste generation during the excavation and construction phase of the proposed development and has been included as Appendix 19.1. The RWMP was prepared in accordance with the Environmental Protection Agency's (EPA) document Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects (2021).

A separate Operational Waste Management Plan (OWMP) has also been prepared by AWN Consulting Ltd (ref CB/237501.0679WMR02) for the operational phase of the proposed development and is included in Appendix 19.2 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 management of wastes arising at the development site in accordance with legislative requirements and best practice standards.

19.2 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.

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 US EPA waste generation research as well as other available research sources.

Mitigation measures are proposed to minimise the effect of the proposed Development on the environment during the construction and operational phases, to promote efficient waste segregation and to reduce the quantity of waste requiring disposal. This information is presented in Section 19.5.

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.

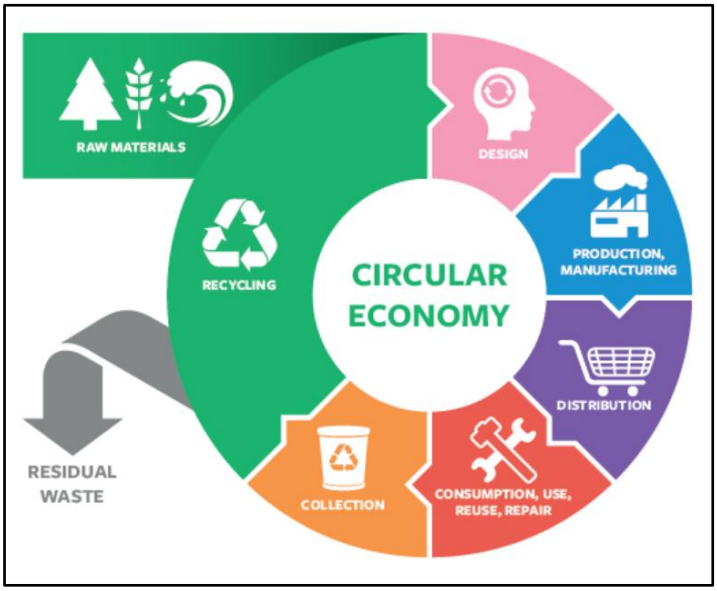
19.3.1 Legislation and Guidance

Waste management in Ireland is subject to EU and national 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 Acts 1996-2021. European and national waste management policy is based on the concept of the 'waste hierarchy', which sets out an order of preference for managing waste (prevention > preparing for reuse > recycling > recovery > disposal) (Figure 19.1).

Figure 19.1: Waste Hierarchy (Source: European Commission)

EU and Irish National waste policy also aims to contribute to the circular economy by extracting high-quality resources from waste as much as possible. Circular Economy (CE) is a sustainable alternative to the traditional linear (take-make-dispose) economic model, reducing waste to a minimum by reusing, repairing, refurbishing and recycling existing materials and products. (Figure 19.2).

Figure 19.2: Circular Economy (Source: 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 Circular Economy and Miscellaneous Provisions Act 2022 was signed into law in July 2022. The Act underpins Ireland's shift from a "take-make-waste" linear model to a more sustainable pattern of production and consumption, that retains the value of resources in our economy for as long as possible and that will to significantly reduce our greenhouse gas emissions. The Act defines Circular Economy for the first time in Irish law, incentivises the use of recycled and reusable alternatives to wasteful, single-use disposable packaging, introduces a mandatory segregation and incentivised charging regime for commercial waste, streamlines the national processes for End-of-Waste and By-Products decisions.

The strategy for the management of waste from the construction phase is in line with the requirements of the EPA's *'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects'* (2021). The guidance documents, *Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects (2006) and Construction and Demolition Waste Management: A Handbook for Contractors and Site Managers* (FÁS & Construction Industry Federation, 2002), were also consulted in the preparation of this assessment.

There are currently no Irish guidelines on the assessment of operational waste generation, and guidance is taken from industry guidelines, plans and reports including the National Waste Management Plan for a Circular Economy 2024 - 2030 (NWMPCE) (2024), BS 5906:2005 Waste Management in Buildings – Code of Practice, the Dún Laoghaire-Rathdown County Council (DLRCC) Dún Laoghaire-Rathdown County Council (Storage, Presentation and Segregation of Household and Commercial Waste) Bye-Laws (2019), the EPA National Waste Database Reports 1998 – 2020, the Circular Economy and National Waste Database Report 2021 (2023) and the EPA National Waste Statistics Web Resource.

19.3.2 Terminology

Note that the terminology used herein is generally consistent with the definitions set out in Article 3 of the Waste Framework Directive. Key terms are defined as follows:

Waste - Any substance or object which the holder discards or intends or is required to discard.

Prevention - Measures taken before a substance, material or product has become waste, that reduce:

a) the quantity of waste, including through the re-use of products or the extension of the life span of products;
b) the adverse impacts of the generated waste on the environment and human health; or
c) the content of harmful substances in materials and products.

Reuse - Any operation by which products or components that are not waste are used again for the same purpose for which they were conceived.

Preparing for Reuse - Checking, cleaning or repairing recovery operations, by which products or components of products that have become waste are prepared so that they can be re-used without any other pre-processing.

Treatment - Recovery or disposal operations, including preparation prior to recovery or disposal.

Recovery - Any operation the principal result of which is waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function, in the plant or in the wider economy. Annex II of the Waste Framework Directive sets out a non-exhaustive list of recovery operations.

Recycling - Any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations.

Disposal - Any operation which is not recovery even where the operation has as a secondary consequence the reclamation of substances or energy. Annex I sets out a non-exhaustive list of disposal operations.

19.3 Baseline Environment

In terms of waste management, the receiving environment is largely defined by DLRCC a as the local authority responsible for setting and administering waste management activities in the area. This is governed by the requirements set out in the NWMPCE 2024 – 2030 and the Waste Action Plan for a Circular Economy – Waste Management Policy in Ireland.

The waste management plans set out the following targets for waste management in the region:

- Achieve a recycling rate of 55% of managed municipal waste by 2025; and
- Reduce to 0% the direct disposal of unprocessed residual municipal waste to landfill (from 2016 onwards) in favour of higher value pre-treatment processes and indigenous recovery practices.

The Regional Waste Management Planning Offices have issued a National Waste Management Plan for a Circular Economy 2024 - 2030 in March 2024, which supersedes the Eastern midlands regional (EMR) waste management plan and the two other regional waste management plans. The NWMPCE does not however dissolve the three regional waste areas. The NWCPCE sets the ambition of the plan to have a 0% total waste growth per person over the life of the Plan with an emphasis on non-household wastes including waste from commercial activities and the construction and demolition sector.

The Dún Laoghaire-Rathdown County Development Plan 2022 – 2028 (2022) sets out the objectives for the DLRCC area which reflect those sets out in the regional waste management plan and can be found in appendix 19.1 and 19.2.

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 EMR 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, municipal waste landfills, material recovery facilities and waste transfer stations.

However, these sites may not be available for use when required or may be limited by the waste contractor selected to service the development in the appropriate phase. In addition, there is potential for more suitably placed waste facilities or recovery facilities to become operational in the future which may be more beneficial from an environmental perspective.

The ultimate selection of waste contractors and waste facilities would be subject to appropriate selection criteria proximity, competency, capacity and serviceability.

A full description of the proposed Development can be found in Chapter 5 (Description of the Proposed Development). The characteristics of the proposed Development that are relevant in terms of waste management are summarised below.

19.3.1 Demolition Phase

There will be waste materials generated from the demolition and refurbishment of some of the existing buildings and hardstanding areas on site, as well as from the further excavation of the building foundations.

Further detail on the waste materials likely to be generated during the demolition works are presented in the project-specific RWMP in Appendix 19.1. The RWMP provides an estimate of the main waste types likely to be generated during the C&D phase of the proposed Development. The reuse, recycling / recovery and disposal rates have been estimated using the EPA National Waste Reports and these are summarised in Table 19.1.

Table 19.1: Predicted on and off-site reuse, recycle and disposal rates for construction waste

Waste Type	Tonnes	Reuse		Recycle / Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Glass	96.8	0	0.0	85	82.3	15	14.5
Concrete, Bricks Tiles, Ceramics	548.8	30	164.6	65	356.7	5	27.4
Plasterboard	43.0	30	12.9	60	25.8	10	4.3
Asphalts	10.8	0	0.0	25	2.7	75	8.1
Metals	161.4	5	8.1	80	129.1	15	24.2
Slate	86.1	0	0.0	85	73.2	15	12.9
Timber	129.1	10	12.9	60	77.5	30	38.7
Total	**1076.1**		**198.5**		**747.4**		**130.2**

19.3.2 Construction Phase

During the construction phase, waste will be produced from surplus materials such as broken or off-cuts of timber, plasterboard, concrete, tiles, bricks, etc. Waste from packaging (cardboard, plastic, timber) and oversupply of materials may also be generated. The appointed Contractor will be required to ensure that oversupply of materials is kept to a minimum and opportunities for reuse of suitable materials is maximised.

There will be soil and stone excavated to facilitate site preparation for the construction of building and road foundations. The volume of material has been estimated by the project engineer (Barrett Mahony) to be c. 78,000m^3. It is envisaged that all of the excavated material apart from c. 7,000m^3 (which will be reused as fill) will be required to be removed off site. Material moved offsite will be taken for offsite reuse, recovery and/or disposal.

If any material requires removal from the site, it 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 19.2).

In order to establish the appropriate reuse, recovery and / or disposal route for the soils and stones if 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* (2019). Environmental soil analysis will be carried out prior to removal of the material 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 19.2). 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 19.2.

Table 19.2: Predicted on and off-site reuse, recycle and disposal rates for construction waste

Waste Type	Tonnes	Reuse		Recycle / Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Mixed C&D	1931.3	10	193.1	80	1545.0	10	193.1
Timber	1638.7	40	655.5	55	901.3	5	81.9
Plasterboard	585.2	30	175.6	60	351.1	10	58.5
Metals	468.2	5	23.4	90	421.4	5	23.4
Concrete	351.1	30	105.3	65	228.2	5	17.6
Other	877.9	20	175.6	60	526.7	20	175.6
Total	**5852.4**		**1328.5**		**3973.8**		**550.1**

19.3.3 Operational Phase

As noted in Section 19.1, an OWMP has been prepared for the proposed Development and is included as Appendix 19.2. The OWMP provides a strategy for segregation (at source), storage and collection of all wastes generated within the building 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, plastic bottles, textiles, waste cooking oil, furniture, medical items and abandoned bicycles.

The total estimated waste generation for the proposed Development for the main waste types, based on the AWN waste generation model (WGM), is presented in Table 19.3, 19.4, 19.5, 19.6 & 19.7 below, and is based on the uses and areas as advised by the Project Architects.

Table 19.3 Estimated waste generation for the proposed development for the main waste types

Waste type	Waste Volume (m^3/week)			
	Residential Duplex/House 2 - Bed (Individual)	Residential Duplex/House 3 - Bed (Individual)	Assisted Living 5 - Bed - Block 2 (Combined)	Residential Block 2 (Combined)
Organic Waste	0.02	0.02	0.06	1.49
DMR	0.12	0.14	0.44	10.56
Glass	<0.00	<0.00	0.01	0.29
MNR	0.06	0.07	0.21	5.55
Total	**0.20**	**0.23**	**0.72**	**17.90**

Table 19.4 Estimated waste generation for the proposed development for the main waste types

Waste type	Waste Volume (m^3/week)			
	Residential Block 3 (Combined)	Residential Block 4 (Combined)	Residential Block 5 (Combined)	Residential Block 6 (Combined)
Organic Waste	2.42	1.42	1.67	0.55
DMR	16.54	10.05	11.81	3.87
Glass	0.47	0.27	0.32	0.11
MNR	9.62	5.28	6.21	2.03
Total	**29.05**	**17.02**	**20.00**	**6.56**

Table 19.5 Estimated waste generation for the proposed development for the main waste types

Waste type	Waste Volume (m^3/week)			
	Residential Block 7 (Combined)	Residential Duplex Block 8 (Combined)	Residential Duplex Block 9 (Combined)	Residential Block 10 (Combined)
Organic Waste	3.28	0.45	0.31	2.57

DMR	23.28	3.21	2.16	18.21
Glass	0.64	0.09	0.06	0.50
MNR	12.24	1.69	1.14	9.57
Total	**39.44**	**5.44**	**3.66**	**30.85**

Table 19.6 Estimated waste generation for the proposed development for the main waste types

Waste type	Waste Volume (m^3/week)			
	Medical Unit (Block 2) (Individual)	Retail / Restaurant (Block 3) (Combined)	Community Centre Facility (Block 6) (Individual)	Retail (Block 7) (Combined)
Organic Waste	0.03	0.31	0.30	0.26
DMR	0.69	2.91	1.88	5.15
Glass	0.02	0.06	0.20	0.14
MNR	0.30	1.66	2.30	2.15
Confidential Paper	0.28	-	-	-
Medical Waste	0.63	-	-	-
Total	**1.93**	**4.94**	**4.78**	**7.70**

Table 19.7 Estimated waste generation for the proposed development for the main waste types

Waste type	Waste Volume (m^3/week)	
	Childcare Unit /Management Suite (Block 10) (Combined)	Cafe (Gate Lodge) (Individual)
Organic Waste	0.07	0.08
DMR	2.71	0.18
Glass	0.01	0.01
MNR	1.48	0.24
Total	**4.27**	**0.51**

The residents and tenants will be required to provide and maintain appropriate waste receptacles within their units to facilitate segregation at source of these waste types. The location of the bins within the units will be at the discretion of the residents. As required, the residents and tenants will need to bring these segregated wastes from their units to their allocated Waste Storage Areas (WSAs). WSAs can be viewed on the plans submitted with the application under separate cover.

The OWMP seeks to ensure the development contributes to the targets outlined in the NWMPCE, *Waste Action Plan for a Circular Economy – Waste Management Policy in Ireland* and the DLRCC waste Bye-laws.

19.4 Potential Impacts of the Proposed Project

19.4.1 Construction Phase

The proposed Development will generate a range of non-hazardous and hazardous waste materials during site excavation and construction (see appendix 19.1 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 in the construction site compound or adjacent to it, on-site pending collection by a waste contractor. If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues at the Development Site and in adjacent areas. The indirect effect of litter issues is the presence of vermin in areas affected. In the absence of mitigation, the effect on the local and regional environment is likely to be **indirect**, **short-term, significant** and **negative**.

The use of non-permitted waste contractors or unauthorised waste facilities could give rise to inappropriate management of waste, resulting in indirect negative environmental impacts, including pollution. It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices. In the absence of mitigation, the effect on the local and regional environment is likely to be **indirect long-term, significant** and **negative.**

Wastes arising will need to be taken to suitably registered / permitted / licenced waste facilities for processing and segregation, reuse, recycling, recovery, and / or disposal, as appropriate. There are numerous licensed waste facilities in the EMR which can accept hazardous and non-hazardous waste materials, and acceptance of waste from the Development Site would be in line with daily activities at these facilities. At present, there is sufficient capacity for the acceptance of the likely C&D waste arisings at facilities in the region. The majority of construction materials are either recyclable or recoverable. However, in the absence of mitigation, the effect on the local and regional environment is likely to be **indirect short-term, significant** and **negative**.

There is a quantity of topsoil and subsoil will need to be excavated to facilitate the proposed Development. A detailed review of the existing ground conditions on a regional, local site-specific scale are presented in Chapter 9. Excavated material that cannot be reused onsite will need to be removed off-site. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site. However, in the absence of mitigation, the effect on the local and regional environment is likely to be **indirect short-term, significant** and **negative**.

19.4.2 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 **indirect**, **long-term, significant** and **negative**.

The nature of the development means the generation of waste materials during the operational phase is unavoidable. Networks of waste collection, treatment, recovery and

disposal infrastructure are in place in the region to manage waste efficiently from this type of development. Waste which is not suitable for recycling is typically sent for energy recovery. There are also facilities in the region for segregation of municipal recyclables which is typically exported for conversion in recycled products (e.g. paper mills and glass recycling).

If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues at the development site and in adjacent areas. The knock-on effect of litter issues is the presence of vermin in affected areas. However, in the absence of mitigation, the effect on the local and regional environment is likely to be **Indirect, long-term, significant** and **negative**.

It is anticipated that Waste contractors will be required to service the proposed development on a scheduled basis to remove waste. The use of non-permitted waste contractors or unauthorised facilities could give rise to inappropriate management of waste and result in negative environmental impacts or pollution. It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices. However, in the absence of mitigation, the effect on the local and regional environment is likely to be **Indirect, long-term, significant** and **negative**.

19.5 Mitigation Measures

This section outlines the measures that will be employed in order to reduce the amount of waste produced, manage the wastes generated responsibly and handle the waste in such a manner as to minimise the effects on the environment.

The concept of the 'circular economy and 'waste hierarchy' are employed when considering all mitigation measures.

The 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. While the waste hierarchy states that the preferred option for waste management is prevention and minimisation of waste, followed by preparing for reuse and recycling / recovery, energy recovery (i.e. incineration) and, least favoured of all, disposal.

19.5.1 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 EPA 'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021) and is included as Appendix 19.1. The mitigation measures outlined in the RWMP will be implemented in full and form part of the mitigation strategy for the site. The mitigation measures presented in this RWMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the excavation and construction phases of the proposed development.

- Prior to commencement, the appointed Contractor(s) will be required to refine / update the RWMP (Appendix 19.1) in agreement with 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 implement the RWMP throughout the duration of the proposed excavation and construction phases.

WM_2:

A quantity of topsoil and sub soil will need to be excavated to facilitate the proposed development. The Development Engineers have estimated that the majority excavated material will need to be removed off-site. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site.

In addition, the following mitigation measures will be implemented:

WM_3:

- Building materials will be chosen to 'design out waste';

WM_4:

- On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling and recovery. The following waste types, at a minimum, will be segregated:
  - 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 Resource Manager will be appointed by the main Contractor(s) to ensure effective management of waste during the excavation and construction works;

WM_9:

- All construction staff will be provided with training regarding the waste management procedures;

WM_10:

- All waste leaving site will be reused, recycled or recovered, where possible, to avoid material designated for disposal;

WM_11:

- All waste leaving the site will be transported by suitably permitted contractors and taken to suitably registered, permitted or licenced facilities; 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 Regulation 27 (By-products), as amended, European Union (Waste Directive) Regulations 2011-2020. EPA approval will be obtained prior to moving material as a by-product.

These mitigation measures will ensure that the waste arising from the construction phase of the proposed development is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated Regulations and the Litter Pollution Act 1997 and the NWCPE. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will promote more sustainable consumption of resources.

19.5.2 Operational Phase

The following mitigation measures will be implemented during the operational phase of the proposed development:

WM_14:
All waste materials will be segregated into appropriate categories and will be temporarily stored in appropriate bins or other suitable receptacles in a designated, easily accessible areas of the site.

WM_15:
As previously stated, a project specific OWMP has been prepared and is included as Appendix 19.2. The mitigation measures outlined in the OWMP will be implemented in full and form part of the mitigation strategy for the site. Implementation of this OWMP will ensure a high level of recycling, reuse and recovery at the development. All recyclable materials will be segregated at source to reduce waste contractor costs and ensure maximum diversion of materials from landfill, thus achieving the targets set out in the NWMPCE , Waste Action Plan for a Circular Economy – Waste Management Policy in Ireland and the DLRCC waste bye-laws.

The Facilities Management Company / Residents and Tenants of the site during the operational phase 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.

In addition, the following mitigation measures will be implemented:

WM_16:

- On-site segregation of all waste materials into appropriate categories including (but not limited to):
    - Organic waste;
    - Dry Mixed Recyclables;
    - Mixed Non-Recyclable Waste;
    - Glass;
    - 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 Facilities Management Company / Residents and Tenants 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 Facilities Management Company / Residents and Tenants 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 Facilities Management Company / Residents and Tenants will ensure that all waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licensed facilities.

These mitigation measures will ensure the waste arising from the development is dealt with in compliance with the provisions of the *Waste Management Act 1996*, as amended, associated Regulations, the *Litter Pollution Act 1997*, *The NWMPCE* and the DLRCC waste bye-laws. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved.

19.6 Residual Impacts

The implementation of the mitigation measures outlined in Section 19.5 will ensure that targeted 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.

19.6.1 Construction Phase

A carefully planned approach to waste management as set out in Section 19.5.1 and adherence to the RWMP (which includes mitigation) (Appendix 19.1) during the construction phase will promote resource efficiency and waste minimisation. When the mitigation measures are implemented and a high rate of prevention reuse, recycling and recovery is achieved, the predicted impact of the construction phase on the environment will be **short-term, imperceptible** and **neutral.**

19.6.2 Operational Phase

During the operational phase, a structured approach to waste management as set out in Section 19.5.2 and adherence to the OWMP (which includes mitigation) (Appendix 19.2) will promote resource efficiency and waste minimisation. When the mitigation measures are implemented and a high rate of reuse, recycling and recovery is achieved, the predicted impact of the operational phase on the environment will be **long-term, imperceptible** and **neutral.**

19.7 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 to ensure effective implementation of the OWMP internally and by the nominated waste contractor(s).

Table 19.8: 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 MCC 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

19.7.1 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 mitigation measures in the RWMP specify the need for a Resource Manager to be appointed, who will have responsibility for monitoring the actual waste volumes being generated and ensuring that contractors and sub-contractors are segregating waste as required. Where targets are not being met, the Resource Manager will identify the reasons for this and work to resolve any issues. Recording of waste generation during the construction phase of the proposed development will enable better management of waste contractor requirements and identify trends. The data should be maintained to advise on future developments.

19.7.2 Operational Phase

During the operational phase, waste generation volumes will be monitored by the Facilities Management against the predicted waste volumes outlined in the OWMP. There may be opportunities to reduce the number of bins and equipment required in the shared WSAs, where estimates have been too conservative. Reductions in bin and equipment requirements will improve efficiency and reduce waste contractor costs.

19.8 Reinstatement

In the event that the Proposed Development is discontinued, there is not likely to be any significant impacts on waste management at the site.

The Proposed Development may be decommissioned at some stage in the future. At that time, a demolition or refurbishment plan will be formulated for the decommissioning phase of the Proposed Development to ensure no waste nuisance occurs at nearby sensitive receptors.

19.9 Interactions

19.9.1 Population and Human Health

The potential impacts on human beings are in relation to incorrect management of waste during construction and / or operation, which could result in littering and presence of vermin – with associated potential for negative impacts on human health and residential amenity. A carefully planned approach to waste management and adherence to the project specific RWMP and mitigation measures in Chapter 7 (Population & Human Health) and Chapter 19 (Material Assets – Waste Management), will ensure appropriate management of waste and avoid any negative impacts on the local population. The effects should be ***long-term, imperceptible*** **and** ***neutral****.*

19.9.2 Land, Soils, Geology and Hydrogeology

During the construction phase, excavated soil, stone, clay and made ground (c. 78,000m^3) will be generated from the excavations required to facilitate site levelling and construction of the new foundations. It is estimated that c. 71,000 m^3 of excavated material will need to be removed off-site. However, it is envisaged that c. 7,000 m^3 material will be reused on-site as fill. When material has to be taken off-site, it will be taken for reuse or recovery, where practical, with disposal as a last resort. Adherence to the mitigation measures in Chapter 9 (Land, Soils, Geology and Hydrogeology), Chapter 15 and the requirements of the RWMP (Appendix 19.1), will ensure the effect is ***long-term, imperceptible*** and ***neutral.***

19.9.3 Material Assets – Roads and Traffic

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 18 (Material Assets – Roads and traffic). Provided the mitigation measures detailed in Chapter 18 and Chapter 19 are adhered to, the predicted effects are ***short to long-term, imperceptible*** and ***neutral.***

19.10 Cumulative Impacts

19.10.1 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:

Table 19.3 Potential Overlapping Developments (Construction Phase)

Reg. Ref.	Location	Development Description	Status
ABP30943021	2.12 ha at Our Lady's Grove, Goatstown Road, Dublin 14	698 no. student bedspace accommodation and associated site works.	Committed (Permitted/Under Construction)
ABP31128721	c.0.9ha at No. 97A Highfield Park (D14P710), and No. 1 Frankfort Castle (D14 HY03), No. 2 Frankfort Castle (D14DE72) and Frankfort Lodge (D14C9P2), Old Frankfort, Dublin 14	115 no. apartments, creche and associated site works.	Committed (Permitted/Under Construction)
ABP31182621	Lands at Knockrabo, Mount Anville Road,, Goatstown, Dublin 14	227 no. apartments and associated site works.	Committed (Permitted/Under Construction)
ABP31013821	Mount Saint Mary's and Saint Joseph's, Dundrum Road, Dundrum, Dublin 14	Demolition of existing buildings on site and part of the granite wall along Dundrum Road, excluding Small Hall, construction of 231 no. apartments, childcare facility and associated site works.	Committed (Permitted/Under Construction)
ABP30768320	Green Acres Convent, Drumahill House and the Long Acre, Upper Kilmacud Road, Dundrum, Dublin 14	Provision of 54 no. additional apartments on previously permitted development of 253 no. apartments under ABP-304469-19, increase in childcare facility and associated site works.	Committed (Permitted/Under Construction)
D20A/0328	University College Dublin, Belfield, Dublin 4	Extension of car park to provide 239 no. spaces	Committed (Permitted/Under Construction)
TA0001	University College Dublin, Belfield, Dublin 4.	10 year permission for 512 student accommodation units (3006 no. bed spaces) including student facility centre, car parking and all associated site works.	Committed (Permitted/Under Construction)
ABP315883	'Dunelm', Rydalmount, Milltown Road, Dublin 6	Demolition of structures, construction of Build to Rent apartments comprising of 63 apartments in 2 blocks with all associated site works	Committed (Permitted/Under Construction)
ABP305261	Building 5, Dundrum Town Centre, Sandyford Road, Dundrum, Dublin 16	107 no. apartments, cafe and associated site works.	Committed (Permitted/Under Construction)
ABP300024	Lands at the former Paper Mills site, bounded by the River Dodder to the East, Clonskeagh Road to the West, Clonskeagh Bridge to the South West, Dublin 6	Increase in apartment units from 96 to 116 with increase in block heights from 3 to 4 storeys with 30 additional parking spaces & additional bicycle spaces & associated site works.	Committed (Permitted/Under Construction)
ABP311439	Site measuring 0.29ha, Bounded by Kilmacud Road Upper to the north, Drummartin Link Road to the west, and Hazelbrook Apartments to the east and south, Dublin 14	Demolition of existing disused agricultural shed structure and the construction of a residential block 3 to 6 storeys consisting of 52 dwelling units	Committed (Permitted/Under Construction) Site visit by JC - nearly complete but not yet occupied
ABP313048	9/14 and 11C, Milltown Road, Milltown, Dublin 6. The application site consists of the former Murphy and Gunn site (currently Autovision) and the former Saint Joseph's Junior Education Centre site.	Construction of 97 Build to Rent apartments	Committed (Permitted/Under Construction)
ABP312539	Cunningham House, Trinity Hall, Dartry, Dublin 6.	Demolition of existing building, construction of 358 no. student bedspace accommodation, 4 no. staff apartments and associated site works.	Committed (Permitted/Under Construction)
ABP312170	Marmalade Lane, Wyckham Avenue, Dundrum, Dublin 16.	531 no. Build to Rent apartments, creche and associated site works.	Committed (Permitted/Under Construction)

ABP309931	24,26 28, Fosters Avenue, Mount Merrion, Blackrock, Co Dublin	Demolition of existing buildings on site and construction of 72 no. apartments, communal open space areas, parking spaces, vehicular, pedestrian and servicing access from Foster's Avenue, ESB substation and switch room, and all associated site works	Committed (Permitted/Under Construction)
ABP31293522	0.79 ha at Sommerville House, Dundrum Road, Dublin 14	Demolition of all structures, construction of 111 no. apartments and associated site works	LIVE APPLICATION
ABP31323522	0.34 hectares comprising the car sales premises currently known as Vector Motors (formerly known as Victor Motors), Goatstown Road, Dublin 14, D14FD23	Demolition of existing building on site, construction of 221 no. student bedspaces and associated site works.	LIVE APPLICATION
ABP31322022	site 3.5335ha incorporating the old Dundrum Shopping Centre known as Main Dundrum Street Village Centre (D14K3T7)	Demolition of all existing buildings on site, construction of 881 no. apartments, creche and associated site works.	LIVE APPLICATION
ABP316470	Site of approx. 0.24 ha on lands at Frankfort Centre, Dundrum Road, Dublin 1	The construction of 64 no. apartment units in the form of a 5-6 storey apartment blocks, the provision of a ground floor retail/cafe unit, and Public Realm upgrades to Dundrum Road and all other associated site works above and below ground associated with the proposed development. An NIS has been submitted with the application.	LIVE APPLICATION

Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will mitigate against any potential cumulative effects associated with waste generation and waste management. As such the effect will be **short-term, not significant** and **neutral.**

19.10.2 Operational Phase

There are existing residential and commercial developments close by, along with the multiple permissions remaining in the area. All of the current and potential developments will generate similar waste types during their operational phases. Authorised waste contractors will be required to collect waste materials segregated, at a minimum, into recyclables, organic waste and non-recyclables. An increased density of development in the area is likely 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.**

19.11 '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. There would continue to be the same level operational waste generated from the site. There would, therefore, be a **neutral effect** on the environment in terms of waste.

The site is zoned for development, and it is likely that in the absence of this subject proposal that a development of a similar nature would be progressed on the site that accords with national and regional policies and therefore the likely significant effects would be similar to this proposal.

19.12 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.

While it is possible to initially select a licensed waste facility for soil disposal, there is potential to encounter contaminated material or material with naturally occurring variations in minerals and chemicals that necessitates sending it to a different suitably licensed facility. The sampling and testing carried out in the Site Investigation (SI) process provides spot samples, and further testing may be required during the excavation process, as the true condition of all excavated materials cannot be ascertained with certainty until this is undertaken.

There is a number of licensed, permitted and registered waste facilities in the Dún Laoghaire-Rathdown region, in the surrounding counties, the eastern midlands waste region and in Ireland and Northern Ireland. However, these sites may not be available for use when required or may be limited by the waste contractor selected to service the development in the appropriate phase. In addition, there is potential for more suitably placed waste facilities or recovery facilities to become operational in the future which may be more beneficial from an environmental perspective.

Licensed waste facilities have annual limitations on material that they can important as part of their license agreements. Because of this it would not make it possible to commit to a singular specific receiving facility as it is not available throughout the excavation phase. It would not be viable to cease a development and wait until a receiving facilities annual receiving quotas are reset. In a normal development waste facilities would switch between facilities with available capacity.

The ultimate selection of waste contractors and waste facilities would be subject to appropriate selection criteria proximity, competency, capacity, serviceability, and cost.

19.13 References

1. Waste Management Act 1996 as amended.
2. Environmental Protection Agency Act 1992 as amended.
3. Litter Pollution Act 1997 as amended.
4. Regional Waste Management Planning Offices, *The National Waste Management Plan for a Circular Economy 2024 - 2030 (2024).*

5. Department of Environment and Local Government (DoELG) *Waste Management – Changing Our Ways, A Policy Statement* (1998).
6. Forum for the Construction Industry – *Recycling of Construction and Demolition Waste.*
7. Department of Communications, Climate Action and Environment (DCCAE), *Waste Action Plan for the Circular Economy - Ireland's National Waste Policy 2020-2025* (Sept 2020).
8. DCCAE, *Whole of Government Circular Economy Strategy 2022-2023 'Living More, Using Less*' (2021).
9. Circular Economy and Miscellaneous Provisions Act 2022.
10. Environmental Protection Agency (EPA) *'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021).*
11. Department of Environment, Heritage and Local Government, *Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects* (2006).
12. FÁS and the Construction Industry Federation (CIF), *Construction and Demolition Waste Management – a handbook for Contractors and* site *Managers* (2002).
13. *Dun Laoghaire-Rathdown County Council (DLRCC), Dún Laoghaire-Rathdown County Council Development Plan 2022 – 2028.*
14. DLRCC, Dún Laoghaire Rathdown County Council Segregation, Storage and Presentation of Household and Commercial Waste) Bye-laws (2019).
15. DLRCC, Guidance Notes for Waste Management Planning for Residential and Commercial Developments (2022).
16. DLRCC, *Guidance Notes for Environmental Design and Management of Construction Projects* (August 2022).
17. Planning and Development Act 2000 (S.I. No. 30 of 2000) as amended.
18. EPA, *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* (2018).
19. European Waste Catalogue - Council Decision 94/3/EC (as per Council Directive 75/442/EC).
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21. Council Decision 2003/33/EC, establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC.
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23. 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).
24. DoHLGH, Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities (2023).
25. Department of Transport, Tourism and Sport and Department of Housing, Planning and Local Government, *Design Manual for Urban Roads and Streets* (2019)
26. Health Service Executive (HSE), *Waste Policy* (2016)
27. Health Service Executive (HSE), *Waste Management Awareness Handbook* (2011)
28. HSE and Department of Health and Children (DOHC), *Healthcare Risk Waste Management: Segregation, Packaging and Storage Guidelines for Healthcare Risk Waste, 4th Edition* (2010)
29. Environmental Protection Agency (EPA) Green Healthcare, best practice guides for the reduction of hospital waste:
    - EPA Green Healthcare, *Best practice Guide on Healthcare Risk Waste Reduction*

- EPA Green Healthcare, *Best Practice Guide on healthcare Risk Waste Reduction in Theatres*
- EPA Green Healthcare, Best Practice Guide Maximise Recycling And Reduce Landfill Waste

20.0 MATERIAL ASSETS – BUILT SERVICES

20.1 Introduction

This chapter of the EIAR assesses the impacts of a proposed development, primarily residential, at the lands at the Central Mental Hospital, Dundrum Road, Dundrum, Dublin 14, 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 will be read in conjunction with the architectural and engineering drawings submitted as part of this planning application.

This chapter has been prepared by John Considine, BE, MIStructE, MIEI, CEng, FConsEIM, Chartered Engineer of Barrett Mahony Consulting Engineers. John is a Chartered Civil/Structural Engineer and a Fellow of the Association of Consulting Engineers of Ireland. He has over 35 years' experience as a consulting engineer covering civil engineering design and structural engineering design, principally in Ireland & the UK where he has been involved in many high-profile projects. He has been involved in the preparation of EIAR documents for over ten years and is particularly familiar with the area in and around Dublin where many of his projects are located.

Christina Fox, BEng (Hons) MSc CEng MIEI of Barrett Mahony Consulting Engineers (BMCE) also inputted into the chapter. Christina is a Chartered Engineer with Engineers Ireland and has been practicing as a consulting engineer for over eleven years. Christina holds an undergraduate degree in Civil Engineering and a master's degree in Structural and Geotechnical Engineering. Her experience includes civil and structural engineering design on a wide range of projects across Ireland, UK, EU, Norway and Africa.

Richard O'Farrell, BEng, MCIBSE, Founder and Managing Director of Engineering Design Consultants Limited has contributed the outline of the available MEP utilities on the site and has detailed all identified risks associated with these services. Richard graduated with a Bachelor of Electrical Engineering in 1997 and has over 25 years of experience within in both the contracting and consultancy sides of the construction industry across both Ireland and the UK. Richard's experience of the utilities is second to none having completed a range of projects across the span of his career.

Figure 20.1: Site Location

20.2 Methodology

The assessment of the potential impact of the proposed development on the material assets 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 2022), EIA Directive, Advice Notes on Current Practice (in preparation of Environmental Impact Statements) (EPA 2015), 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 Barrett Mahony Consulting Engineers
- ECFRAMS Flood Mapping from OPW
- EPA online maps and databases
- Topographical Survey
- Úisce Éireann and DLRCC record drawings
- ESB record drawings

- BGE record drawings
- EIR record drawings
- Virgin Media record drawings

Drainage (surface and foul) and water supply in the development is designed in accordance with the requirements of Dun 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).

20.3 Baseline Environment

20.3.1 General

The subject site is c9.6 ha with an additional 0.1 ha of works area on the Dundrum Road. It is the site of the former Central Mental Hospital. There are other ancillary buildings on the site which are proposed to be demolished as part of the works, these include a swimming pool/sports hall, 2-storey red-brick building and temporary structures including portacabins.

The site is bounded on all sides by a boundary wall. Vehicular access to the site is through existing gates off the Dundrum Road at the Northwest corner.

There is considerable variation in ground levels across the site. In broad terms the main part of the site slopes down gradually from the southwest corner towards the northeast corner, from +45.21m OD down to +39.76m OD. The western portion of the site slopes down towards the Dundrum Road entrance at +38.44m OD. These low points are the furthest locations from the high topography in the south corner at a distance of 410m and 430m away respectively. Please refer to Figure 20.2 which is a summarised topographical survey.

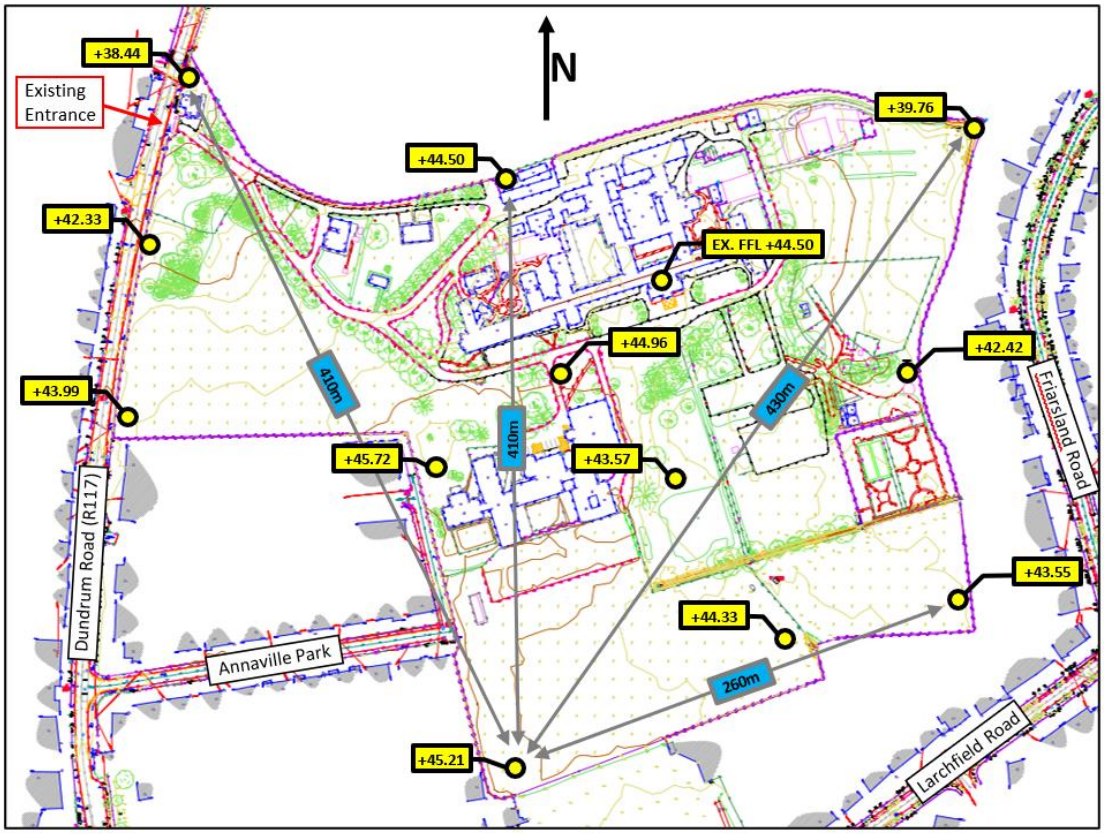

Figure 20.2: Summary of the Existing Site Topography Superimposed on Topographical Survey Drawing (Ordnance Datum Levels).

20.3.2 Foul Water Drainage

The foul drainage from the existing buildings on site drains to a combined drainage system on site which discharges to the Ø300mm combined buried sewer on the Dundrum Road. The combined sewer drains in a northerly direction towards the Dodder Valley Sewer System.

20.3.3 Potable Water Supply

The existing 9-inch public watermain in Dundrum Road was recently upgraded by Úisce Éireann to a 355mm diameter HDPE main (this upgrade has not been picked up yet on UE mapping). The existing buildings on site are serviced from this upgraded main with the connection to the public main located at the existing entrance.

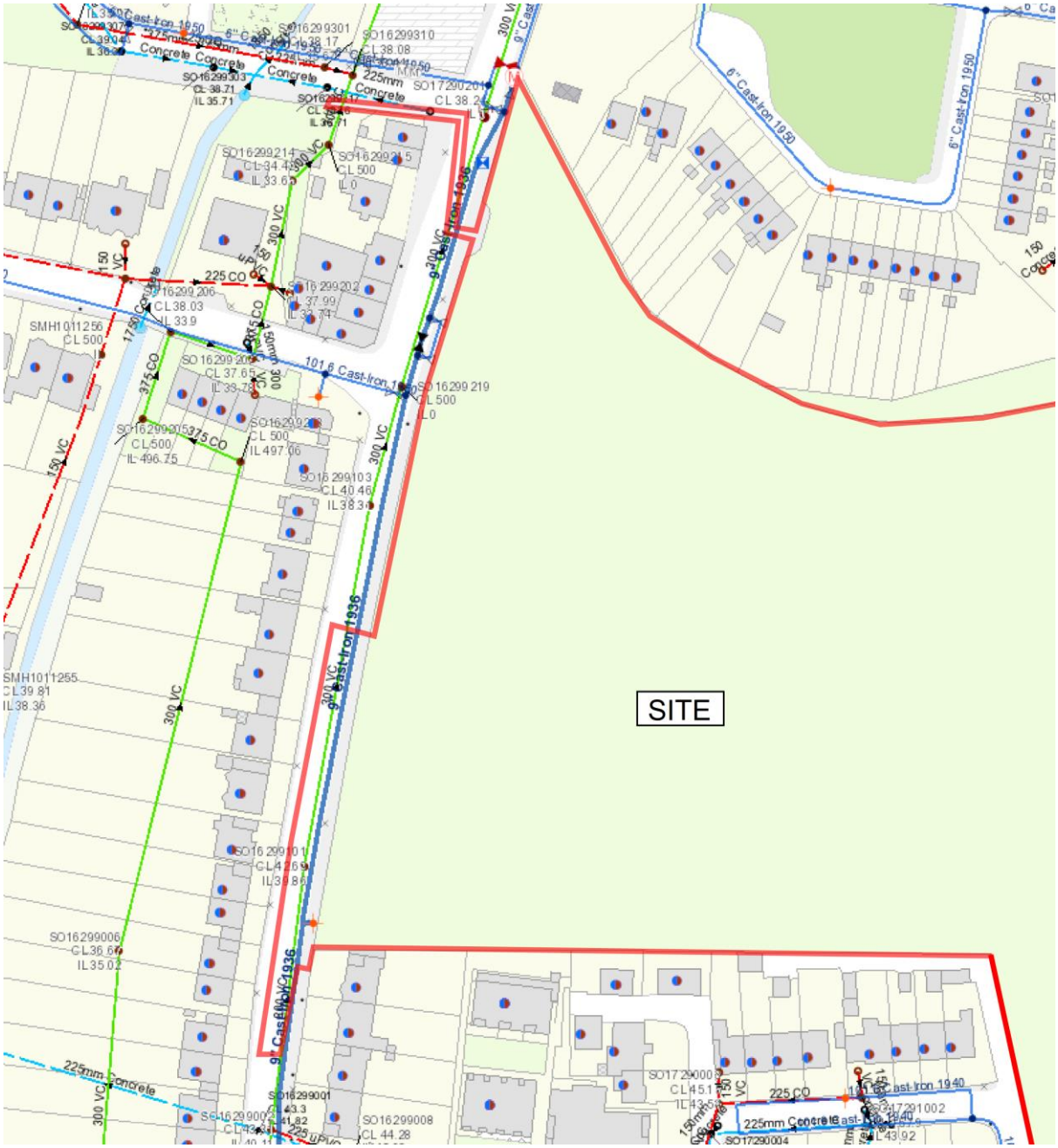

Figure 20.3: Úisce Éireann existing services map extract (western side of site).

20.3.4 Natural Gas

The site is served by a 250mm main entering Northwest on the site per diagram below. The pipe, at 25mBar low-pressure enters at the northwest and extends to the Central Mental Hospital. Refer to Figure 20.4. There is an existing pressure reducing station within the site and the existing gas lines feed the hospital and swimming pool building.

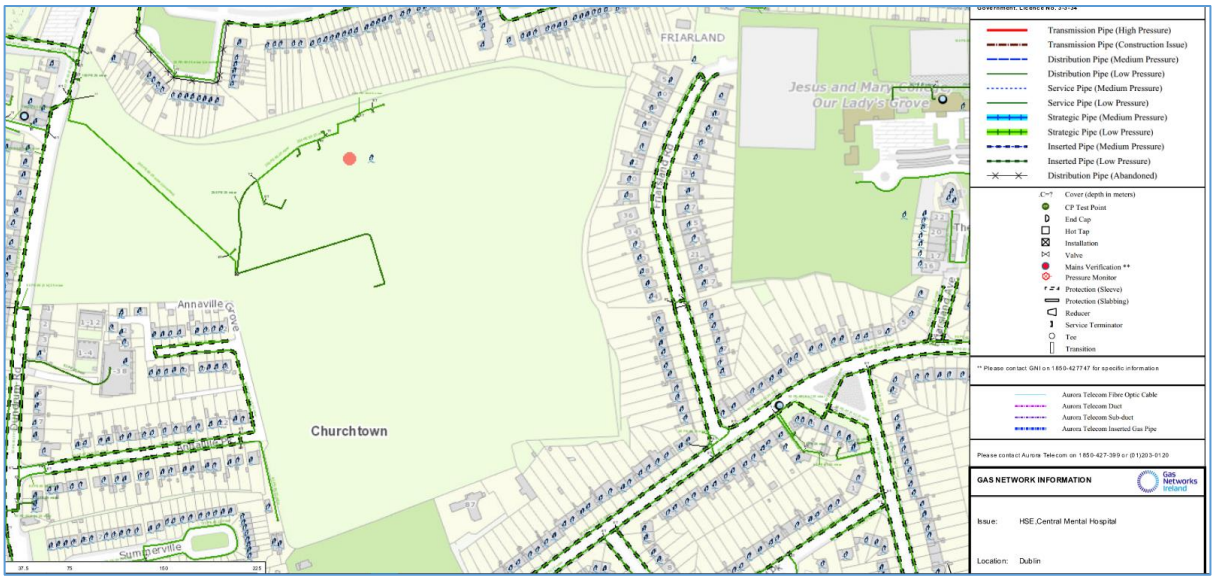

Figure 20.4: Drawing of the existing gas mains.

20.3.5 Electricity

The existing site consists of 2 ESBN supplies fed from 2 separate substations located on Larchfield Road and opposite St. Columbanus Road.

Connection 1 is rated at 10KV/20KV/400V/230V and consists of an overhead line terminating at the end of Larchfield Road South of the site. Connection 1 is tapped from the overhead line and is installed underground and terminates South of the site.

Connection 2 extends from the substation opposite St. Columbanus Road and terminates within the Central Mental Hospital grounds North of the main building. Connection 2 is rated at 10KV/20KV/400V/230V.

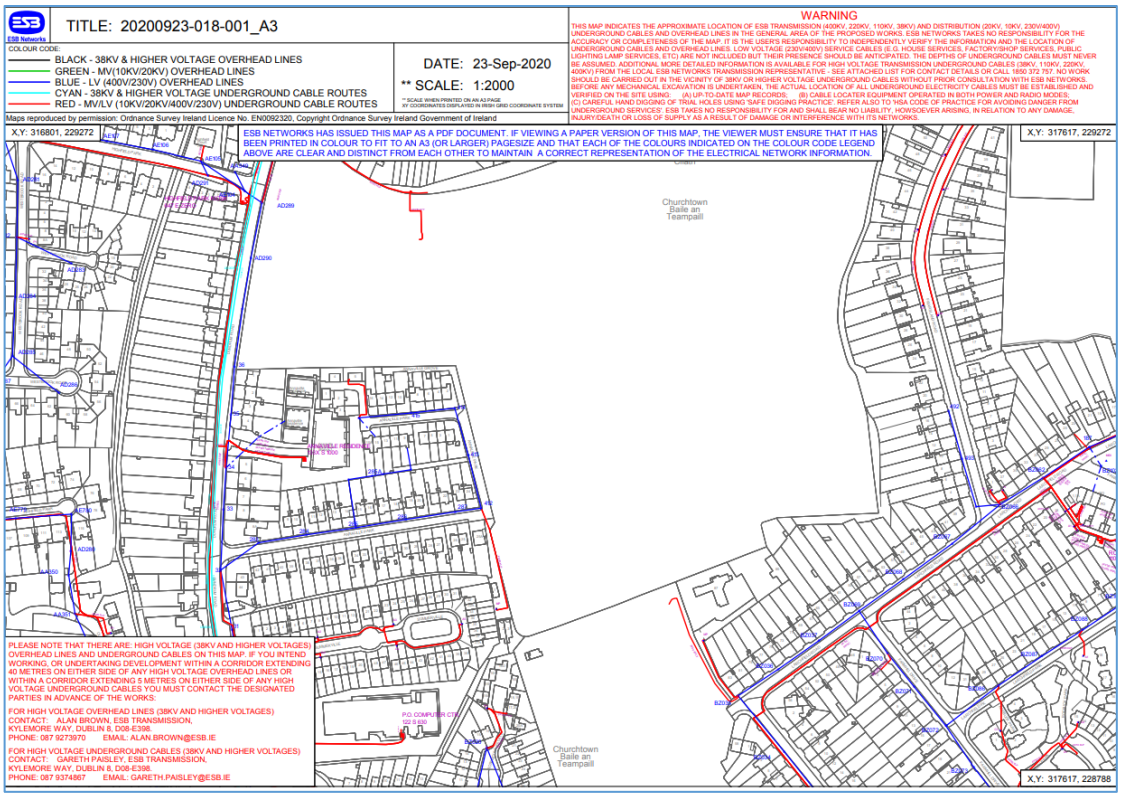

Figure 20.5: Drawing of the existing electrical infrastructure.

20.3.6 Telecommunications

The Central Mental Hospital is currently fed from the EIR network. The EIR network enters the site from the Dundrum Road. Refer to Figure 20.6.

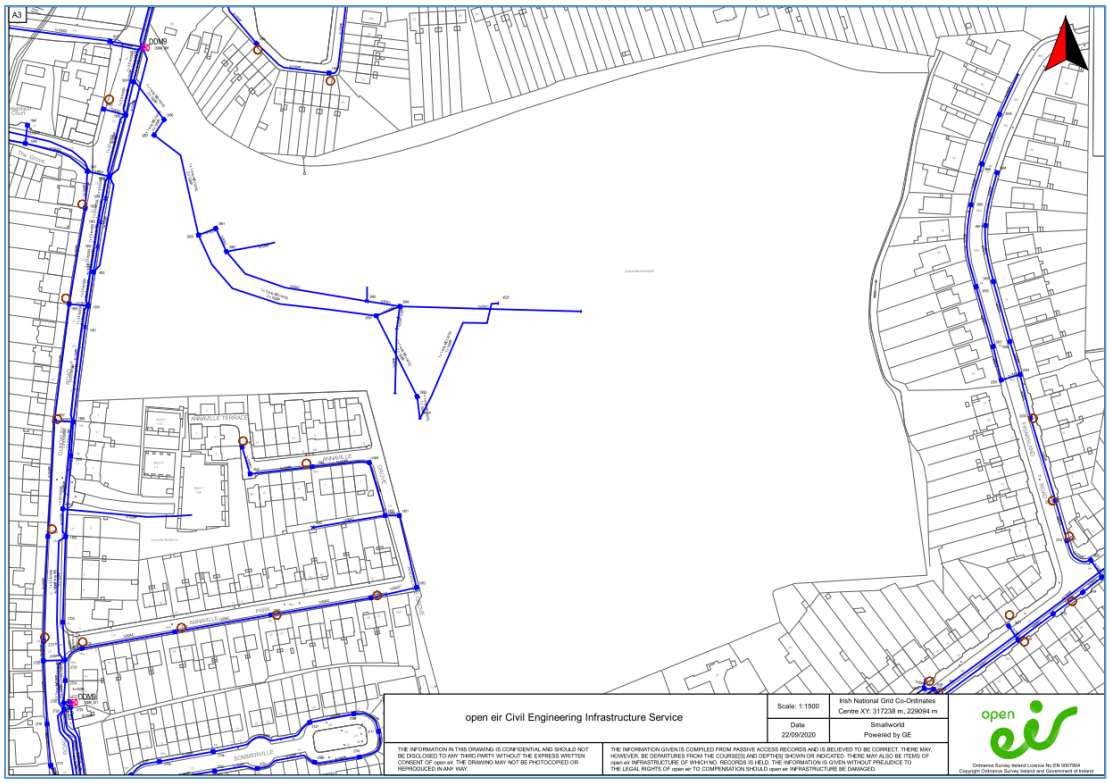

Figure 20.6: Drawing of the existing EIR network.

Virgin Media, although not entering the site currently, is also currently available in the area with ample coverage around the site. A Virgin Media network extends around the perimeter wall adjacent to Dundrum Road. Refer to Figure 20.7.

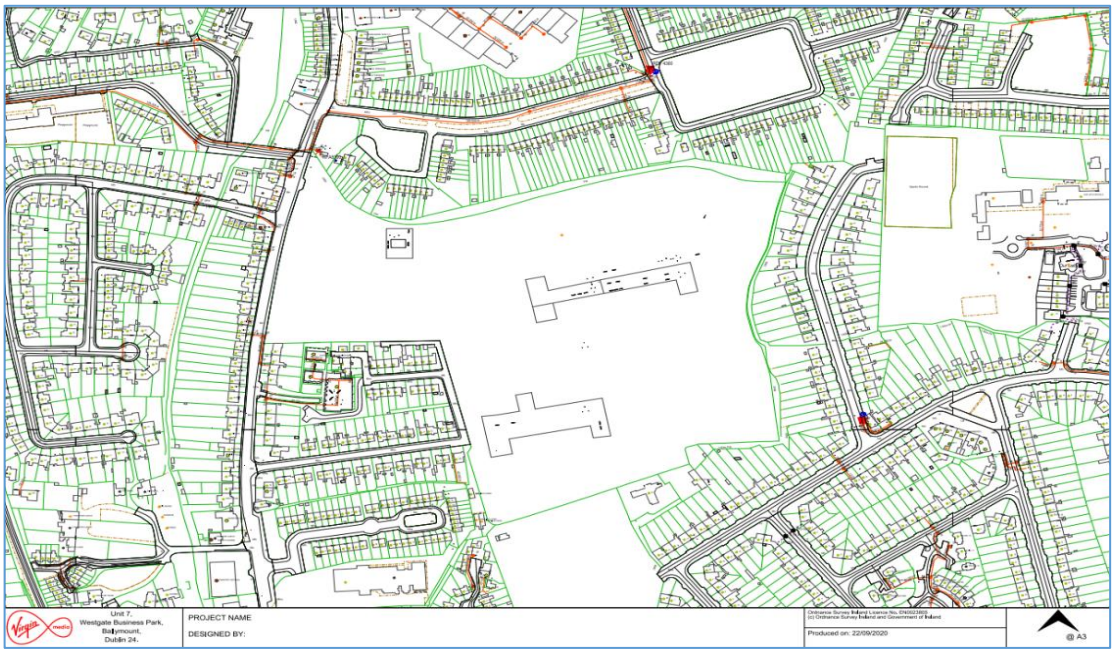

Figure 20.7: Drawing of the existing Virgin network.

20.4 Characteristics of the Proposed Development

20.4.1 Gas

To inform the proposed MEP utility requirements of the scheme some fundamental design principles were formed for the scheme. For example, air source heat pumps to supply the apartment blocks via centralised plant solutions. This then limits the requirement for natural gas to just restaurants, and similar commercial type uses.

The new development will primarily require electrical driven heat pumps and air source heat pumps, so the gas load is anticipated to be limited to commercial facilities. The new gas load is forecasted to be in the order of 3MW and following discussions with BGE is not anticipated to be a concern. If the load proves challenging at a later date in design development, there is a larger 315mm gas pipe available. The gas infrastructure in generally good in this area.

20.4.2 Electricity

The new development will require a new ESB infrastructure that will feed multiple substations around the site. The substation requirement has been assessed and allowed for within the architectural layouts. The final design details to be clarified by the ESB post planning.

ESB conducted a capacity study and released their findings in April 2021. To facilitate the development, ESB confirmed that a new High Voltage supply is required. The LDA are currently working through the most effective solution with the ESB and will continue to discuss proposals with them following consent of planning at this location.

All new substations will require unobstructed 24/7 access for the ESB in line with their guidelines. A formalised application process to the ESB will be required post planning once the planning process is concluded.

20.4.3 Telecommunications

The new development will consist of approximately 9 Comms rooms – to be finalised during detailed internal design. Each apartment block and commercial unit will have individual comms rooms to facilitate telecommunications. The new development will consist of separate underground networks connecting to all new apartment blocks and commercial premises.

It is important to note that two alternative suppliers are available to the end tenants/users for broadband and telecoms services. This infrastructure will ensure that the LDA can provide current and next generation broadband to each home.

20.4.4 Foul Water Drainage

The proposed foul drainage system will be designed to take discharges from the new residential units & other proposed limited non-residential uses on site – creche, retail units, community centre, medical centre, a restaurant & a café. Drainage from any kitchen/canteen facilities will discharge through a grease separator designed in accordance with IS EN 1825 Part 1 and Part 2 and to Uisce Éireann requirements. The foul system will connect to the Uisce Éireann network at the existing 300mm combined sewer in the Dundrum Road.

It is calculated that the proposed development will have a total hydraulic loading of 439m^3 per day of foul effluent generated during the operational phase of the development. This equates to an average flow of 5.085 litres/second (over a 24-hour period) and a peak flow of 22.88 litres/second.

A Pre-connection Enquiry application was submitted to Uisce Éireann to confirm capacity in the receiving network and a Confirmation of Feasibility letter was obtained on the 26th of March 2024 CDS number CDS24000356. The letter included site specific comments and states that the UE receiving system is adequate to take flows from the development subject to the following (taken from the letter with numbers added by BM for ease of reference):

i. *The Developer will be required to implement wastewater discharge management to limit the foul flows from the Development to 3DWF. The exact pump flow rate will be agreed at a connection application stage.*
ii. *Current storm water discharge from the Site (approx. 3900sqm of hard standing area) must be removed from the combined network and separate storm and foul water connection services to be provided for the Development. The storm water must be discharged only into the existing storm water network that is not connected to an Uisce Éireann network. Further information, verified by surveys, is to be provided at a connection application stage and before any existing infrastructure is demolished, regarding the current storm connection.*
iii. *Proposed basement carparks must be designed such that surface water from the Site and/or surrounding areas cannot flow down to the carparks. Wastewater from the carparks (contaminated water generated from run off from cars/tyres) must be pumped to ground level to discharge by gravity to the Uisce Éireann Network via a petrol interceptor.*

Item i is addressed by the provision of a new controlled flow wastewater pumping station on site prior to discharge to the combined sewer. Refer to BM drawings nr C11220 and C11221 for details.
Item ii is addressed by the provision of a fully separate surface water drainage system on site which does not discharge to UÉ wastewater or combined sewers.
Item iii will be complied with i.e. petrol interceptors will be provided for basement car parks.

<u>Residential</u>

Dry Weather Flow (Daily)	= (Population)(Consumption/Capita) + (Infiltration)
Number of Residential Units	= 934
Population Estimate	= 934 x 2.7 = 2,522 persons
Consumption/Capita	= 150 litres / person / day
Infiltration	= 10% (as per App C Section 1.2.4 of CoP for WW Infrastructure)
Average Flow (DWF)	= (934 x 2.7 x 150 x 1.1) = 416,097litres / day = 4.816 litres/second
Peak Flow	= (Average Flow) × (4.5) = 4.816 x 4.5 = 21.67 litres/second

<u>Retail</u>
Staff Occupancy = 65
DWF = 50 l/head/day
Daily Flow = 18 x 50 x 1.1 = 3,590 l/day

Average Flow = 3,590 / (60x60x24) = 0.042l/s
Peak Flow = Avg. Flow x 4.5 = 0.042 x 4.5 = 0.187l/s

Community Centre
Occupancy = 150
DWF = 40 l/head/day
Daily Flow = 150 x 40 x 1.1 = 6,600 l/day
Average Flow = 6,600 / (60x60x24) = 0.076l/s
Peak Flow = Avg. Flow x 4.5 = 0.076 x 4.5 = 0.344l/s

Medical Centre
Occupancy = 24
DWF = 50 l/head/day
Daily Flow = 24 x 50 x 1.1 = 1,329 l/day
Average Flow = 1,329 / (60x60x24) = 0.015l/s
Peak Flow = Avg. Flow x 4.5 = 0.015 x 4.5 = 0.069l/s

Restaurant - Staff
Occupancy = 19
DWF = 50 l/head/day
Daily Flow = 19 x 50 x 1.1 = 1,069 l/day
Average Flow = 1,069 / (60x60x24) = 0.012l/s
Peak Flow = Avg. Flow x 4.5 = 0.012 x 4.5 = 0.056l/s

Restaurant - Diners
Occupancy = 84
DWF = 30 l/head/day
Daily Flow = 84 x 30 x 1.1 = 2,520 l/day
Average Flow = 2,520 / (60x60x24) = 0.032l/s
Peak Flow = Avg. Flow x 4.5 = 0.032 x 4.5 = 0.144l/s

Creche
Occupancy = 144
DWF = 50 l/head/day
Daily Flow = 144 x 50 x 1.1 = 7,920 l/day
Average Flow = 7,920 / (60x60x24) = 0.092l/s
Peak Flow = Avg. Flow x 4.5 = 0.092 x 4.5 = 0.413l/s

Combined Peak flow = 22.884 l/s
Total Average Flow = 5.085 l/s

Foul Network Design

The proposed pipe network has been designed in accordance with the relevant requirements of the Uisce Éireann Code of Practice for Wastewater Infrastructure.

The proposed foul drainage network comprises of a series of 150mm, 225mm and 375mm diameter pipes, designed for a minimum velocity of 0.75m/s (self-cleansing) and maximum velocity of 3.0m/s. A pipe friction coefficient of 1.5mm has been assumed. Each residential

block is serviced by 225mm diameter (SN8 uPVC) branch connections in accordance with the Uisce Éireann Code of Practice for Wastewater Infrastructure. It is noted the proposed foul outfall pipe is 300mm diameter pipe at 1:100 minimum fall which has a capacity of approximately 100 l/s and is deemed adequate for the peak foul flows anticipated.

20.4.5 Water Supply

The proposed development will be connected to the new 355mm diameter public watermain in the Dundrum Road. A stub connection has been left out from this main to receive the connection from the site. Refer to the BM Watermain layout drawing C-11040.

The proposed watermain system through the site will vary between 250mm diameter, 200 diameter, 150mm diameter and 100mm diameter – as shown on Barrett Mahony drawing C-11040.

The peak flow demand during the operational phase of the development will be 28.99 litres/second, equivalent to an average daily demand of 501m^3. The installation of low flow fittings for the development will reduce the demand on the existing water supply network.

A Pre-connection Enquiry application was submitted to Uisce Éireann to confirm capacity in the receiving network and a Confirmation of Feasibility letter was obtained on the 26th of March 2024 CDS number CDS24000356..

All proposed water mains will be HPPE PE100 SDR17 in accordance with Uisce Éireann Standards. Own-door apartments will have their own service connections and boundary boxes. All apartment blocks will each have a dedicated connection with a bulkmeter in accordance with Uisce Éireann requirements. Non-residential uses – creche, retail units, community centre, medical centre, restaurant & café will each have a dedicated metered service pipe connection.

The proposed water main layout is arranged such that all buildings are a maximum of 46m max, 6m minimum from a hydrant in accordance with the Department of the Environment's Building Regulations "Technical Guidance Document Part B Fire Safety". Hydrants are to be installed in accordance with Uisce Éireann's Code of Practice and Standard Details. Final positions of hydrants will be agreed as part of the Fire Safety Certificate requirements.

Sluice valves are provided at all junctions and appropriate locations to facilitate isolation of the system. Air valve at high points and scour valves at low points are also provided. 24-hour water storage will be provided in each unit or in each apartment block in accordance with the requirements of Uisce Éireann's Code of Practice.

<u>Residential</u>

Average Daily Demand	= (Population)(Consumption/Capita)
Number of Residential Units	= 934
Population Estimate	= 934 x 2.7 = 2,522 persons
Consumption/Capita	= 150 litres / person / day
Average Daily Demand	= 2,522 x 150
	= 378,270 litres/day
Average Day/Peak Week Demand	= (Average Daily Demand) x 1.25

	= 378,270 litres/day
	= 5.473 litres/second
Peak Demand	= (Average Day/Peak Week Demand) x 5
	= 27.36 litres/second

Retail
Occupancy = 65
Demand = 50 l/head/day
Daily Demand = 65 x 50 = 3,264 l/day
Average Demand = 3,264 / (60x60x24) x 1.25 = 0.047l/s
Peak Demand = Avg. Demand x 5 = 0.047 x 5 = 0.236l/s

Community Centre
Occupancy = 150
Demand = 50 l/head/day
Daily Demand = 150 x 50 = 7,500 l/day
Average Demand = 7,500 / (60x60x24) x 1.25 = 0.109l/s
Peak Demand = Avg. Demand x 5 = 0.109 x 5 = 0.543l/s

Medical Centre
Occupancy = 24
Demand = 50 l/head/day
Daily Demand = 24 x 50 = 1,208 l/day
Average Demand = 1,208 / (60x60x24) = 0.014l/s
Peak Demand = Avg. Demand x 5 = 0.047 x 5 = 0.070l/s

Restaurant - Staff
Occupancy = 19
Demand = 50 l/head/day
Daily Demand = 24 x 50 = 972 l/day
Average Demand = 972 / (60x60x24) x 1.25 = 0.014l/s
Peak Demand = Avg. Demand x 5 = 0.047 x 5 = 0.070l/s

Restaurant - Diners
Occupancy = 84
Demand = 30 l/head/day
Daily Demand = 84 x 30 = 2,520 l/day
Average Demand = 2,520 / (60x60x24) x 1.25 = 0.036l/s
Peak Demand = Avg. Demand x 5 = 0.036 x 5 = 0.182l/s

Creche
Occupancy = 144
Demand = 50 l/head/day
Daily Demand = 144 x 50 = 7,200 l/day
Average Demand = 7,200 / (60x60x24) x 1.25 = 0.104l/s
Peak Demand = Avg. Demand x 5 = 0.104 x 5 = 0.521l/s

Combined Peak flow	= 28.985 l/s
Total Average Flow	= 5.797 l/s

20.5 Potential Impacts of the Proposed Project

20.5.1 Construction Phase

20.5.1.1 Direct

Accidental spills of harmful substances such as petrol/diesel or oil during the delivery and storage of harmful substances or by leakages from construction machinery. Potential for building materials or silts to be washed into the surface water system, causing blockages and pollution.

During the connection of new mains to existing mains on site there is a small risk that contamination of the existing supply may occur. The potential impact on the local public water supply network would be short term and significant.

During the connection of services, there could be short term outages in the area. These impacts would be short term and significant.

20.5.1.2 Indirect

There is not anticipated to be any indirect affects to the built assets during the construction phase.

20.5.1.3 Worst Case Scenario

The worst-case scenario is that flooding occurs on-site and in the surrounding area due to this development. On-site measures are to be provided during construction as outlined in this chapter and the water chapter, to ensure such flooding does not occur.

20.5.2 Operational Phase

20.5.2.1 Direct

Surface Water Drainage

There will be an impact on the surface water in the area due to the new development. However, the surface water system will ensure the impact from the operational phase on surface water will be minimal and constitute a significant improvement from existing conditions.

The provision of SuDS measures in the development will ensure that the total run-off rate will be no greater than the estimated greenfield run-off rate. Surface water run-off will also improve in quality due to these measures.

Given the proposed residential usage, there is very little risk of accidental spillages resulting in water quality issues during the operational stage.

Wastewater Drainage Network

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 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 sewer network will be permanent and not significant.

There exists a minor risk associated with the possibility of leakage from damaged foul sewers and drains within the development site. Any foul water leakage could result in minor contamination of groundwater in the area. The current foul water drainage system that is on site will need to be replaced. Placing a new system on site reduces the overall risk of leakage from damaged sewers.

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.

Water Supply Network

The new development will lead to an increase in the water supply demand on the public water supply network. Uisce Éireann has confirmed that there is capacity in the system to take additional demand. An upgrade to the existing public watermain on the Dundrum Road has been completed to facilitate the connection from the site. Any impact from the increased water demand on the existing water supply network will be permanent and not significant. There is a small likelihood or accidental damage occurring to the water supply system during the operational phase of the development.

Natural Gas Supply

As there is very small requirement for Gas this will not impact the site. The impact is negligible and will be less than or similar to existing usage.

Electrical Supply

The impact of the proposed development on the electricity supply is likely to be an increase in demand on the existing supply.

The LDA have engaged with the ESB and they have advised that there will be capacity following a HT upgrade to facilitate the project.

The potential impact of the proposed development on the electricity network is likely to be neutral.

Telecommunications

EIR & Virgin Duct networks are to be extended along roadway to service the development. The potential impact of the proposed development on the EIR/Virgin networks is likely to be neutral.

20.5.2.2 Indirect

When the development is in operational phase, there will be a decrease in surface water outflow from the development into the surrounding lands and soil, which will affect the existing pathways.

20.5.2.3 Worst Case Scenario

The worst-case scenario would be a failure of one of the systems on the site, which may cause flooding or pollutants to enter the surrounding environment and cause negative effects. There is a small risk of this occurring during the operational stage.

20.6 Mitigation Measures

There is no specific requirement for mitigation in the context of this chapter, however, the following construction measures are relevant to the installation of services on site.

20.6.1 Construction Phase.

BS_1: A method statement for all works to be carried out will be prepared by the contractor and agreed with the various service providers prior to commencement of works to outline what measures are to be taken to ensure there is no loss of service during the works or to ensure such losses are minimised when they are unavoidable.

BS_2: Dewatering measures will only be employed where necessary.

BS_3: If concrete mixing is carried out on site, the mixing plant will be sited in a designated area with an impervious surface.

BS_4: The existing surface drainage channel within the lands that serve adjacent lands will be retained for as long as possible.

BS_5: Construction methods used will comply with the noise and dust requirements as set out in the relevant EIAR chapters to reduce, as much as possible, dust and noise pollution

BS_6: Comprehensive traffic management procedures, including the provision of access to all roads, and access/egress points will be prepared and agreed with the DLRCC. These traffic

management measures will be implemented at times when traffic disruption may be experienced.

BS_7: Road sweeping and/or wheel wash facilities will be provided, as required.

BS_8: All oils/diesel stored on site for construction equipment will be located in appropriately bunded areas.

BS_9: Filters and silt traps will be used to prevent rain washing silts and other materials into the surface water network and creating blockages.

BS_10: All onsite sewers will be tested and surveyed prior to connection to the public sewer to prevent any possibility of ingress of ground water.

BS_11: All sewers will be inspected and where necessary sealed to ensure that uncontrolled ground water inflow does not occur.

BS_12: Any leakage from the foul sewer will be cordoned off and the contaminated effluent and soil collected and disposed by licensed contractors.

BS_13: The contractor will adhere to any specific requirements, required by the local authority when introducing a new watermain connection.

BS_14: Commissioning of the system to be carried out in accordance with the engineering specifications set out in the drawings and specifications document.

BS_15: Provision of Utilities will be carried out in accordance with the recommendations of the relevant statutory bodies (ESB, Gas Networks Ireland, Irish Water, EIR, Virgin, City and County Councils etc.).

BS_16: The watermain connection to the public system is to be in accordance with the Uisce Éireann requirements to avoid any contamination risk.

20.6.2 Operational Phase

BS_17: SuDS measures on site include green roofs, blue roofs, attenuation tanks/soakaway's, permeable paving and detention basins

BS_18: Dual & low flush toilets and water economy outlets will be used to reduce flows from the development and water demand.

BS_19: The site water main system will be metered as directed by Uisce Éireann to facilitate detection of leakage and the prevention of water loss.

20.7 Residual Impacts

Implementation of the mitigation measures and adherence to the Construction and Environmental Management Plan prepared for the project will ensure that any potential residual impacts will be short term and negligible.

20.8 Monitoring

20.8.1 Construction Phase

General monitoring during the Construction Phase of the development will consist of the following and be carried out by the contractors QA team:

- Normal quality control inspection of the works.
- Pressure testing and CCTV inspections of the foul sewers following completion of stages of the construction is recommended to ensure that the required construction standards are being maintained.
- Upon completion of the development, monitoring of the discharges from the development will be undertaken as required.

20.8.2 Operational Phase

Monitoring of the system will be undertaken by Uisce Éireann to ensure that the foul water and potable water systems are maintained.

20.9 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.

20.9.1 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.

20.9.2 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, small, 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. Following the implementation of mitigation measures outlined in Chapter 8 and Chapter 18, the predicted effects on biodiversity are short and long term, imperceptible, and neutral.

20.10 Cumulative Impacts

We understand that Uisce Éireann considered cumulative impacts in their network capacity assessment (foul drainage and water supply). Other service provides also considered network capacity. Surface water discharge from each site will be controlled to the greenfield run-off rate Q-Bar. Therefore, there will be no cumulative impact on the receiving environment (surface sewers and watercourse).

An online planning search was undertaken by Tom Phillips & Associates for current and recently permitted development applications within a 2km radius of the proposed site within the past year. These developments have been or will be assessed for their impacts on receiving systems as part of the planning application process. These projects are evaluated for cumulative effects in Table 20.1 below.

Table 20.1: Cumulative Effects of current and recently permitted developments

Reg. Ref.	Location	Development Description	Decision	Status	Likely Cumulative Effects
ABP30943021	2.12 ha at Our Lady's Grove, Goatstown Road, Dublin 14	698 no. student bedspace accommodation and associated site works.	GRANT PERMISSION	Committed (Permitted/Under Construction)	No cumulative effects foreseen. The project will not result in significant effects when combined with the proposed development.
ABP31128721	c.0.9ha at No. 97A Highfield Park (D14P710), and No. 1 Frankfort Castle (D14 HY03), No. 2 Frankfort Castle (D14DE72) and Frankfort Lodge (D14C9P2), Old Frankfort, Dublin 14	115 no. apartments, creche and associated site works.	GRANT PERMISSION	Committed (Permitted/Under Construction)	No cumulative effects foreseen. The project will not result in significant effects when combined with the proposed development.
ABP31182621	Lands at Knockrabo, Mount Anville Road, Goatstown, Dublin 14	227 no. apartments and associated site works.	GRANT PERMISSION	Committed (Permitted/Under Construction)	No cumulative effects foreseen. The project will not result in significant effects when combined with the proposed development.
ABP31013821	Mount Saint Mary's and Saint Joseph's, Dundrum Road, Dundrum, Dublin 14	Demolition of existing buildings on site and part of the granite wall along Dundrum Road, excluding Small Hall, construction of 231 no. apartments, childcare facility and associated site works.	GRANT PERMISSION	Committed (Permitted/Under Construction)	No cumulative effects foreseen. The project will not result in significant effects when combined with the proposed development.
ABP30768320	Green Acres Convent, Drumahill House and the Long Acre, Upper Kilmacud Road, Dundrum, Dublin 14	Provision of 54 no. additional apartments on previously permitted development of 253 no. apartments under ABP-304469-19, increase in childcare facility and associated site works.	GRANT PERMISSION	Committed (Permitted/Under Construction)	No cumulative effects foreseen. The project will not result in significant effects when combined with the proposed development.
ABP30446919	Greenacres, Longacre and Drumahill House, Upper Kilmacud Road, Dundrum, Dublin 14	253 no. apartments and associated works.	GRANT PERMISSION	Built & occupied	No cumulative effects foreseen. The project will not result in significant effects when combined with the proposed development.
ABP248265 D16A/0818	Green Acres Convent, Kilmacud Road Upper, Dublin 14.	Demolition of the former Green Acres Convent and the construction of 120 no. apartments in 2 blocks ranging in height from 2 to 5 storeys with all associated site works.	GRANT PERMISSION	Committed (Permitted/Under Construction)	No cumulative effects foreseen. The project will not result in significant effects when combined with the proposed development.
D20A/0328	University College Dublin, Belfield, Dublin 4	Extension of car park to provide 239 no. spaces	GRANT PERMISSION	Committed (Permitted/Under Construction)	No cumulative effects foreseen. The project will not result in significant effects when combined with the proposed development.
TA0001	University College Dublin, Belfield, Dublin 4.	10 year permission for 512 student accommodation units (3006 no. bed spaces) including student facility centre, car parking and all associated site works.	GRANT PERMISSION	Committed (Permitted/Under Construction)	No cumulative effects foreseen. The project will not result in significant effects when combined with the proposed development.

Reg. Ref.	Location	Development Description	Decision	Status	Likely Cumulative Effects
ABP315883	'Dunelm', Rydalmount, Milltown Road, Dublin 6	Demolition of structures, construction of Build to Rent apartments comprising of 63 apartments in 2 blocks with all associated site works	GRANT PERMISSION	Committed (Permitted/Under Construction)	No cumulative effects foreseen. The project will not result in significant effects when combined with the proposed development.
ABP305261	Building 5, Dundrum Town Centre, Sandyford Road, Dundrum, Dublin 16	107 no. apartments, cafe and associated site works.	GRANT PERMISSION	Committed (Permitted/Under Construction)	No cumulative effects foreseen. The project will not result in significant effects when combined with the proposed development.
ABP300024	Lands at the former Paper Mills site, bounded by the River Dodder to the East, Clonskeagh Road to the West, Clonskeagh Bridge to the South West, Dublin 6	Increase in apartment units from 96 to 116 with increase in block heights from 3 to 4 storeys with 30 additional parking spaces & additional bicycle spaces & associated site works.	GRANT PERMISSION	Committed (Permitted/Under Construction) Unclear if this has been started on site – hoarding up	No cumulative effects foreseen. The project will not result in significant effects when combined with the proposed development.
ABP311439	Site measuring 0.29ha, Bounded by Kilmacud Road Upper to the north, Drummartin Link Road to the west, and Hazelbrook Apartments to the east and south, Dublin 14	Demolition of existing disused agricultural shed structure and the construction of a residential block 3 to 6 storeys consisting of 52 dwelling units	GRANT PERMISSION	Committed (Permitted/Under Construction) Nearly complete but not yet occupied	No cumulative effects foreseen. The project will not result in significant effects when combined with the proposed development.
ABP313048	9/14 and 11C, Milltown Road, Milltown, Dublin 6. The application site consists of the former Murphy and Gunn site (currently Autovision) and the former Saint Joseph's Junior Education Centre site.	Construction of 97 Build to Rent apartments	GRANT PERMISSION	Committed (Permitted/Under Construction)	No cumulative effects foreseen. The project will not result in significant effects when combined with the proposed development.
ABP312539	Cunningham House, Trinity Hall, Dartry, Dublin 6.	Demolition of existing building, construction of 358 no. student bedspace accommodation, 4 no. staff apartments and associated site works.	GRANT PERMISSION	Committed (Permitted/Under Construction)	No cumulative effects foreseen. The project will not result in significant effects when combined with the proposed development.
ABP312170	Marmalade Lane, Wyckham Avenue, Dundrum, Dublin 16.	531 no. Build to Rent apartments, creche and associated site works.	GRANT PERMISSION	Committed (Permitted/Under Construction)	No cumulative effects foreseen. The project will not result in significant effects when combined with the proposed development.
ABP309931	24,26 28, Fosters Avenue, Mount Merrion, Blackrock, Co Dublin	Demolition of existing buildings on site and construction of 72 no. apartments, communal open space areas, parking spaces, vehicular, pedestrian and servicing access from Foster's Avenue, ESB substation and switch room, and all associated site works	GRANT PERMISSION	Committed (Permitted/Under Construction)	No cumulative effects foreseen. The project will not result in significant effects when combined with the proposed development.

Reg. Ref.	Location	Development Description	Decision	Status	Likely Cumulative Effects
ABP31293522	0.79 ha at Sommerville House, Dundrum Road, Dublin 14	Demolition of all structures, construction of 111 no. apartments and associated site works	LIVE APPLICATION	Planned	No cumulative effects foreseen. The project will not result in significant effects when combined with the proposed development.
ABP31323522	0.34 hectares comprising the car sales premises currently known as Vector Motors (formerly known as Victor Motors), Goatstown Road, Dublin 14, D14FD23	Demolition of existing building on site, construction of 221 no. student bedspaces and associated site works.	LIVE APPLICATION	Planned	No cumulative effects foreseen. The project will not result in significant effects when combined with the proposed development.
ABP31322022	site 3.5335ha incorporating the old Dundrum Shopping Centre known as Main Dundrum Street Village Centre (D14K3T7)	Demolition of all existing buildings on site, construction of 881 no. apartments, creche and associated site works.	LIVE APPLICATION	Planned	No cumulative effects foreseen. The project will not result in significant effects when combined with the proposed development.
ABP316470	Site of approx. 0.24 ha on lands at Frankfort Centre, Dundrum Road, Dublin 1	The construction of 64 no. apartment units in the form of a 5-6 storey apartment blocks, the provision of a ground floor retail/cafe unit, and Public Realm upgrades to Dundrum Road and all other associated site works above and below ground associated with the proposed development. An NIS has been submitted with the application.	LIVE APPLICATION	Planned	No cumulative effects foreseen. The project will not result in significant effects when combined with the proposed development.

20.10.1 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 environmental management plan. As such, no cumulative impacts will arise that would result in significant effects on the environment.

20.10.2 Operational Phase

All proposed developments are required to submit a Pre-connection Enquiry form to Uisce Éireann, for the foul water effluent and potable water supply. Uisce Éireann 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.

20.11 'Do-Nothing' Effect

Under a '*do-nothing'* scenario there would be no increase in demand on public services in the vicinity of the site.

20.12 Difficulties Encountered in Compiling the Chapter

No difficulties were encountered in completing this section.

20.13 Conclusion

This chapter of the EIAR has assessed the impacts of the proposed development at the lands at the Central Mental Hospital, Dundrum Road, Dundrum, Dublin 14 on the material assets (built services). The built services in question relate to potable water supply, foul water drainage, surface water drainage, gas, electricity and telecommunications. In the case of the potable water supply and foul water drainage, these assets are managed by Uisce Éireann. Uisce Éireann operate and maintain the built service assets in Ireland. A Pre-connection enquiry form was issued to Uisce Éireann, which included a proposed site plan, the proposed connection points to the national system and the expected demand that the site will generate. Uisce Éireann have issued their letter of confirmation of for the site. Therefore, it can be assumed that although the site will generate more demand on both the foul water drainage and potable water systems, this affect will be negligible, long term and negative.

20.14 References

Refer to Section 20.2 for references.

21.0 MAJOR ACCIDENTS AND DISASTERS

21.1 Introduction

This chapter of the EIAR assesses the impacts of a proposed development, primarily residential, at the lands at the former Central Mental Hospital, Dundrum Road, Dundrum, Dublin 14, on Major Accidents and Disasters. This chapter of the EIAR should be read in conjunction with the architectural and engineering drawings submitted as part of this planning application.

This assessment is a review of major accident hazards and disasters based on the engineering design, drawings and documentation.

This chapter of the Environmental Impact Assessment Report has been prepared by Matthew Michie a Senior Environmental Consultant at AWN Consulting Limited. Matthew holds an MChem and a MSc (Physical Chemistry). Matthew has 5 years' experience in environmental consulting and process safety, and has been involved in numerous EIARs for a range of projects including commercial, residential, industrial, pharmaceutical and data centre developments.

21.2 Project Description

Dún Laoghaire Rathdown County Council, in partnership with The Land Development Agency, is seeking a ten year approval to carry out the following proposed development which is located on a total application site area of c. 9.7 ha, located on the former Central Mental Hospital, Dundrum Road, Dundrum, Dublin 14 and areas of Dundrum Road and St. Columbanus Road, Dublin 14. The subject site is in the immediate setting and curtilage of a number of protected structures, namely the 'Asylum' (RPS No. 2072), the 'Catholic Chapel' (RPS No. 2071) and the 'Hospital Building' (RPS No. 2073).

The development will consist of the construction of a residential scheme of 934 no. dwellings on an overall site of c. 9.7 ha.

Refer to Chapter 3 of this EIAR for a more detailed description of the site's location and context.

21.3 Methodology

Alongside the legislation, policy, and guidance outlined in Chapter 1, the following relevant legislation, policy, and guidance has informed the preparation of this chapter:

- EPA 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (2022),
- EPA 'Advice Notes on Current Practice in the Preparation of Environmental Impact Statements' (2018),
- Health and Safety Authority Guidance on Technical Land-Use Planning Advice, for planning authorities and COMAH establishment operators (2023)
- Chemicals Act (Control of Major Accident Hazards Involving Dangerous Substances) Regulations 2015
- HSA Guide to the COMAH Regulations 2015 (S.I. No. 209 of 2015)
- Building Regulations (Part A Amendment) Regulations 2012 (as amended) (SI No. 138 of 2012)

- Safety, Health and Welfare at Work (Construction) Regulations 2013 (as amended) (hereafter referred to as the Safety, Health and Welfare (Construction) Regulations) (S.I. No. 291 of 2013)
- A Framework for Major Emergency Management. Guidance Document 10 (DECLG 2015)

The EPA Guidelines, 2022, state that:

"To address unforeseen or unplanned effects the Directive further requires that the EIAR takes account of the vulnerability of the project to risk of major accidents and /or disasters relevant to the project concerned and that the EIAR therefore explicitly addresses this issue. The extent to which the effects of major accidents and / or disasters are examined in the EIAR should be guided by an assessment of the likelihood of their occurrence (risk). This may be supported by general risk assessment methods or by systematic risk assessments required under other legislation e.g. a COMAH (Control of Major Accident Hazards involving Dangerous Substances) assessment.

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."

21.3.1 Major Accidents

For the purpose of this assessment, the definition of a 'Major Accident' is taken from the guidelines on Major Accidents and Disasters within EIA published by Institute of Environmental Management and Assessment (IEMA, 2020).

"A major accident is an event (for instance, train derailment or major road traffic accident) that threatens immediate or delayed serious environmental effects to human health, welfare and / or the environment and requires the use of resources beyond those of the client or its appointed representatives (i.e., contractors) to manage". Major accidents can be caused by disasters resulting from both man-made and natural hazards. A disaster is a man-made / external hazard (such as an act of terrorism) or a natural hazard (such as an earthquake) with the potential to cause an event or situation that meets the definition of a major accident. In general, major accidents and / or disasters should be considered as part of an assessment where the development has the potential to cause the loss of life, permanent injury and/or temporary or permanent destruction of an environmental receptor which cannot be restored through minor clean-up and restoration".

21.3.2 Background to Control of Major Accident Hazards Involving Dangerous Substances (COMAH) Regulations

The Seveso III Directive (2012/18/EU) requires Member States to apply land-use or other relevant policies to ensure that appropriate distances are maintained between residential areas, areas of substantial public use and the environment, including areas of particular natural interest and sensitivity and hazardous establishments. For existing establishments, Member States are required to implement, if necessary, additional technical measures so that the risk to persons or the environment is maintained at an acceptable level.

The purpose of the Chemicals Act (Control of Major Accident Hazards Involving Dangerous Substances) Regulations (S.I. 209 of 2015) (COMAH Regulations)is to transpose the Seveso Directive into Irish law and lay down rules for the prevention of major accidents involving dangerous substances, and to seek to limit as far as possible the consequences for human health and the environment of such accidents, with the overall objective of providing a high level of protection in a consistent and effective manner.

The COMAH Regulations do not apply to the proposed development as the proposed development will not store significant quantities of hazardous materials which are in excess of the defined COMAH thresholds set out in Schedule 1 of the COMAH Regulations.

21.3.3 Baseline Scenario/Likely Future Receiving Environment Analysis Methodology

The EPA Guidelines on the Preparation of an EIAR (EPA, 2022) state that:

> *"It is important to demonstrate that correct methodologies and experts have been used. It is also important that the methodology used in establishing the baseline scenario is documented to permit replicable future monitoring so that the later results can be properly compared (where required). Standard recognised methods should be applied where available and appropriate."*

The baseline/future receiving environment analysis for this Chapter has been undertaken in accordance with the EPA Guidelines on the Preparation of an EIAR (EPA, 2022) and all other documents outlined above.

A desktop study has been completed to establish the baseline environment for which the risks of the proposed development can be assessed.

21.3.4 Impact Assessment Methodology

The analysis of the predicted impacts of the proposed development on human health and the environment during construction and operation are presented in this Chapter. The risk assessment identifies and quantifies risks focusing on potentially significant adverse effects of the development on the environment, deriving from its vulnerability to risks of relevant major accidents and/or disasters. The approach to identifying and quantifying risks associated with the proposed development by means of a sites specific risk assessment is derived from the EPA *Guidelines on the Preparation of an EIAR* (EPA, 2022) and all other documents outlined above.

Assessment methods quantify and predict the magnitude and significance of impacts.

The methods employed for assessment and evaluation of the environmental topics for this Chapter have been:

1. Schedule 6 of the Planning and Development Regulations, 2001, as amended:

   "a description of the expected significant adverse effects on the environment of the proposed development deriving from its vulnerability to risks of major accidents and/or disasters which are relevant to it. Relevant information available and obtained through risk assessments pursuant to European Union legislation such as the Seveso III Directive or the Nuclear Safety

Directive or relevant assessments carried out pursuant to national legislation may be used for this purpose, provided that the requirements of the Environmental Impact Assessment Directive are met.
Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for, and proposed response to, emergencies arising from such events".

2. Geospatial Analysis (cumulative impacts only – used to identify planning permissions/applications and Seveso Establishments within a 10 km radius).

3. Flood Risk Assessment following The Planning System and Flood Risk Management Guidelines for Planning Authorities published by the OPW in 2009 (OPW Guidelines).

4. Site Specific Flood Risk Assessment, Dundrum Central. BMCE, June 2024

21.3.5 Site Specific Risk Assessment Methodology

The risk assessment identifies and quantifies risks focusing on potentially significant adverse effects of the development on the environment, deriving from its vulnerability to risks of relevant major accidents and/or disasters. The approach to identifying and quantifying risks associated with the proposed development by means of a sites specific risk assessment is derived from the EPA Guidelines on information to be contained in EIAR (EPA, 2022).

The criterion for categorising impact is derived from the EPAs Guidance on Assessing and Costing Environmental Liabilities (2014). In this guidance, the risk assessment methodology commences with the establishment of risk classification criteria followed by risk analysis based on these criteria. Risk classification tables are required in order to evaluate and rank the risks compared with each other. They form the basis for rating the likelihood of an event occurring and the consequence of impact if the event occurs. The likelihood and consequence ratings are combined to form a risk score for risk evaluation.

Table 21.1 Risk Classification – Likelihood

Rating	Category	Description
1	Very low	Very low chance of hazard occurring
2	Low	Low chance of hazard occurring
3	Medium	Medium chance of hazard occurring
4	High	High chance of hazard occurring
5	Very high	Very high chance of hazard occurring

Table 21.2 Risk Classification - Consequence

Rating	Category	Description
1	Trivial	No impact of negligible change to the environment
2	Minor	Minor impact/localised or nuisance occurring
3	Moderate	Moderate impact to environment or human health
4	Major	Severe impact to environment or human health
5	Massive	Massive impact to a large area

The risks are then ranked according to their own risk score (1-5) in a colour coded matrix table which allows risks to be easily displayed and prioritised. The colour codes are as follows and indicated in Table 21.3 below:

- Red – high level risks requiring priority action (overall risk scores of 15-25);
- Yellow – medium-level risks requiring action, but not as critical as red-coded risks (overall risk scores of 8-12); and
- Green (light and dark) – low-level risks requiring continuing awareness and monitoring on a regular basis (overall risk scores of 1-6).

Table 21.3 Example Risk Matrix

		Consequence →				
		Trivial	Minor	Moderate	Major	Massive
Likelihood ↑	Very High	Low	Medium	High	High	High
	High	Low	Medium	Medium	High	High
	Medium	Low	Low	Medium	Medium	High
	Low	Low	Low	Low	Medium	Medium
↓	Very Low	Low	Low	Low	Low	Low

21.4 Baseline Scenario/Future Receiving Environment Analysis

21.4.1 Current State of the Environment (Baseline Scenario)

The EIA Directive requires the following to be described relating to the baseline scenario:

> *"A description of the relevant aspects of the current state of the environment (baseline scenario)".*

The subject site is *ca* 9.6 ha with an additional 0.1 ha of works area on the Dundrum Road. It is currently occupied by the former Central Mental Hospital. There are other ancillary buildings on the site which are proposed to be demolished as part of the works, these include a swimming pool/sports hall, 2-storey red-brick building and temporary structures including portacabins. The site is bounded on all sides by a boundary wall. Vehicular access to the site is through existing gates off the Dundrum Road at the Northwest corner. The existing facility

is a non-COMAH site and the Chemicals Act (Control of Major Accident Hazards Involving Dangerous Substances) Regulations, 2015 (COMAH Regulations 2015) does not apply.

21.4.2 Nearby Seveso Establishments

Seveso establishments have a "consultation distance" which is defined as "a distance or area relating to an establishment, within which there are potentially significant consequences for human health or the environment from a major accident at the establishment" (COMAH Regulations). Table 21.4 details the Seveso Establishments within a 10km radius of the facility.

Table 21.4 Seveso Establishments within 10km of Proposed Development

Seveso Establishment	Tier	Distance from Proposed Development (km)
Irish Distillers	Lower	7.5
Kayfoam Woolfson	Lower	7.5
BOC Gases Ireland	Upper	7.5
Larnrod Eireann (Inchicore)	Lower	7.0
Synergen Power	Lower	4.5
National Oil Reserves Agency (Ringsend)	Upper	4.5
National Oil Reserves Agency (Poolbeg)	Upper	6.0
Circle K Terminal 1	Lower	6.0
ESB North Wall	Lower	5.9
Larnrod Eireann (North Wall)	Lower	5.9
Valero Energy	Upper	6.1
Circle K Yard 3	Lower	6.4
Tedcastles Oil Products	Upper	6.4
Fareplay Energy	Upper	6.4
Tedcastles Oil Products Yard 2	Upper	6.4
Indaver Ireland Ltd	Upper	6.5
Calor Teoranta	Upper	6.5

The proposed development is not within the consultation distance of a Seveso Establishment. The closest Seveso Establishment is *ca*. 4.5 km from the proposed development. The proposed development site is not located within the consultation zones of any Seveso establishment; therefore, there are no constraints to the proposed development at this location from nearby Seveso establishments.

21.4.3 Seismic Activity

In Ireland, seismic activity is recorded by the Irish National Seismic Network. The Geophysics Section of the School of Cosmic Physics, Dublin Institute for Advanced Studies, has been recording seismic events in Ireland since 1978 (www.dias.ie). This network consists of several seismometers that are located throughout Ireland. Figure 21.1 illustrates historical and recorded seismic events since 1980.

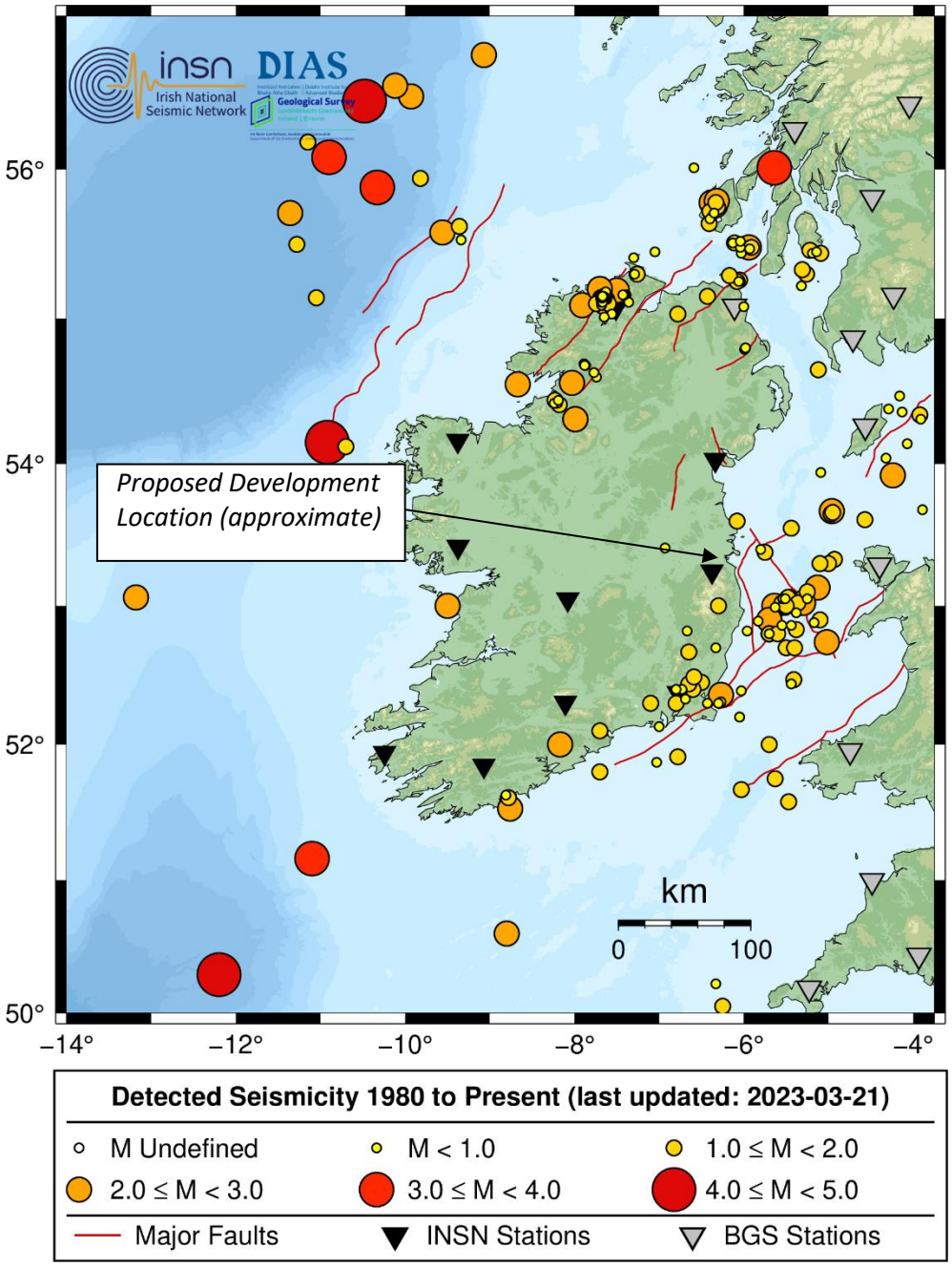

Figure 21.1 Ireland Seismic Activity Map

Seismic activity and earthquake risk in Ireland are generally considered to be low. This is because Ireland is located on the western edge of the Eurasian Plate, which is a tectonic plate that is not known for its seismic activity.

However, earthquakes can still occur in Ireland, although they are typically small and have little impact.

It can be seen in Figure 21.1 that there is no significant seismic activity recorded in the vicinity of the proposed development. Therefore, the likelihood of seismic activity impacting the proposed development are negligible; therefore, **not significant.**

21.4.4 Landslides

Much of the Earth's surface is covered by unconsolidated sediments which can be especially prone to instability. Water often plays a key role in lubricating the slope failure. Instability is often significantly increased by man's activities in building houses, roads, drainage and agricultural changes. Landslides, mud flows, bog bursts (in Ireland) and debris flows are a are a natural hazard that can occur. These can cause damage to property, infrastructure, and the natural environment, and can also pose a risk to human life.

In general, risk of landslides in Ireland is generally considered to be low, as the country is not located in a region with high seismic activity or large mountain ranges. Landslides are more common in unconsolidated material than in bedrock, and where the sea constantly erodes the material at the base of a cliff landslides and falls lead to recession of the cliffs. Landslides have occurred in Ireland in recent years in upland peat areas due to disturbance of peat associated with construction activities.

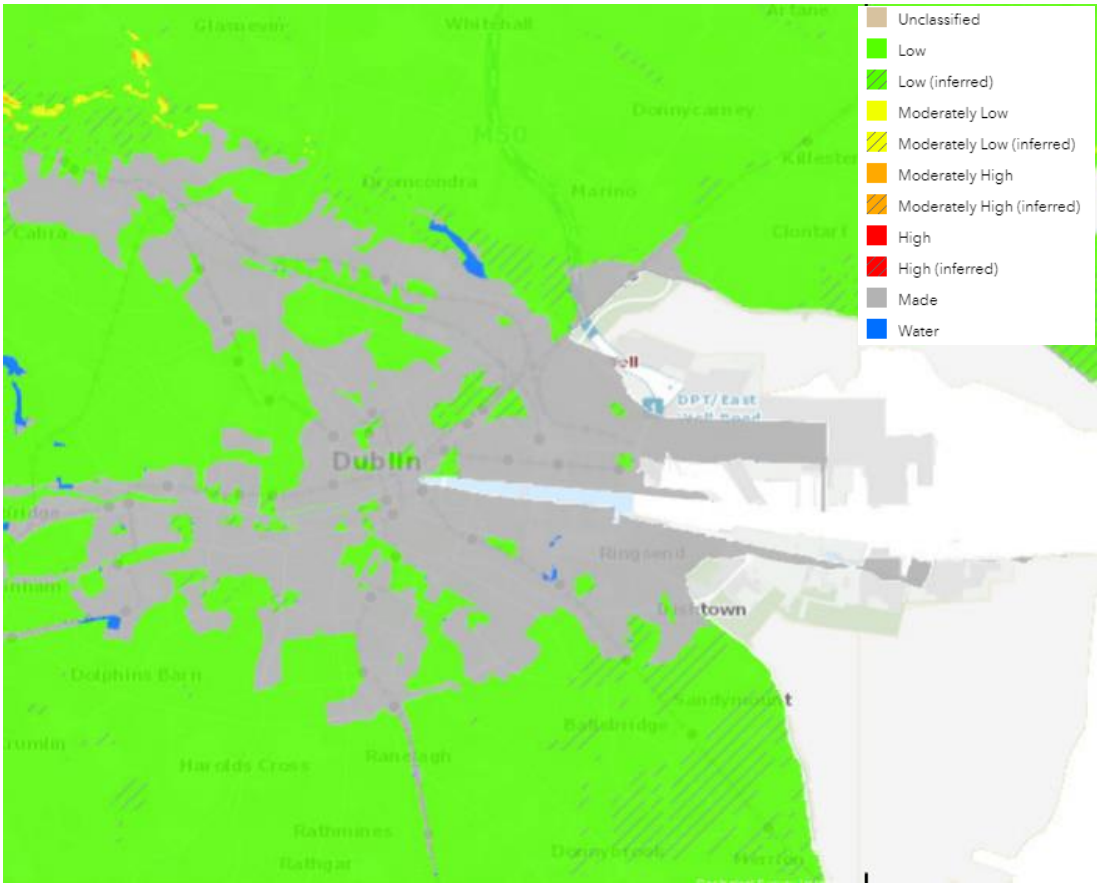

Figure 21.2 Landslide Susceptibility Map (GSI Ireland)

The landslide susceptibility map identifies areas which are subject to landslides and is measured from low to high. The landslide susceptibility map considers the location of landslides and what causes them (slope, soil type and the impact of the flow of water). It can be seen in Figure 21.2 that the greater Dublin area has a low susceptibility of landslides. Therefore, the likelihood of a landslide impacting the proposed development is negligible; therefore, **not significant**.

21.4.5 Flood Risk

According to the site-specific Flood Risk Assessment carried out by BMCE (2024), the developed site is shown not to be at a significant risk from flooding and to not create a significant risk to adjoining areas or downstream.

The site is located within Flood Zone C (i.e., where the probability of flooding from rivers is less than 0.1% or 1 in 1000 years – probability of fluvial flooding is low risk). There are no reported incidents of flooding from the Dodder River or the internal drainage network in this area.

Therefore, the likelihood of a flood impacting a major accident at the proposed development is negligible; therefore, **not significant.**

21.4.6 Metrological

The climatic conditions were assessed using data obtained from the Met Eireann Meteorological database and the Casement Aerodrome Synoptic Station between 1991 - 2021 (Casement Aerodrome being the closest Meteorological Station).

Precipitation

- The annual mean total rainfall was 806mm and the greatest 24 hour total was 109.8mm

Wind

- The maximum annual gust over the 30-year period was 50 knots.

Temperature

- The maximum temperature was 30.3^{o}C and the minimum temperature was -15.3^{o}C.

The proposed development building structures are not considered to be at risk during storms or during extreme heat or cold event. Therefore, the likelihood of extreme weather impacting the proposed development is negligible; therefore, **not significant.**

21.4.7 Hazardous Materials

Natural Gas

The site is served by a 250mm, 25 bar, buried natural gas pipeline, entering Northwest of the site. The pipe, enters at the northwest and extends to the former Central Mental Hospital. There is an existing pressure reducing station within the site and the existing gas lines feed the hospital and swimming pool building.

There is the potential for a loss of containment of natural gas from pipework due to mechanical failure of pipework, connections or fittings, such as corrosion or fatigue, or as a consequence of accidental damage to equipment and pipework such as a dropped object, an impact with vehicles or machinery.

If released and ignited, the potential consequences of a release of natural gas include a jet fire or fireball (if ignited immediately), flash fire or a vapour cloud explosion (VCE) (if delayed ignition).

The potential impacts of a fire and / or explosion as a result of a release of natural gas include:

1. A major fire which could escalate to other areas.
2. Thermal radiation generated by a major fire and / or explosion overpressures could cause significant harm to persons including up to the potential for fatal injuries.
3. Harm to persons due to smoke inhalation.
4. Damage to property within the establishment.

The impacts of Natural Gas to the proposed development are detailed in Section 21.5 of this chapter.

Flammable Gas Cylinders

Construction and maintenance activities may require welding which can be carried out using compressed gases such as acetylene. There is the potential for a release of flammable gas, including an explosive depressurisation event, for example due to accidental damage to a gas cylinder, pressure regulator, or associated pipework. The released gas could be ignited, resulting in a fire or explosion. The potential impacts of which could include harm to persons due to thermal radiation and damage to property.

Fuel Storage

Diesel will be present on-site during the construction of the proposed development for use in construction vehicles. Diesel has flammable and environmental hazards.

Diesel is classified as an ignition category 3 substance, following the criteria in the Guidance on Technical Land Use Planning (HSA, 2023); therefore, it has an ignition probability of 0. Therefore, flammable hazards associated with diesel are not credible and will not be considered further in this assessment.

A spill or leak of diesel, during construction, could pose a risk of accidental pollution to the surrounding environment.

21.4.8 Likely Future Receiving Environment ('Do Nothing' Scenario)

The EIA Directive requires the following to be described relating to the future receiving environment (the 'Do Nothing' scenario):

> *"an outline of the likely evolution thereof without implementation of the project as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge".*

Under a 'do-nothing' scenario there is no known or anticipated change to the Major Accidents and Disasters risk at the proposed development site.

21.5 Likely Impacts of the Project

The major accident hazards for the proposed development are presented in Table 21.5 and the natural disaster hazards are presented in Table 21.6.

Table 21.5 Assessment of Major Accidents

Major Accident Scenario	Phase	Impact	Consequence Rating	Basis of Consequence	Likelihood Rating	Basis of Likelihood	Risk Score
Flash fire, Vapour Cloud Explosion (VCE) or Jet fire following natural gas release at natural gas pipeline	Operation / Construction	Human Health	4	There is potential for harm to persons on-site in the vicinity of the natural gas pipeline. A Site Emergency Response Plan will be developed prior to the commencement of operations and will include detailed procedures in the event of a major accident.	1	The pipeline is buried; therefore, the likelihood of a jet fire, VCE or flash fire at the proposed development are considered to be very low. The Gas Networks Ireland (GNI) Code of Practice for Working in the Vicinity of the Transmission Network (Procedure No: AO/PR/127, 2021)will be followed. Detailed method statements, plans and assessments will be produced to carry out natural gas activities safely.	4
Flash fire, Explosion or Jet fire following compressed gas cylinder release (e.g. acetylene for welding)	Construction	Human Health	3	There is potential for harm to persons on-site in the vicinity of the hazardous gas release. Detailed method statements, plans and assessments will be produced to carry out natural gas activities safely. A Site Emergency Response Plan will be developed prior to the commencement of operations and will include detailed procedures in the event of a major accident.	1	European Industrial Gases Association standard procedures will be used for the storage and use of gas cylinders. When not in use, cylinders will be stored in external, well-ventilated areas and when in use, appropriately certified equipment will reduce the potential for ignition if a flammable gas is accidentally released.	3

Major Accident Scenario	Phase	Impact	Consequence Rating	Basis of Consequence	Likelihood Rating	Basis of Likelihood	Risk Score
Major Accident to the Environment following release of diesel.	Construction	Biodiversity, soils and geology, hydrology and hydrogeology	2	In order to mitigate potential impacts during the construction phase, best practice construction methods will be implemented in order to prevent water (surface water and groundwater) pollution.	2	The construction phase of the proposed development will be carried out in accordance with good practice construction methodologies, all relevant health and safety guidance and legislation (Safety, Health and Welfare at Work), as well as the provisions of the CEMP, as detailed in this EIAR. Refuelling 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) which will be away from surface water gulleys, the existing open ditch or drains. Guidelines such as "Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors" (CIRIA 532, 2001) will be complied with	4

Table 21.6 Assessment of Natural Disasters

Natural Disaster	Phase	Impact	Consequence Rating	Basis of Consequence	Likelihood Rating	Basis of Likelihood	Risk Score
Extreme heat or cold weather resulting in result structural damage and/or pollution to soils, groundwater or surface waters	Construction / Operation	Human health, biodiversity, soils and geology, hydrology and hydrogeology	2	The proposed development will be constructed, and operated in accordance with all relevant planning, building and environmental licencing codes (Building Regulations, 2012). All construction activities will be suspended during extreme weather events.	1	The proposed development building structures are not considered to be at risk during storms or during extreme heat or cold event.	2
Storm events resulting in structural damage and/or pollution to groundwater and surface waters	Construction / Operation	Human health, biodiversity, soils and geology, hydrology and hydrogeology	2	As above	1	As above	2
Flooding	Construction / Operation	Flooding	2	A Flood Risk Assessment was prepared in accordance with 'The Planning System and Flood Risk Management -Guidelines for Planning Authorities' issued by the Department of Environment, Heritage and Local Government in November 2009. It was concluded that the proposed development is within Flood Zone C.	1	The flood risk assessment concluded that a regularly maintained drainage system would ensure the network remains effective should a large pluvial storm occurs.	2

21.5.1 Construction Phase

General construction activities will include ground preparation, excavation, construction of structures. These activities will require the use of vehicles and tools. The hazards associated with activities include the potential for vehicle impact, particularly during reversing and vehicle overturning. The controls around this work will be managed by appropriate risk assessments to control the risks to people, the environment and also to the existing operational areas.

The following scenarios have been identified that could impact the construction phase of the project:

- Natural Gas release from pipeline
- Compressed Gas Cylinder release
- Extreme heat or cold weather resulting in result structural damage and/or pollution to soils, groundwater or surface waters
- Storm events resulting in structural damage and/or pollution to groundwater and surface waters
- Flooding
- Pollution to soils / groundwater / surface water

The impact and likelihood of these scenarios is assessed in Table 21.5 and Table 21.6. There are no likely impacts on the project or to off-site receptors during the construction phase in relation to major accidents and disasters.

21.5.2 Operational Phase

The following scenarios have been identified that could impact the construction phase of the project:

- Natural Gas release from pipeline
- Extreme heat or cold weather resulting in result structural damage a
- Storm events resulting in structural damage
- Flooding

The impact and likelihood of these scenarios is assessed in Table 21.5 and Table 21.6. There are no likely impacts to off-site receptors, as a result of the proposed development, during the operational phase in relation to major accidents and disasters.

21.6 Likely Cumulative and Interaction Impacts of the Project

21.6.1 Cumulative Impacts

Cumulative effects relate to the potential effects of the proposed development in combination of the potential effects of other developments (referred to as 'cumulative developments') within the surrounding area, as listed in Chapter 19.

During the construction phase, since there are no likely impacts on the project or to off-site receptors, the cumulative impacts, of major accidents and disasters, are considered imperceptible and neutral to the proposed development and to cumulative developments in the surrounding area.

During the construction phase, since there are no likely impacts to off-site receptors, the cumulative impacts, of major accidents and disasters, are considered imperceptible and neutral to the proposed development and to cumulative developments in the surrounding area.

21.7 Mitigation Measures and Proposed Response to such Emergencies

A site Emergency Response Plan will be developed prior to the commencement of operations and will include detailed procedures in the event of a major accident. This plan will follow the framework detailed in Guidance Document 10 of A Framework for Major Emergency Management (DECLG 2015).

This plan will contain detailed plans for the response to emergencies such as loss of containment of natural gas, fuel oil, fires and severe weather events. A stock of emergency equipment such as spill kits will be maintained on site in particular around the fuel storage areas.

The proposed development has been designed in line with good industry practice, and, as such, mitigation against the risk of major accidents and/or disasters is embedded through the design and in accordance with planning and legislative requirements. As no likely significant effects were identified, no additional mitigation measures are proposed.

21.8 Residual Impacts

The residual effects are the final predicted or intended effects which occur after the proposed mitigation measures have been implemented. As no likely significant effects were identified, no additional mitigation measures are proposed. Therefore, residual effects are not relevant for this assessment.

21.9 Difficulties in Compiling the Chapter

No difficulties were encountered in completing this section.

References

Health and Safety Authority Guidance on Technical Land-Use Planning Advice, for planning authorities and COMAH establishment operators (2023)

CDOIF (2017), Guideline Environmental Risk Tolerability for COMAH Establishments, v 2.0

Chemicals Act (Control of Major Accident Hazards Involving Dangerous Substances) Regulations, 2015 (COMAH Regulations 2015)

Environmental Protection Agency (EPA) (2022). Guidelines on the Information to be contained in Environmental Impact Assessment Reports.

Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors' (CIRIA 532, 2001)

A Framework for Major Emergency Management. Guidance Document 10 (DECLG, 2015)

Building Regulations (Part A Amendment) Regulations 2012 (as amended) S.I. No. 138/2012

Safety, Health and Welfare at Work (Construction) Regulations 2013 (as amended) S.I. No. 291 of 2013

22.0 INTERACTIONS

22.1 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, this Chapter has regard to the potential cumulative impact upon the environment arising from the proposed development, in combination with other developments (committed or planned projects) in the surrounding area.

22.2 Description of Potential Interactions

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 interactions between effects on different environmental factor. Section 3.7.6 of the EPA *Guidelines on the information to be contained in Environmental Impact Assessment Reports 2022* also sets out that interactions between effects on different environmental factors should be addressed as relevant throughout the EIAR and notes that it is common practice to include a matrix illustrating the interactions.

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.

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 in Table 22.1 below.

Table 22.1: Summary of interactions at construction (Con) and operational (Opp) phases 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		Microclimate		Architectural Heritage		Cultural Heritage and Archaeology		Roads and Traffic		Waste		Built Services	
		Cons	Opp	Cons	Opp	Cons	Opp	Cons	Opp	Cons	Opp	Cons	Opp	Cons	Opp	Cons	Opp	Cons	Opp	Cons	Opp	Cons	Opp	Cons	Opp	Cons	Opp	Cons	Opp
Population & Human Health						x	x			x	x	x	x	x	x									x	x	x	x		
Biodiversity						x		x	x	x	x			x	x									x	x	x	x	x	x
Land, Soils, Geology and Hydrogeology								x	x	x	x													x	x	x	x	x	
Hydrology																													
Air Quality												x	x												x				
Climate																													
Noise & Vibration																													
Landscape & Visual																													
Microclimate																													
Architectural Heritage																x	x												
Cultural Heritage and Archaeology																				x	x								
Roads and Traffic						x																							
Waste																													
Built Services																													

22.2.1 Interactions between Population and Human Health and Land, Soils and Hydrogeology

As set out in Chapter 7 and 9, there is a risk of accidental pollution to land, soil and geology within the site from construction works, such as excavations and oil / diesel spillages from construction plant and equipment. Surface water runoff from the surface of the excavated areas within the site may result in silt discharges to the surrounding network. However, if the proposed mitigation measures are applied during the construction process, the potential impact during on Population and Human Health in respect of the environmental factor of Land, Soils and Geology is negative, short term and not significant given that such instances are likely to be isolated and rare occurrences with the mitigation measures intended to avoid any adverse impacts as a result of the construction. This is set out in full in Chapter 9 of the EIAR.

The sources of pollution that could potentially have an effect on the soils and geology of Proposed Development during the operational phase are oil and fuel leaks from parked cars, service vehicles, etc that are used by people within the site. However, due to hardstanding areas this is more likely to impact on the water environment. The potential impact during operation on Population and Human Health in respect of the environmental factor of Land, Soils, and Hydrogeology is long term, neutral and imperceptible given that such instances are likely to be isolated and rare occurrences.

22.2.2 Interactions between Population and Human Health and Hydrology

As set out in Chapter 7 and 10, there is a risk of accidental pollution to water within the area from construction works, such as oil / diesel spillages from construction plant and equipment. Surface water runoff from the surface of the excavated areas may result in silt discharges to the surrounding network. There is a risk of contamination to the existing water supply during connection to the public water supply. The potential impact during construction on Population and Human Health in respect of the environmental factor of Water is negative, not significant and short term, given that such instances are likely to be isolated and rare occurrences.

When operational, there are no discharges to any open water courses included in the design. The projected surface water network has been designed to provide sufficient capacity to contain and convey all surface water runoff associated with the 1 in 100 year event to the attenuation basins without any overland flooding. In the event of an accidental leakage of oil from the parking areas, this will be intercepted by the drainage infrastructure proposed. As such, the potential for unmitigated off-site flooding or contamination of surface water from oil / diesel spillages will not have potential to impact on human health, populations, and material assets. The effect is considered to be long-term, imperceptible and neutral.

22.2.3 Interactions between Population and Human Health and Air Quality

As set out in Chapter 7 and 11 dust emissions from the construction stage of the Proposed Development have the potential to impact populations through nuisance dust. There are some high sensitivity residential receptors in the vicinity of the site. In the absence of mitigation there is the potential for not significant, direct, negative, short-term effects to nearby sensitive receptors as a result of dust emissions from the Proposed Development.

The traffic generated by the Proposed Development during operation has been assessed and it has been determined that pollutant concentrations will be in compliance with the Air Quality Standards. The effect to human health during the operational stage will be direct, negative, long-term, and not significant.

22.2.4 Interactions between Population and Human Health and Noise and Vibration

As set out in Chapter 7 and 13, during the construction phase of the Proposed Development there will be a potential temporary to short term impact on nearby properties due to noise emissions from site traffic and other activities. During periods when initial construction works are occurring at distances of up to 50m and other construction works at a distance of up to 20m from the nearest noise sensitive locations to the site boundary, there is potential for temporary, negative, moderate to significant noise impacts to occur. For the remainder of construction periods, construction noise impacts will be short-term, negative, slight to moderate.

During the operational phase predicted noise emissions from the additional traffic, and mechanical and electrical services will not exceed the noise level agreed via a planning permission at any nearby noise sensitive locations. The resultant noise impact is negative, not significant and long-term.

22.2.5 Interactions between Population and Human Health and Landscape and Visual

As set out in Chapters 7 and 14, visual impacts perceived by individual persons are highly subjective and difficult to characterise however, generally, the effects would be negative since construction is an inherently, unavoidably unsightly activity. It is considered that the overall interaction between the community and landscape and visual will be negative, moderate and short term during the construction phase.

There is a strong functional and thematic relationship between the proposed development and the nearby Dundrum Town Centre. They both represent intensive contemporary design responses to the needs of a rapidly growing urban population. As a result, it is anticipated that the interaction between the local population and landscape and visual will be positive, moderate, and long term.

22.2.6 Interactions between Population and Human Health and Material Assets (Roads and Traffic)

As set out in Chapters 7 and 18, there is potential for construction traffic to impact from a noise and dust perspective in relation to the surrounding road network. There is also potential for traffic congestion, due to increased heavy good vehicles on the road network which may also perform turning movements, unloading, etc., in areas that impact on traffic. There is potential for construction traffic to have a slight, negative effect on the surrounding environment. However, the duration of this impact will be short-term.

When operational the proposed development will generate a number of trips by various modes of travel including vehicular, pedestrian, cycle and public transport. As the affected junctions have sufficient capacity impact from the proposed development will be minimal. The interaction will be negative, not significant and long-term.

22.2.7 Interactions between Population and Human Health and Material Assets (Waste Management)

As set out in Chapter 7 and 19, the potential impacts on human beings are in relation to incorrect management of waste during construction and / or operation, which could result in littering and presence of vermin – with associated potential for negative impacts on human health and residential amenity. A carefully planned approach to waste management and adherence to the project specific RWMP and mitigation measures in Chapter 7 (Population & Human Health) and Chapter 20, will ensure appropriate management of waste and avoid any negative impacts on the local population. The effects should be long-term, imperceptible and neutral.

22.2.8 Interactions between Population and Human Health and Material Assets (Built Services)

As identified by Chapter 7 and Chapter 20, the Proposed Development will not have an impact on material assets such as water supply and power supply. The predicted interaction between the connection to utilities and the populations and businesses in the surrounding area is imperceptible and neutral.

22.2.9 Interactions between Biodiversity and Land, Soils, Geology and Hydrogeology

During the construction phase, excavated soil, stone, clay and made ground will be generated from the excavations required to facilitate site levelling and construction of the new foundations. It is estimated that excavated material will need to be removed off-site. However, it is envisaged that material will be reused on-site as fill. Where material has to be taken off-site, it will be taken for reuse or recovery, where practical, with disposal as a last resort. As such, there is the potential for impacts on local biodiversity via the proposed excavation and re-profiling works. There will be a loss of some vegetation on site, but this is not expected to impact significantly on surrounding areas. Following the implementation of mitigation measures outlined in Chapter 8 and Chapter 9, the predicted effects on biodiversity will be short to long term, imperceptible, and neutral. The biodiversity of the subject site is likely to improve following the completion of landscaping works.

22.2.10 Interactions between Biodiversity and Hydrology

During the construction phases of development, there is the potential for downstream impacts on the on-site drainage ditches, proximate watercourses, and designated conservation sites via contaminated surface water runoff. Following the implementation of mitigation measures outlined in Chapter 8 and Chapter 10, the predicted effects on biodiversity will be short term, imperceptible, and neutral.

During the operational phase, the potential effects on surface water drainage can involve the Biodiversity component due to a potential hydrological connection between the site and protected habitats. As stated above, no impacts are expected on South Dublin Bay SPA/SAC/pNHA, given the potential loading and the distance from source to the Natura 2000 sites. The potential risk is considered to be imperceptible as potential contaminant would be attenuated, diluted and dispersed below statutory guidelines (i.e., S.I. European Communities Environmental Objectives Regulations, 2022. Adherence to the mitigation measures in Chapter 24 will ensure the effect is long-term, imperceptible and neutral.

22.2.11 Interactions between Biodiversity and Air Quality

During the construction phase of development, given the nature and scale of the proposed works, there is the potential for dust and materials to enter the existing surface water sewer, drainage ditches, and proximate watercourses during site clearance and re-profiling works with the potential for downstream impacts on biodiversity and designated conservation sites. Following the implementation of mitigation measures outlined in Chapter 8 and Chapter 11 the predicted effects on biodiversity are short term, imperceptible, and neutral. There are no anticipated operational impacts.

22.2.12 Interactions between Biodiversity and Noise and Vibration

During the construction and operational phase of the development, there will be an increase in disturbance including noise and vibration that could potentially impact on birds on site. Following the implementation of mitigation measures outlined in Chapter 8 and Chapter 13, the predicted effects are short term and minor adverse.

22.2.13 Interactions between Biodiversity and Material Assets (Roads and Traffic)

During the construction and operational phase of development, heightened traffic within and immediately surrounding the subject site (resulting from the transport of construction materials and the commuting of workers to the site) has the potential to impact on local biodiversity through increased disturbance. Following the implementation of mitigation measures outlined in Chapter 8 and Chapter 18, the predicted effects on biodiversity are short and long term, imperceptible, and neutral.

22.2.14 Interactions between Biodiversity and Material Assets (Waste)

There is the potential for impacts on local biodiversity and the potential for downstream impacts on proximate watercourses and designated sites via the storage and transportation of waste and pollution from the subject site during the construction phase of development. 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 19, the predicted effects on biodiversity are short long term, imperceptible, and neutral. There are no anticipated operational impacts.

22.2.15 Interactions between Biodiversity and Material Assets (Built Services)

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. Impacts have the potential to arise during the excavation of land that will result in ground disturbances having an immediate, short term impact on biodiversity during the construction phase.

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. Following the implementation of mitigation measures outlined in Chapter 8 and Chapter 20, the predicted effects on biodiversity are short and long term, imperceptible, and neutral.

22.2.16 Interactions between Land, Soils, Geology and Hydrogeology and Hydrology

Chapter 10 notes that, during the construction phase, there is an inter-relationship between soils, geology and hydrogeology and surface water due to the potential increasing of sediments loading in run-off as a result of the excavation required to facilitate site levelling and construction of the new foundations. Adherence to the mitigation measures in Chapter 9 and 10 and the requirements of the CEMP, will ensure the effect is long-term, imperceptible and neutral.

As set out in Chapter 9, there are potential interactions between land, soils, geology and hydrogeology and surface water during the operational phase, with some surface water conveyed and stored in SuDS features such as soakaways and discharging to the ground where possible, replicating the existing greenfield site drainage as closely as possible. The likely impact will be permanent, slight and neutral.

22.2.17 Interactions between Land, Soils, Geology and Hydrogeology and Material Assets (Roads and Traffic)

As set out in Chapter 9, there are potential interactions between lands and soils and material assets (roads and traffic) on the basis that throughout the construction stage of the project, there will be an increase in traffic on the roads due to deliveries to and from the site, site personnel and construction works. This impact will be negative, temporary and significant.

There will be an increase in traffic in the general vicinity of the site during the operational stage, this will be negative, permanent and slight.

22.2.18 Interactions between Land, Soils, Geology and Hydrogeology and Material Assets (Waste)

As set out in Chapter 9 and 18, during the construction phase, the excavated material volume to be disposed off-site is 71,000m3 approx. which comprises of 22,000m3 from the site strip and a net cut volume of 49,000m3 from the bulk excavation. The net cut volume assumes reasonably that excavated material can be used as bulk fill on site. There will only be limited opportunities to use some of the site strip topsoil in green field and landscaped areas on site. Excavated material will be disposed off-site to a licensed waste disposal facility. Refer to the *Resource Waste Management Plan* for further information. Adherence to the mitigation measures in Chapter 9 & 19 and the requirements of the *Resource Waste Management Plan*, will ensure the effect is long-term, imperceptible, and neutral. There are no anticipated operational impacts.

22.2.19 Interactions between Land, Soils, Geology and Hydrogeology and Material Assets (Built Services)

As set out in Chapters 9 and 20, there are potential interactions between lands and soils and material assets (built services) 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 any impact they have on the land, soils, geology, and hydrogeology will be negative, imperceptible, and temporary.

There are also interactions between land, soils, geology and hydrogeology and material assets, with the construction of basements and drainage/utilities impacting the quantity of soil and subsoil as these materials will be removed to facilitate construction. The likely impact will be moderate, permanent and negative.

22.2.20 Interactions between Air Quality and Traffic and Transportation

As set out in Chapter 11, with increased traffic movements and reduced engine efficiency, i.e. due to congestion, the emissions of vehicles increase. The effects of the proposed development on air quality are assessed by reviewing the change in annual average daily traffic on roads close to the site. The effects of the interactions between traffic and air quality are considered to be direct, long-term, negative and not significant.

22.2.21 Interactions between Air Quality and Climate

Air quality and climate have interactions due to the emissions from the burning of fossil fuels during the construction and operational phases generating both air quality and climate effects. Air quality modelling outputs are utilised within Chapter 12 (Climate). There is no impact on climate due to air quality; however, the sources of impacts on air quality and climate are strongly linked.

22.2.22 Interactions between Air Quality and Land, Soils and Geology

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, soils and geology (Ch. 09 Land, Soils, Geology & Hydrogeology).

The impact of flood risk has been assessed and the surface water drainage network will be designed to cater for increased rainfall in future years as a result of climate change. The effect of the interactions between climate and land, soils, geology and hydrology (Ch.9) are direct, short-term, negative and imperceptible during the construction phase and direct, long-term, negative and imperceptible during the operational phase, which is overall not significant in EIA terms.

22.2.23 Interactions between Climate and Traffic and Transportation

During the construction and operational phase, there is the potential for interactions between climate and traffic (for more information see Ch.18 Traffic and Transportation). Vehicles accessing the site will result in emissions of CO2, a greenhouse gas. The effects of the proposed development on air quality are assessed by reviewing the change in annual average daily traffic on roads close to the site. In this assessment, the effects of the interactions between traffic and climate are considered to be direct, short-term, negative and not significant during the construction phase and direct, long-term, negative and not significant during the operational phase, which is overall not significant in EIA terms.

22.2.24 Interactions between Climate and Waste

Waste (Ch.19) management measures will be put in place to minimise the amount of waste entering landfill, which has higher associated embodied carbon emissions than other waste management such as recycling. The effect of the interactions between waste and climate are considered to be direct, short-term, negative and not significant during the construction phase and direct, long-term, negative and not significant during the operational phase, which is overall not significant in EIA terms.

22.2.25 Interactions between Microclimate and Population and Human Health

As set out in Chapter 15, during the Operational Phase the Proposed Development will impact on the wind microclimate within and around the Site, which ultimately can impact positively or negatively on people's health and well-being. The wind microclimate has the potential to impact on the level of pedestrian comfort and safety within the development.

22.2.26 Interactions between Archaeology and Cultural Heritage and Architectural Heritage

Due to the nature of Chapters 16 and 17, there are potential interactions between Archaeology and Cultural Heritage and Architectural Heritage on the basis that heritage considerations form the basis of both chapters. It is however concluded in Chapter 16 that following the implementation of the mitigation measures laid out in Chapter 17, in relation to the architectural heritage resource, there would be a remaining moderate negative residual impact on the cultural heritage of the original asylum complex. This is offset by the fact that the site and its heritage, at operation, will be publicly accessible.

22.2.27 Interactions between Architectural Heritage and 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. In addition to the historic landscape, eight heritage structures have been identified in the site that will be affected by the proposal. The proposal will alter the setting of the current historic landscape and heritage structures on the site. Mitigation measures in respect of landscape and visual appearance are discussed in Chapters 14 and 17 of this report. Following the implementation of the proposed mitigation measures, the remaining residual impacts would range from significantly beneficial to significantly negative in relation to each of the heritage assets on the site. This is set out in full under Chapter 17.

22.2.28 Interactions between Waste and Material Assets (Roads and Traffic)

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 movements 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 18 (Material Assets – Roads and traffic). Provided

the mitigation measures detailed in Chapter 18 and Chapter 19 are adhered to, the predicted effects are short to long-term, imperceptible and neutral.

23.0 CUMULATIVE IMPACTS

23.1 Introduction

This section has regard to the potential cumulative impact upon the environment arising from the proposed development, in combination with other developments (committed or planned projects) in the surrounding area.

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:

> "t*he 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 impacts, when considered in combination with the proposed development. The methodology surrounding the identification of relevant projects is set out below.

23.2 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. An initial radius of c. 2km was selected for the reasons outlined in Table 23.1 below.

For the purposes of this initial survey, a search of all planning applications which were recorded on the Dún Laoghaire-Rathdown's online planning portal and An Bord Pleanála's online case search 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:

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 23.1 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, 3.7.2 and 3.7.3). This is also set out in Tables 23.1 and 23.2 below

Committed (Permitted/Under Construction)

Table 23.1: Surrounding development permitted projects identified as relevant to the assessment of the proposed project.

Reg. Ref.	Location	Development Description	Decision date	Distance from the site
ABP30943021	2.12 ha at Our Lady's Grove, Goatstown Road, Dublin 14	698 no. student bedspace accommodation and associated site works.	03/06/2021	0.26 km
ABP31128721	c.0.9ha at No. 97A Highfield Park (D14P710), and No. 1 Frankfort Castle (D14 HY03), No. 2 Frankfort Castle (D14DE72) and Frankfort Lodge (D14C9P2), Old Frankfort, Dublin 14	115 no. apartments, creche and associated site works.	20/12/2021	0.39 km
ABP31182621	Lands at Knockrabo, Mount Anville Road,, Goatstown, Dublin 14	227 no. apartments and associated site works.	08/03/2022	1.14 km
ABP31013821	Mount Saint Mary's and Saint Joseph's, Dundrum Road, Dundrum, Dublin 14	Demolition of existing buildings on site and part of the granite wall along	25/08/2021	0.95 km

		Dundrum Road, excluding Small Hall, construction of 231 no. apartments, childcare facility and associated site works.		
ABP30768320	Green Acres Convent, Drumahill House and the Long Acre, Upper Kilmacud Road, Dundrum, Dublin 14	Provision of 54 no. additional apartments on previously permitted development of 253 no. apartments under ABP-304469-19, increase in childcare facility and associated site works.	10/11/2020	1.44 km
ABP30446919	Greenacres, Longacre and Drumahill House, Upper Kilmacud Road, Dundrum, Dublin 14	253 no. apartments and associated works.	26/08/2019	1.44 km
ABP248265 D16A/0818	Green Acres Convent, Kilmacud Road Upper, Dublin 14.	Demolition of the former Green Acres Convent and the construction of 120 no. apartments in 2 blocks ranging in height from 2 to 5 storeys with all associated site works.	11/09/2017	1.45 km
D20A/0328	University College Dublin, Belfield, Dublin 4	Extension of car park to provide 239 no. spaces	08/12/2020	1.09 km
TA0001	University College Dublin, Belfield, Dublin 4.	10 year permission for 512 student accommodation units (3006 no. bed spaces) including student facility centre, car parking and all associated site works.	09/01/2018	1.09 km
ABP315883	'Dunelm', Rydalmount, Milltown Road, Dublin 6	Demolition of structures, construction of Build to Rent apartments comprising of 63 apartments in 2 blocks with all associated site works	18/01/2024	1.23 km
ABP305261	Building 5, Dundrum Town Centre, Sandyford Road, Dundrum, Dublin 16	107 no. apartments, cafe and associated site works.	02/12/2019	1.3 km
ABP300024	Lands at the former Paper Mills site, bounded by the River Dodder to the East, Clonskeagh Road to the West, Clonskeagh Bridge to the South West, Dublin 6	Increase in apartment units from 96 to 116 with increase in block heights from 3 to 4 storeys with 30 additional parking spaces & additional bicycle spaces & associated site works.	04/07/2018	1.63 km
ABP311439	Site measuring 0.29ha, Bounded by Kilmacud Road Upper to the north,	Demolition of existing disused agricultural shed structure and the	27/04/2022	1.75 km

	Drummartin Link Road to the west, and Hazelbrook Apartments to the east and south, Dublin 14	construction of a residential block 3 to 6 storeys consisting of 52 dwelling units		
ABP313048	9/14 and 11C, Milltown Road, Milltown, Dublin 6. The application site consists of the former Murphy and Gunn site (currently Autovision) and the former Saint Joseph's Junior Education Centre site.	Construction of 97 Build to Rent apartments	26/07/2023	1.78 km
ABP312539	Cunningham House, Trinity Hall, Dartry, Dublin 6.	Demolition of existing building, construction of 358 no. student bedspace accommodation, 4 no. staff apartments and associated site works.	04/07/2022	1.8 km
ABP312170	Marmalade Lane, Wyckham Avenue, Dundrum, Dublin 16.	531 no. Build to Rent apartments, creche and associated site works.	08/04/2022	1.91 km
ABP309931	24,26 28, Fosters Avenue, Mount Merrion, Blackrock, Co Dublin	Demolition of existing buildings on site and construction of 72 no. apartments, communal open space areas, parking spaces, vehicular, pedestrian and servicing access from Foster's Avenue, ESB substation and switch room, and all associated site works	28/08/2023	1.98 km
ABP31969724	Mount Anville Lands, Lower Kilmacud Road, Dublin 14, D14KX80	Demolition of existing building and construction of 114 residential units	15/04/2024	1.81km

Planned

The below list includes the surrounding planning applications that were live on 30 July 2024. This date was considered to be the appropriate cut-off date to enable to completion of the EIAR and submission of planning application. It is noted however that the status of these applications may change before a decision is made on the subject planning application. For example, following the cut-off date but prior to the lodgement of the subject planning application, the planning application at Sommerville House (An Bord Pleanála Ref. No. 312935-22) was refused planning permission. This planning application has been taken into account in the cumulative assessment of the proposal as per Table 23.2.

Table 23.2: Surrounding development planned projects identified as relevant to the assessment of the proposed project.

Reg. Ref.	Location	Development Description	Registered Date	Distance from the site
ABP31293522	0.79 ha at Sommerville House, Dundrum Road, Dublin 14	Demolition of all structures, construction of 111 no. apartments and associated site works	07/03/2022	0.21 km
ABP31323522	0.34 hectares comprising the car sales premises currently known as Vector Motors (formerly known as Victor Motors), Goatstown Road, Dublin 14, D14FD23	Demolition of existing building on site, construction of 221 no. student bedspaces and associated site works.	06/04/2022	0.53 km
ABP31322022	site 3.5335ha incorporating the old Dundrum Shopping Centre known as Main Dundrum Street Village Centre (D14K3T7)	Demolition of all existing buildings on site, construction of 881 no. apartments, creche and associated site works.	05/04/2022	0.79 km
ABP316470	Site of approx. 0.24 ha on lands at Frankfort Centre, Dundrum Road, Dublin 1	The construction of 64 no. apartment units in the form of a 5-6 storey apartment blocks, the provision of a ground floor retail/cafe unit, and Public Realm upgrades to Dundrum Road and all other associated site works above and below ground associated with the proposed development. An NIS has been submitted with the application.	25/4/2023	0.37 km

As part of the cumulative assessment, the future planning application (detailed in Section 3.7.3 of Chapter 3) which forms part of the same site wide Masterplan as the proposed development, has been considered as a planned project. In acknowledging the proximity and potential interaction between the future application and the proposed development each chapter has given particular regard to the potential cumulative impacts of the proposed development and the future planning application. Whilst both the proposed development and the future planning application form part of the wider site Masterplan, these two projects are independent of one another i.e., one can be fully implemented with, or without the other. The extent of cumulative assessment in relation to these two potential projects varies from chapter to chapter, depending upon the environmental aspect being assessed and the design detail available at the time of writing, in the normal way for all projects which are planned but are not yet implemented/operational.

Table 23.3: 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 initial 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. In addition, there is a potential hydrological link with South Dublin Bay SPA/SAC/pNHA but the risk is considered to be imperceptible given the loading and distance from the Natura 2000 sites. 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 development. It is however noteworthy that following the screening exercise by the competent experts, the 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 development 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; • 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	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. 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.

	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.	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 development, it was screened in to 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 have been submitted to a Planning Authority for a decision, but were yet to be decided at the time of writing. Or potential projects that are at pre-application stage and within the public domain.	This parameter aligns with EIA best practice surrounding the projects that should be included for cumulative impact assessment.
Time of writing	30 July 2024	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	This aligns with the amended EIA Directive (Directive 2014/52/EU) which states the following in relation to the persons responsible for preparing the

	assessed within the EIAR. The EIAR team, together with their qualifications, is outlined in Chapter 1 (Table 1.3).	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."*

23.2 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, 3.7.2 and 3.7.3), including the future Section 34 application in respect of the wider Masterplan lands. The aforementioned chapters should be referred to for full details of the assessment; this chapter provides a summary of the cumulative impact assessment.

Table 23.4: 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, 3.7.2 and 3.7.3 of this EIAR and concludes that other than the potential (short term and temporary) significant cumulative impacts arising from construction in terms of noise, soil quality and traffic upon human health (addressed in detail in Chapters 7 and 12), and the potential long term traffic impacts 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, 3.7.2 and 3.7.3 of this EIAR and concludes that there would be no projects in the vicinity of the proposed development would be seen to have a significant in combination effect on conservation sites
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, 3.7.2 and 3.7.3 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, 3.7.2 and 3.7.3 of this EIAR, and concludes that there would be no significant adverse cumulative effects arising.
Air Quality	Chapter 11 has undertaken a cumulative impact assessment of the proposed development in combination with the projects outlined in Sections 3.7.1, 3.7.2 and 3.7.3 of this EIAR, and concludes that other than short term impacts as a result construction and long term impacts as a result of an increase in road traffic emissions described as 'not significant' there would be no significant adverse cumulative effects arising.
Climate	Chapter 12 has undertaken a cumulative impact assessment of the proposed development in combination with the projects outlined in Sections 3.7.1, 3.7.2 and 3.7.3 of this EIAR, and concludes that there would be no significant adverse cumulative effects arising.
Noise and Vibration	Chapter 13 has undertaken a cumulative impact assessment of the proposed development in combination with the projects outlined in Sections 3.7.1, 3.7.2 and 3.7.3 of 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, moderate to significant and short-term.
Landscape (Townscape) and Visual	Chapter 14 has undertaken a cumulative impact assessment of the proposed development in combination with the projects outlined in Sections 3.7.1, 3.7.2 and 3.7.3 of this EIAR, and concludes that there would be no significant adverse cumulative effects arising.
Microclimate - Wind	Chapter 15 has undertaken a cumulative impact assessment of the proposed development in combination with the projects outlined in Sections 3.7.1, 3.7.2 and 3.7.3 of this EIAR, and concludes that there would be no significant adverse cumulative effects arising.
Cultural Heritage and Archaeology	Chapter 16 has undertaken a cumulative impact assessment of the proposed development in combination with the projects outlined in Sections 3.7.1, 3.7.2 and 3.7.3 of this EIAR, and concludes that there would be no significant adverse cumulative effects arising.

Architectural Heritage	Chapter 17 has undertaken a cumulative impact assessment of the proposed development in combination with the projects outlined in Sections 3.7.1, 3.7.2 and 3.7.3 of this EIAR, and concludes that there would be no significant adverse cumulative effects arising.
Material Assets (Roads and Traffic)	Chapter 18 has undertaken a cumulative impact assessment of the proposed development in combination with the projects outlined in Sections 3.7.1, 3.7.2 and 3.7.3 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 particularly around Dundrum Road
Material Assets (Waste Management)	Chapter 19 has undertaken a cumulative impact assessment of the proposed development in combination with the projects outlined in Sections 3.7.1, 3.7.2 and 3.7.3 of this EIAR, and concludes that there would be no significant adverse cumulative effects arising.
Material Assets (Built Services)	Chapter 20 has undertaken a cumulative impact assessment of the proposed development in combination with the projects outlined in Sections 3.7.1, 3.7.2 and 3.7.3 of this EIAR, and concludes that there would be no significant adverse cumulative effects arising.
Major Accidents and Disasters	Chapter 21 has undertaken a cumulative impact assessment of the proposed development in combination with the projects outlined in Sections 3.7.1, 3.7.2 and 3.7.3 of this EIAR, and concludes that there would be no significant adverse cumulative effects arising.

23.3 Mitigation and Monitoring

Having regard to the conclusions set out in Table 23.2 above, the proposed project, when considered in combination with the committed and planned projects set out in Sections 3.7.1, 3.7.2 and 3.7.3 of this EIAR, is not expected to give rise to significant cumulative impacts with the exception of noise impacts during the construction phase which are expected to be negative, moderate to significant and short-term as well as potential traffic impacts on the Dundrum Road.

Relevant mitigations are included in Appendix 24.1 and the relevant chapters.

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.

23.4 'Do-Nothing' Effect

If the proposed project does not proceed, there will be no cumulative impacts arising.

24.0 MITIGATION AND MONITORING

24.1 Introduction

Paragraph 2(d) of Schedule 6 to the *Planning and Development Regulations 2001*, as amended by the 2018 regulations, 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.

24.2 Summary Tables

Appendix 24.1 provides an overview of all mitigation measures proposed within this Report to inform the environmental impact assessment by the Board. The mitigation measures should be read in conjunction with the associated chapters and assessment contained within.