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Environmental Impact Assessment Report

PRESENTED TO

The Land Development Agency (LDA)
Proposed Development at Donore Avenue, Dublin 8

December 2022

Environmental Consultancy Services

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1 INTRODUCTION AND METHODOLOGY

1.1 Introduction

This Environmental Impact Assessment Report (EIAR) has been commissioned by the Applicant, the Land Development Agency (LDA), in respect of a Proposed Development at a site located at the former St. Teresa's Gardens, Donore Avenue, Dublin 8 (the Proposed Development).

This EIAR has been compiled in accordance with all current legislation and best practice guidance. This Chapter describes the methodology by which the Environmental Impact Assessment (EIA) was carried out and the EIAR was completed. The methodology used is broadly consistent across all chapters in order to ensure the EIAR is clear and easy to navigate.

The Proposed Development will consist of the construction of a residential scheme of 543 no. apartments on an overall site of 3.26 ha (GFA of c. 53,227 sqm) containing the following mix of apartments:

- 225 No. 1 bedroom apartments (36 no. 1-person & 189 no. 2-person)
- 274 No. 2 bedroom apartments (including 52 No. 2 bed 3 person apartments and 222 No. 2 bed 4 person apartments)
- 44 No. 3 bedroom 5-person apartments
- A retail/café unit (168 sq.m.), mobility hub (52 sq.m.) and 952 sq.m. of community, artist workspace, arts and cultural space, including a creche, set out in 4 No. blocks.

The breakdown of each block will contain the following apartments:

- Block DCC1 comprises 111 No. apartments in a block of 6-7 storeys;
- Block DCC 3 comprises 247 No. apartments in a block of 6-15 storeys;
- Block DCC5 comprises 132 No. apartments in a block of 2-7 storeys;
- Block DCC6 comprises 53 No. apartments in a block of 7 storeys;

The Proposed Development will also provide for public open space of 3,408 sqm, communal amenity space of 4,417 sqm and an outdoor play space associated with the creche. Provision of private open space in the form of balconies or terraces is provided to all individual apartments.

The Proposed Development will provide 906 no. residential bicycle parking spaces which are located within secure bicycle stores. 5% of these are over-sized spaces which are for large bicycles, cargo bicycles and other non-standard bicycles. In addition, 138 spaces for visitors are distributed throughout the site.

A total of 79 no. car parking spaces are provided at undercroft level. Six of these are mobility impaired spaces (2 in each of DCC1, DCC3 & DCC5). 50% of standard spaces will be EV fitted. Up to 30 of the spaces will be reserved for car sharing (resident use only). A further 15 no. on-street spaces are proposed consisting of:

- 1 no. accessible bay (between DCC5 & DCC6)

- 1 no. short stay bay (between DCC5 & DCC6)
- 1 no. crèche set-down / loading bay (between DCC5 & DCC6)
- 1 no. set-down / loading bay (northern side of DCC5)
- 1 no. set-down/loading bay (northern side of DCC 3)
- 10 no. short stay spaces (north-east of DCC1)

In addition, 4 no. motorcycle spaces are also to be provided.

Vehicular, pedestrian and cyclist access routes are provided from a new entrance to the north-west from Margaret Kennedy Road. Provision for further vehicular, pedestrian and cyclist access points have been made to facilitate connections to the planned residential schemes on the Bailey Gibson & Player Wills sites for which there are extant permissions (Ref. No.'s ABP-307221-20 & ABP-308917-20).

The development will also provide for all associated ancillary site development infrastructure including site clearance & demolition of boundary wall along Margaret Kennedy Road and playing pitch on eastern side of site and associated fencing/lighting, the construction of foundations, ESB substations, switch room, water tank rooms, storage room, meter room, sprinkler tank room, comms room, bin storage, bicycle stores, green roofs, hard and soft landscaping, play equipment, boundary walls, attenuation area and all associated works and infrastructure to facilitate the development including connection to foul and surface water drainage and water supply.

1.2 Definition of EIA and EIAR

Environmental Impact Assessment (EIA) is a systematic examination of the likely significant effects of a Proposed Development on the environment. In assessing the significant effects this EIAR will evaluate the existing situation and assess any likely significant effects of the Proposed Development. Where likely significant effects are identified proposed mitigation measures will be identified. In addition, all elements of the project have been cumulatively assessed together for their overall impact and furthermore, the project has then been assessed in combination with other existing, consented, or planned projects.

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

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

> *"The EIAR should be prepared at a stage in the design process where changes can still be made to avoid adverse effects. This often results in the modification of the project to avoid or reduce effects through redesign" (EPA, 2022)*

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

This process is illustrated in Figure 1-1.

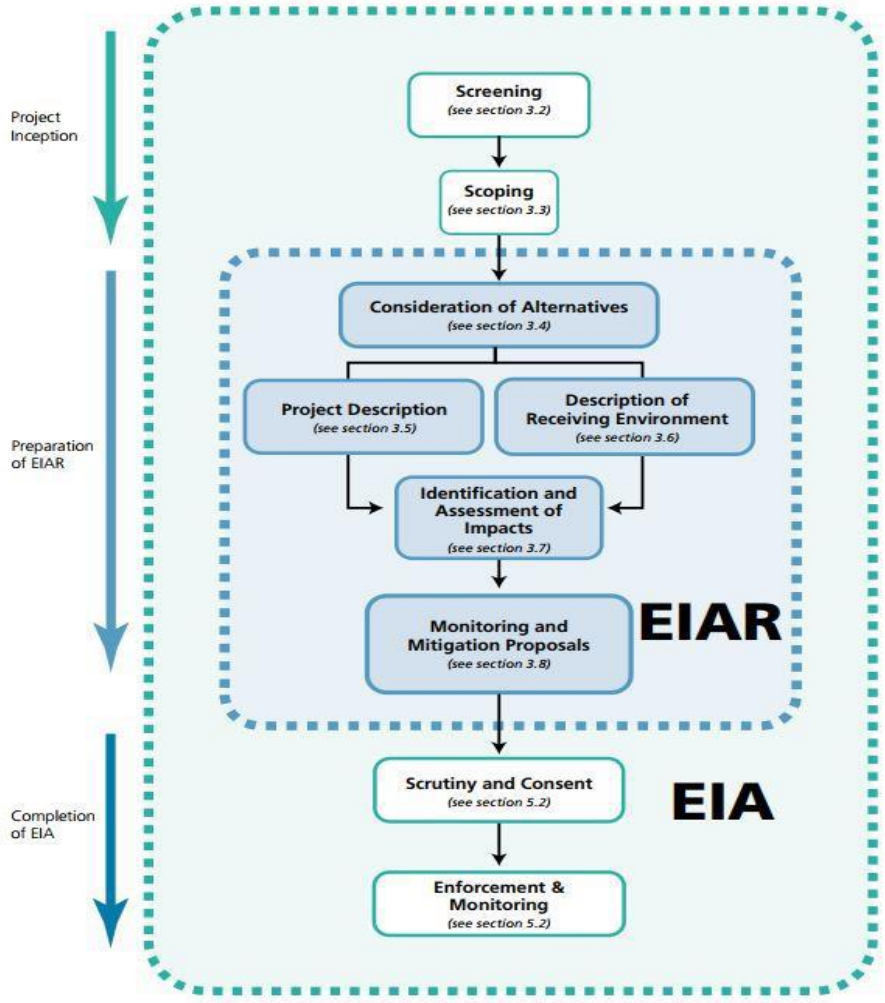


Figure 1-1: EIA Process

1.3 EIA Legislation

The EIA Directive requires EIA to be carried out for certain projects as listed in the Directive. The EIA Directive is transposed into Irish law through the Planning and Development Act 2000 (as amended) (the **Planning Act**) and the Planning Regulations 2001 (As Amended).

1.4 EIA Guidelines

This EIAR has been prepared in accordance with all relevant guidance. The documents listed below are common to all chapters. Additional specific guidelines will be referred to in each specific chapter.

- Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (EPA 2003);

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA May 2022);
- Environmental Assessments of Plans, Programmes and Projects – Rulings of the Court of Justice of the European Union (European Union 2020);
- Environmental Impact Assessment of Projects – Guidance on Scoping (Directive 2011/92/EU as amended by 2014/52/EU) (European Union 2017);
- Guidance of Integrating Climate Change and Biodviersity into Environmental Impact Assessment (European Union 2013);
- Environmental Impact Assessment of Projects – Guidance on the preparation of the Environmental Impact Assessment Report (European Union 2017);
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Government of Ireland 2018);
- Key Issues Consultation Paper on the Transposition of 2014 EIA Directive (2014/52/EU) in the Land Use Planning and EPA Licencing Systems; (Department of Housing, Planning, Community and Local Government 2017);
- Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions (European Communities 1999); and
- Implementation of Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (European Communities 2003).
- Office of the Planning Regulator (OPR) Environmental Impact Assessment Screening Practice Note (2021).

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

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

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

The EIA Directive requires the EIAR to identify, describe and assess, in an appropriate manner and in light of each individual case, the direct, indirect and cumulative significant effects of the Proposed Development on factors of the environment as per Schedule 6, Sections 1 and 2 of the Planning Regulations, including:

a) Population and human health

b) Biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC (respectively, the Habitats Directive and the Birds Directive)

c) Land, soil, water, air, and climate

d) Material assets, cultural heritage, and the landscape

The interaction between the factors referred to in points (a) to (d)

1.5 Screening for EIA

'Screening' is the term used to describe the process for determining whether a Proposed Development requires an EIA by reference to mandatory legislative threshold requirements or in the case of sub threshold development, by reference to the type and scale of the Proposed Development and the significance of the likely effects of the Proposed Development.

Annex 1 of the EIA Directive requires as mandatory an EIA for all development projects listed therein.

Schedule 5, Part 1, of the Planning Regulations transposes Annex 1 of the EIA Directive directly into Irish planning legislation. An EIAR is required to accompany a planning application for development of a class set out in Schedule 5, Part 1 of the Planning Regulations which exceeds a limit, quantity or threshold set for that class of development.

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

Schedule 5 (Part 2) of the Planning Regulations sets mandatory thresholds for each project class. Sub-section 10(b) (i) to (iv) addresses *'Infrastructure Projects'* and requires that the following relevant class of project be subject to EIA:

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

The Proposed Development exceeds the threshold of in terms of the number of units at 543 no. dwellings and as such an EIAR is required.

Therefore, considering the unit numbers are above the EIAR threshold, an EIAR has been prepared to accompany the subject application, having regard to category 10(b)(i) of Part 2 of Schedule 5 of the Planning and Development Regulations 2001, as amended.

1.6 Scope of the EIAR

'Scoping' is a process of deciding what information should be contained in an EIAR and what methods should be used to gather and assess that information. It is defined in the European Commission (EC) Guidance on EIA Scoping 2017[1] as:

> *'The process of identifying the content and extent of the information to be submitted to the Competent Authority under the EIA process.'*

The content of this EIAR was informed by a scoping process carried out by the Applicant, design team and EIAR consultants and the Dublin County Council (DCC) pre-application consultations to identify the core issues likely to be most important during the EIA process.

The EIAR prepared for the Proposed Development has endeavoured to be as thorough as possible and therefore all the issues listed in Schedule 6, Sections 1 and 2 of the Planning Regulations and Article 3 of the EIA Directive have been addressed in the EIAR.

The scope of this EIAR has had regard to the documents listed in Section 1.4 above, together with:

- The requirements of Part X of the Planning Act and also Part 10 of the Planning Regulations;
- Dublin City Development Plan 2022-2028;
- Relevant Regional and National Planning Policy Documents (refer to Chapter 3 of this EIAR);
- The receiving environment and any vulnerable or sensitive local features and current uses;
- Previous relevant planning history and applications that have been submitted on the subject and adjoining lands;
- Any likely significant impacts of the Proposed Development on the environment; and
- Available mitigation measures for reducing or eliminating any potentially significant undesirable impacts.

In addition, the individual chapters of this EIAR should be referred to for further information on the documents consulted by each individual consultant. The EIAR complies with the requirements of the Dublin City Development Plan 2022-2028.

[1] Environmental Impact Assessment of Projects Guidance on Scoping 2017

1.7 Purpose and Objectives of the EIAR

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

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

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

EIA is an iterative process. The EIAR captures this assessment process and describes its outcomes. The EIAR documents the consideration of environmental effects and provides transparent, objective and replicable documentary evidence of the EIA evaluation and decision-making processes.

The EIAR provides information on any identified effects arising as a consequence of the Proposed Development and which:

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

1.8 Format and Structure of this EIAR

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

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

- Population and Human Health
- Biodiversity

- Land & Soils
- Water
- Air
- Climate
- Material Assets
- Cultural Heritage
- Landscape

And the interaction between these factors. The expected effects deriving from the vulnerability of the Proposed Development to risks of major accidents and/or disasters must also be examined. EC Guidance requires decommissioning phase to be considered, however, this is not relevant to the Proposed Development as it is a residential development.

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

Table 1-1: Structure of the EIAR

Chapter	Title	Content
1	Introduction and Methodology	Chapter 1 sets out the purpose, methodology and scope of the document.
2	Description of the Proposed Development & Assessment of Alternatives	As required under Article 5(1)(a) of the EIA Directive 2014/52/EU (subsequently referred to as the Directive), Chapter 2 provides a description of the Site, design and scale of Proposed Development, and as required under Article 5(d), an evaluation of the reasonable alternatives.
3	Planning and Development Context	Chapter 3 sets the national, regional, and local policy framework for the Proposed Development.
4	Population and Human Health	Chapter 4 covers the requirement for assessment on potentially significant effects to population and human health as required under Article 3(1)(a) of the Directive.
5	Biodiversity	Chapter 5 covers the requirement of Article 3(1)(b) of the Directive to assess potentially significant effects on biodiversity (which previously referred only to 'fauna and flora'), having particular attention to species and habitats protected under the Habitats Directive and the Birds Directive.
6	Land and Soils	Chapter 6 covers the requirement under Article 3(1)(c) of the Directive on Land and Soil to assess the type of soil and geology in the area of the Proposed Development and identifies any potentially significant effects.

7	Hydrology	Chapter 7 covers the requirement under Article 3(1)(c) of the Directive to assess potentially significant effects to water quality arising from the Proposed Development. This Chapter will assess any potential effects from pollution and discharges to surface water and will detail compliance with the Water Framework Directive.
8	Air Quality and Climate	Chapter 8 covers the requirement under Article 3(1)(c) of the Directive on Air and Climate to assess potentially significant effects to air quality in the surrounding environment.
9	Noise and Vibration	Chapter 9 covers the requirement to assess potentially significant effects from airborne noise and vibration as required under Article 3(1) of the Directive.
10	Landscape and Visual Amenity	Chapter 10 covers the requirement under Article 3(1)(d) of the Directive to assess potentially significant effects on the landscape. This Chapter will assess any potential visual impacts to landscape caused by the Proposed Development.
11	Archaeology and Cultural Heritage.	Chapter 11 covers the requirement under Article 3(1)(d) of the Directive to assess potentially significant effects on archaeology and cultural heritage.
12	Material Assets _Traffic, Utilities and Waste Management	Chapter 12 covers the requirement under Article 3(1)(d) of the Directive to assess potentially significant effects on material assets. This Chapter will identify impacts to existing utilities and infrastructure from the development of the Proposed Development. Article 5(1), Annex IV, point 1(d) of the Directive requires estimates of quantities and types of waste produced during construction and operation phase. Chapter 12 will also present an assessment of how resources and waste will be managed for the Proposed Development.
13	Risk Management	Chapter 13 covers the requirement under Article 3(2) of the Directive to include the expected effects deriving from the vulnerability of the Proposed Development to risks of major accidents and/or disasters that are relevant to the project.
14	Interactions	As required under Article 3(1)(e) of the Directive, Chapter 14 provides an assessment of the interaction between all of the environmental aspects referred to in this EIAR.
15	Mitigation and Monitoring	Chapter 15 describes mitigation and monitoring as required under Article 5(1) of the Directive in order to avoid, prevent, reduce, or if possible, offset any identified significant adverse effects on the environment and, where appropriate, describes any proposed monitoring arrangements.

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

1.9 Methodology Used to Produce this EIAR

The methodology employed to produce this EIAR is detailed in Table 1-2. The objective is to evaluate each environmental topic, both individually and collectively, in a systematic and objective manner.

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

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

An outline of the methodology employed consistently in each chapter of the EIAR to examine each environmental topic is provided in Table 1-2:

Table 1-2: Methodology Employed to Produce each EIAR Chapter

Introduction	Provides an overview of the specialist area and specifies the specialist who prepared the assessment and their qualifications and competencies.
Study Methodology	This subsection outlines the method by which the relevant impact assessment has been conducted within that chapter. In each respective chapter the zone of influence of the Project is outlined in respect of each environmental receptor and explain and justify the methodology used to determine an appropriate study area.
The Existing Receiving Environment (Baseline Situation)	The context, character, significance, and sensitivity of the baseline receiving environment, into which the Proposed Development will fit, is assessed. This also takes account of any Proposed Developments for which applications for consent have been submitted and have been developed.
Characteristics of the Proposed Development	Consideration of the 'Characteristics of the Proposed Development' allows for a projection of the 'level of impact' on any particular aspect of the environment that could arise. For each chapter those characteristics of the Proposed Development which are relevant to the area of study are described; for example, the chapter on noise describes the machinery and operations which are likely to produce noise while the landscape and visual impact would describe the height, scale and location of the development. The characteristics of projects must be considered, with particular regard to: (a) the size and design of the whole project; (b) cumulation with other existing and/or approved projects; (c) the use of natural resources, in particular land, soil, water and biodiversity; (d) the production of waste; (e) pollution and nuisances; (f) Material assets including road network capacity and utilities (g) the risk of major accidents and/or disasters which are relevant to the project concerned, including those caused

	by climate change, in accordance with scientific knowledge; (h) the risks to human health (for example due to water contamination or air pollution)
Potential Impact of the Proposed Development	This section provides a description of the specific, direct and indirect, impacts that the Proposed Development may have. This is provided with reference to both the Receiving Environment and Characteristics of the Proposed Development sections while also referring to the (i) magnitude and intensity, (ii) integrity, (iii) duration and (iv) probability of impacts. Impact assessment addresses direct, indirect, secondary, cumulative, short, medium and long-term permanent, temporary, positive and negative effects as well as impact interactions. This EIAR has considered it important to subdivide sections into 'Construction Phase' and 'Operational Phase' in describing impacts, mitigation measures etc.
Cumulative Impacts	A review has been carried out by each consultant in regard to the potential for cumulative impacts with permitted and Proposed Developments in the vicinity. The Dublin City Council (DCC) and ABP websites were reviewed to identify permissions in the area.
Do Nothing Impact	In order to provide a qualitative and equitable assessment of the Proposed Development, this section considers the Proposed Development in the context of the likely impacts upon the receiving environment should the Proposed Development not take place.
Avoidance, Remedial and Mitigation Measures	Avoidance, Remedial and Mitigation measures describe any corrective or mitigative measures that are either practicable or reasonable, having regard to the potential impacts. This includes avoidance, reduction and remedy measures as set out in Section 4.7 of the Development Management Guidelines 2007 to reduce or eliminate any significant adverse impacts identified.
Predicted Impacts of the Proposed Development	This section allows for a qualitative description of the resultant specific direct, indirect, secondary, cumulative, short, medium and long-term permanent, temporary, positive and negative effects as well as impact interactions which the Proposed Development may have, assuming all mitigation measures are fully and successfully applied.
Monitoring	This involves a description of monitoring in a post-development phase, if required. This section addresses the effects that require monitoring, along with the methods and the agencies that are responsible for such monitoring.
Interactions	This section provides a description of impact interactions together with potential indirect, secondary and cumulative impacts
Difficulties Encountered in Compiling Information	This section provides an indication of any difficulties encountered by the environmental specialist in compiling the required information.
References	Consultants refer to documents referred to in preparing their chapter / undertaking their assessment.

1.10 EIAR Project Team

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

Table 1-3: EIAR Project Team

Chapter	Consultant Name and address	Consultant Competence	Specialist Area
1.0 Introduction and Methodology	Enviroguide Consulting, 3D Core C, The Plaza, Park West, D12F9TN Laura Griffin	Laura Griffin holds a BA Arts- English and Geography and MSc in Climate Change. Laura has worked as an Environmental Consultant with Enviroguide since 2021 and has experience in the preparation of EIA Screening Assessments and EIA chapters.	Multidisciplinary Environmental Consultants
2.0 Project Description and Alternatives	Enviroguide Consulting, 3D Core C, The Plaza, Park West, D12F9TN Nikita Coulter	Nikita Coulter has a B.Sc. in Zoology (Hons) from University College Dublin, an MSc in Biodiversity and Conservation and a Postgraduate Diploma in Environmental Engineering from Trinity College Dublin, and a NEBOSH accredited International Diploma in Environmental Risk Management. Nikita has 8 years professional experience as an Environmental Compliance Specialist.	Multidisciplinary Environmental Consultants
3.0 Planning & Policy Context	John Spain Associates David Ferguson Reviewed by Stephen Blair	David Ferguson has a BA, in Geography and Sociology and a Master in Urban and Regional Planning. Davis is a Corporate Member of both the Irish Planning Institute and the Royal Town Planning Institute. He has recent experience in the preparation of EIARs. Stephen Blair has a master's degree in Regional & Urban Planning from UCD and is a Corporate Member of both the Irish Planning Institute and the Royal Town Planning Institute. Stephen has over 35 years' experience working as a professional planner in both the public and private sectors.	Planning & Development Consultants

4.0 Population and Human Health	Enviroguide Consulting, 3D Core C, The Plaza, Park West, D12F9TN Louise Hewitt Reviewed by Janet O'Shea	Janet O'Shea has 16 years professional environmental experience. Janet who is Technical Director of EIA holds a BSc in Environmental Health and Diploma in Environmental Impact Assessment. Janet is a Lead Environmental Auditor (IEMA Approved), a Chartered Waste Manager (MCIWM) and Chartered Environmentalist (C. Env). Janet has authored and project managed the preparation of EIAs for various large-scale developments. Louise Hewitt holds a BSc Biology and MSc Environmental Resource Management. Louise has worked as an Environmental Consultant with Enviroguide since 2021 and has experience in the preparation of EIA Screening Assessments and EIA chapters.	Multidisciplinary Environmental Consultants
5.0 Biodiversity	Altemar, Lower Windgates, Rathdown Lower, Greystones, Co. Wicklow Bryan Deegan Hugh Delaney	Bryan Deegan MCIEEM Managing Director M.Sc., BSc (Hons.) Dip.Bryan Deegan MCIEEM is the Managing Director of Altemar Ltd. and holds a M.Sc. Environmental Science, BSc (Hons.) in Applied Marine Biology and a National Diploma in Applied Aquatic Science. He has over 26 years' experience as an environmental consultant in Ireland and was the ecologist for all aspects of this project. Bryan has experience in preparing EIARs. Hugh Delaney is a freelance ecologist (Birds primarily) with an experienced background in bird surveying on numerous sites with ecological consultancies over 10+ years. Hugh Delaney, is a lifelong ornithologist, is local to the Dublin area and is especially familiar with the bird life and its ecology in the environs going back over 30 years.	Multidisciplinary Environmental Consultants
6.0 Land & Soils	Enviroguide Consulting, 3D Core C, The Plaza, Park West, D12F9TN Fionnuala Joyce Reviewed by Claire Clifford	Claire Clifford BSc., MSc., PGeo., EurGeol who is Technical Director - Contaminated Land and Hydrogeology with Enviroguide Consulting and is a Professional Geologist with the Institute of Geologists of Ireland and has extensive experience in preparing hydrogeological and environmental assessments for a range of project types and geological and hydrogeological site settings. Fionnuala Joyce, BSc., MSc., is a Hydrogeologist who has five years experience of land soils and geological impact assessments.	Multidisciplinary Environmental Consultants

7.0 Hydrogeology and Hydrology	Enviroguide Consulting, 3D Core C, The Plaza, Park West, D12F9TN Fionnuala Joyce Reviewed by Claire Clifford	Claire Clifford BSc., MSc., PGeo., EurGeol who is Technical Director - Contaminated Land and Hydrogeology with Enviroguide Consulting and is a Professional Geologist with the Institute of Geologists of Ireland and has extensive experience in preparing hydrogeological and environmental assessments for a range of project types and geological and hydrogeological site settings. Fionnuala Joyce, BSc., MSc., is a Hydrogeologist who has five years experience of land soils and geological impact assessments.	Multidisciplinary Environmental Consultants
8.1 Air Quality & Climate	Enviroguide Consulting, 3D Core C, The Plaza, Park West, D12F9TN Laura Griffin	Laura Griffin holds a BA Arts- English and Geography and MSc in Climate Change. Laura has worked as an Environmental Consultant with Enviroguide since 2021 and has experience in the preparation of EIA Screening Assessments and EIA chapters.	Environmental Consultants
8.2 Microclimate	B-Fluid Limited, 28 Baggot Street Lower, Dublin 2, , D02 NX43 Dr. Cristina Paduano Dr. Chino Uzoka Dr. Arman Safdari	Dr. Cristina Paduano is a Chartered Engineer (CEng) and member of Engineers Ireland who specialises in computational fluid dynamics applications for urban environment and the construction industry with over 18 years' experience. She holds a PhD in Mechanical Engineering from Trinity College Dublin, with M.Eng and B.Eng in Aerospace Engineering. Dr. Chino Uzoka is a CFD Specialist Engineer who specialises in computational fluid dynamics applications. He holds a PhD in Mechanical Engineering and MSc in Engineering Management from the University of Huddersfield. Dr. Arman Safdari is a CFD Modelling Engineer who specialises in computational fluid dynamics applications. He is an expert in airflow modelling, heat and mass transfer and multi-phase flow simulations. He holds a PhD in Mechanical Engineering from Pusan National University, a M.Sc. and B.Sc. in Mechanical Engineering.	Engineering Consultancy Firm

9.0 Noise and Vibration	Redkite Environmental, Huntersmoon, Ballykeane Road, Redcross Co. Wicklow Siobhan Maher	Siobhan Maher has over 20 years' experience project managing and preparing assessments for EIARs covering a large variety of project types including major infrastructural projects such as road schemes and ports, industrial projects in the dairy, food processing and pharmaceutical sectors, extractive industries including peat harvesting and leisure, residential and commercial projects. Ms. Maher's relevant qualifications and experience include: • BSc. Analytical Science (Chemistry) from Dublin City University; • Master of Technology (M.Tech.) Environmental Management from University of Limerick; • Senior Consultant, Malone O' Regan Environmental Services, 1998 -2001; • Technical Director, Malone O' Regan Environmental Services, 2001 – 2013; • Business Development, OES Consulting, 2013 – 2014; • Managing Director, Redkite Environmental 2014 – present.	Environmental Consultants
10.0 Landscape and Visual Impact	AECOM, 24 Lower Hatch Street, Dublin 2, D02 TY88 Maria Donohoe Joerg Schulze	Maria is a Landscape Architect with AECOM Ltd. Maria has Bachelor of Honours in Landscape Architecture from University College Dublin and is a Member of the Irish Landscape Institute. She has worked in the Republic of Ireland and the UK and has experience on a range of projects across the public and private sectors. Maria has provided landscape and visual impact assessment for urban and rural developments, in residential, renewable energy projects as well as industrial, electricity, and road infrastructure developments. She provides technical reviews of architectural and landscape architectural design proposals proposing mitigation strategies and design solutions to reduce/minimise the landscape and visual effects through landscape change. Joerg Schulze is a qualified Landscape Architect since 2003 and a corporate member of the Irish Landscape Institute since 2008. He has over 19 years' professional experience working for clients in the private and public sectors. He has a comprehensive track record in developing and managing landscape and visual impact assessments of large residential, commercial, industrial, infrastructural, renewable energy, tourism and civic developments throughout	Multidisciplinary Environmental Consultants

		the island of Ireland. He has extensive experience in all stages of the planning, design, tender and implementation process, contract management and as consultant for EIAR, EIA and Part 8 applications. He has also prepared residential visual impact assessments, manages the production of photomontages and the preparation of zones of theoretical visibility and theoretical visual intensity mapping. Joerg is a regular expert witness at Oral Hearings.	
11.0 Archaeology & Cultural Heritage	AECOM 24 Lower Hatch Street, Dublin 2, D02 TY88 David Kilner	David Kilner, Senior Archaeological Consultant, BA (Hons), PG Dip, MSc, MIAI (AECOM). David has over 20 years' experience supporting environmental impact assessment projects in Ireland. David has been responsible for determining the potential impact to heritage from a wide range of projects varying in size and type from small scale residential to large scale infrastructure, proposing and managing measures to mitigate these impacts.	Multidisciplinary Environmental Consultants
12.1 Material Assets – Road Network & Traffic	AECOM 24 Lower Hatch Street, Dublin 2, D02 TY88 Jen Searle Hillary Herlihy	Jen Searle is a Chartered Transport Planner with over 13 years' experience providing transportation advice to both our public and private sector clients alongside feasibility studies, traffic modelling, simulation and detailed highway design services. Jen's specialism includes in developing Traffic and Transport Assessments (TA), Travel Plans(TP) Environmental Impact Assessments (EIA) and EIARs, scheme design and junction modelling for both small and large developments. Jen is fully embedded in the planning process with her lead role in the development planning team within AECOM. She has extensive knowledge of local planning policy and processes and has worked with National Highways and other stakeholders on multiple projects across the country to deliver suitable developments and improvement schemes. Hilary is a graduate consultant collaborating with members of the traffic team in various projects throughout the Republic of Ireland, TTA's, scoping reports, MMP's, and EIAR inputs are part of the work that Hilary completes daily along-side members of her team. A diverse range of development applications are worked on with a focus on housing development. Recent projects include Energia solar farms and the associated traffic scoping for EIAR and abnormal loads assessment's contribution.	Multidisciplinary Environmental Consultants

		Hilary's experience includes, detailed report writing, understanding of development plan standards and ability to work with development traffic growth assessments.	
12.2 Material Assets – Waste & Utilities	Enviroguide Consulting, 3D Core C, The Plaza, Park West, D12F9TN Nikita Coulter	Nikita Coulter has a B.Sc. in Zoology (Hons) from University College Dublin, an MSc in Biodiversity and Conservation and a Postgraduate Diploma in Environmental Engineering from Trinity College Dublin, and a NEBOSH accredited International Diploma in Environmental Risk Management. Nikita has 8 years professional experience as an Environmental Compliance Specialist.	Multidisciplinary Environmental Consultants
13.0 Risk Management	Chris Mee Group, Ballymount, Dublin Michael Gleeson	Michael Gleeson, BSc, MSc, MIEMA. Michael is an Environmental Health and Safety (EHS) Consultancy Manager for the Dublin office of Christopher Mee & Associates Ltimited (T/A CMSE). He graduated with a First Class Honours from Dublin Institute of Technology with a MSc in environmental health and safety and has extensive expertise over the last 20 years in the provision of Project Supervisor for the Design Process (PSDP) on a wide variety of projects across the public and private sectors with involvement from preplanning to project completion and Safety File handover.	Safety Consultants
14.0 Interactions of the Foregoing	Enviroguide Consulting, 3D Core C, The Plaza, Park West, D12F9TN Arthur Greene	Arthur is a Graduate Environmental Consultant with Enviroguide Consulting. Arthur has a Master of Science (Hons) in Ecosystem Science and Policy from University College Dublin and Justus Liebig University and a Bachelor of Arts (Hons) in Geography from Trinity College Dublin. Arthur has experience preparing Environmental Impact Assessment (EIA) Screening Reports, Introduction Chapters, Archaeology Chapters and Archaeology & Cultural Heritage Chapters of EIARs.	Multidisciplinary Environmental Consultants
15.0 Principal Mitigation & Monitoring Measures	Enviroguide Consulting, 3D Core C, The Plaza, Park West, D12F9TN Arthur Greene	Arthur is a Graduate Environmental Consultant with Enviroguide Consulting. Arthur has a Master of Science (Hons) in Ecosystem Science and Policy from University College Dublin and Justus Liebig University and a Bachelor of Arts (Hons) in Geography from Trinity College Dublin. Arthur has experience preparing Environmental Impact Assessment (EIA) Screening Reports, Introduction Chapters, Archaeology Chapters and Archaeology & Cultural Heritage Chapters of EIARs.	Multidisciplinary Environmental Consultants

1.11 Non-Technical Summary

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

1.12 Links between EIAR and Appropriate Assessment

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

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

Accordingly, an Appropriate Assessment Stage 1 Screening exercise was undertaken by Altemar Limited (2022) in accordance with 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' (European Commission, 2021)' and an AA Screening Report is submitted with this application.

Acting on a strictly precautionary basis, a Natura Impact Statement (or Stage 2 Appropriate Assessment) was required in respect of the effects of the Proposed Development on South Dublin Bay SAC, North Dublin Bay SAC, South Dublin Bay and River Tolka Estuary SPA, and North Bull Island SPA because it cannot be excluded on the basis of best objective scientific information following screening, in the absence of control or mitigation measures in relation to pollution (silt, dust, potential contamination and runoff) during construction and operation, that the Proposed Development, individually and/or in combination with other plans or projects, will have a significant effect on the named European Sites. The NIS subsequently concluded that *'Following the implementation of the mitigation measures outlined, the construction and operation of the Proposed Development will not adversely affect the integrity of the site or result in direct, indirect or in-combination effects which would have the potential to adversely affect the qualifying interests/special conservation interests of the European sites screened in for NIS with regard to the range, population densities or conservation status of the habitats and species for which these sites are designated (i.e. conservation objectives).*'

"*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*." (Altemar, 2022).

1.13 Availability of EIAR Documents.

A copy of this EIAR document and Non-Technical Summary is available for purchase at the offices of An Bord Pleanála at a fee not exceeding the reasonable cost of reproducing the document. The application may also be viewed/downloaded on the following website: www.donoreproject.ie

1.14 Statement of Difficulties Encountered

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

1.15 Quotations

It is important to acknowledge that the EIAR by its nature contains statements about the Proposed Development, some of which are positive and some less than positive. Selective quotation or quotations out of context can give a very misleading impression of the findings of the study. Therefore, the study team urge that quotations should, where reasonably possible, be taken from the conclusions of specialists' sections or from the Non-Technical Summary and not selective.

2 PROJECT DESCRIPTION & DESCRIPTION OF ALTERNATIVES

2.1 Introduction and Terms of Reference

This Chapter provides a detailed description of the Proposed Development together with details of the existing environment. In accordance with Article 5(1)(a) of the EIA Directive 2011/92/EU, as amended by 2014/52/EU and Schedule 6 of the Planning and Development Regulations 2001 – 2022, the description of the project should comprise:

'…information on the site, design, size and other relevant features of the project'.

The Chapters of this EIAR have been prepared in accordance with the EIA Directive; Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EIARs) (EPA, 2022); Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning and Local Government, 2018); and other EIA guidance documents , including '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' (European Commission, 2021)', 2021/C 437/01.

The EIAR must contain information in relation to the environmental effects of both the Proposed Development and all other "*reasonable*" alternatives studied. An indication of the main reasons for the option chosen must be given, taking into account the effects of the Proposed Development on the environment.

The description of the Proposed Development is set out in this chapter and the following chapters by each specialist consultant in terms of those environmental topics which will form the basis of the impact assessment process and the characteristics of the Proposed Development which could potentially affect population, human health, cultural heritage and archaeology, biodiversity, land and soil, water, air quality, climate, noise, vibration, landscape and visual impact, and material assets.

2.1.1 Quality Assurance and Competence

This Chapter was prepared by Enviroguide Senior Environmental Consultant Nikita Coulter. Nikita Coulter has a B.Sc. in Zoology (Hons) from University College Dublin, an M.Sc. in Biodiversity and Conservation and a Postgraduate Diploma in Environmental Engineering from Trinity College Dublin, and a NEBOSH accredited International Diploma in Environmental Risk Management. Nikita has 8 years professional experience as an Environmental Compliance Specialist and has experience working on EIARs and EIA Screening Reports for projects of a similar scale to the Proposed Development.

2.2 Site Location

The Proposed Development is located at a site on the former St. Teresa's Gardens, Donore Avenue, Dublin 8. The site is bound by Donore Avenue to the north-east, Margaret Kennedy Road to the north-west, The Coombe Women and Infants University Hospital to the west, the former Bailey Gibson factory buildings to the south-west, and the former Player Wills factory to the south-east. The Proposed Development will consist of the construction of a residential scheme of 543 no. apartments on an overall site area of 3.26 ha. with a net development area of 2.05 ha. The landholding comprises the site of the former St. Teresa's Gardens Flat

Complex, which have since been demolished save for two blocks closest to Donore Avenue which are de-tenanted.

The Proposed Development site benefits from close access to a whole range of amenities in the general Dolphin's Barn/South Circular Road area. A Community and Social Audit (CSA) Report has been prepared for the Proposed Development. The CSIA Report concludes that the Proposed Development site is accessible to a range of leisure facilities including football / rugby / GAA clubs, a number of public parks, a number of education facilities and a substantial amount of community facilities located throughout the neighbourhood. As such the facilities that the local area currently offers is very good and will be able to support the Proposed Development.

2.3 Site History / Background and Description

The Proposed Development site forms part of a larger area zoned '*Z14 - Strategic Development and Regeneration Areas (SDRA)*', under the Dublin City Development Plan (DCDP) 2022-2028. The land-use zoning objective for Z14 zoned lands is "*To seek the social, economic and physical development and/or rejuvenation of an area with mixed use, of which residential would be the predominant use"*

Within the DCDP 2022-2028, 17 no. areas have been classed as SDRA's. St. Teresa's Gardens Environs and SDRA is listed as SDRA 11.

The DCDP has set out guiding principles for the 17 no. SDRA's, and in some cases, further detailed objectives are found in adopted local area plans and strategic development zone plans. The Planning Report prepared by John Spain Associates for the Proposed Development (Appendix B) has detailed how the Proposed Development is consistent with the Guiding Principles for the St Teresa's Gardens and Environs SDRA 11 as set out in the Dublin City Development Plan 2022-2028.

Figure 2-1 and Figure 2-2 detail the Site Location and the Proposed Site Layout Plan, respectively.

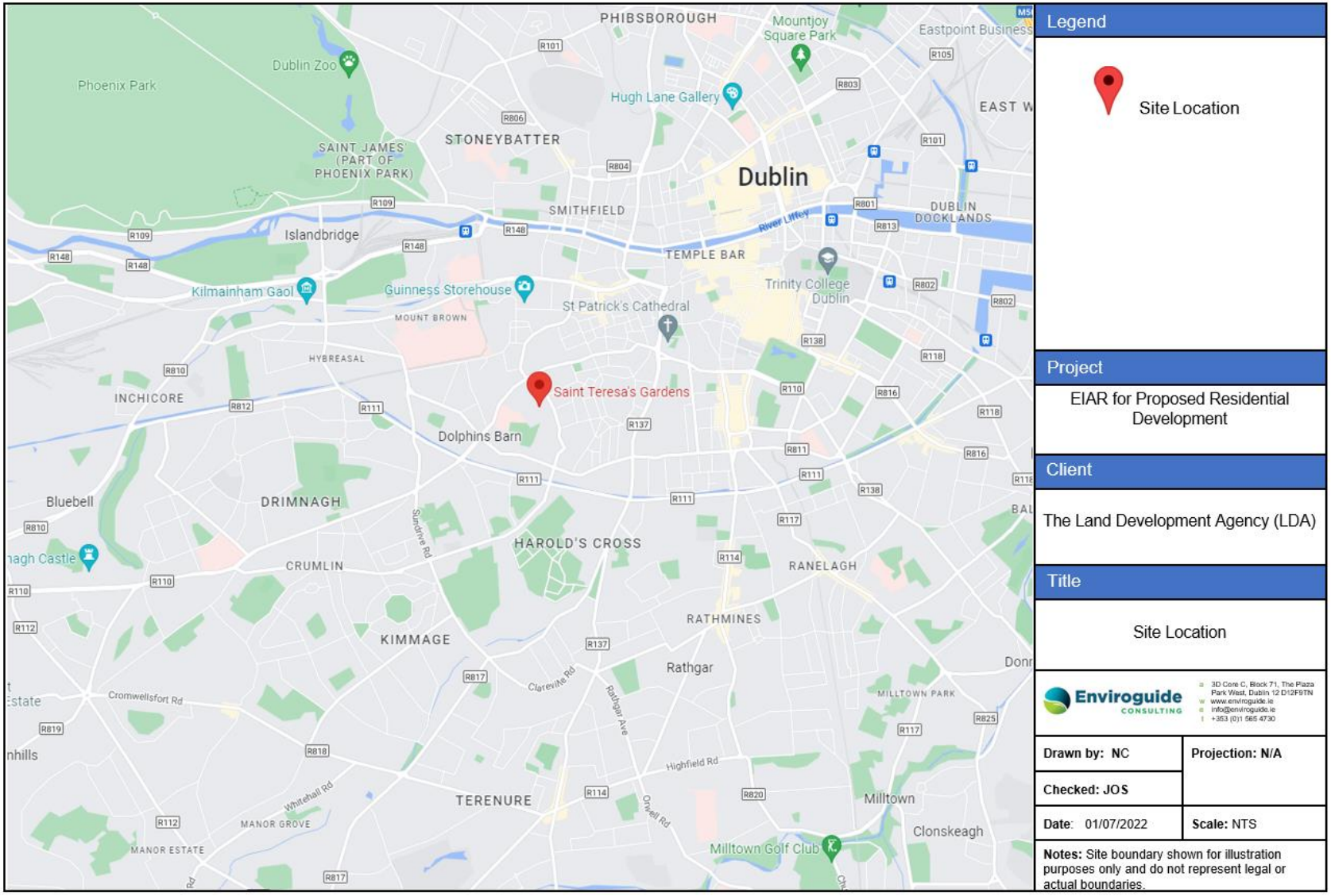


Figure 2-1: Site Location Map

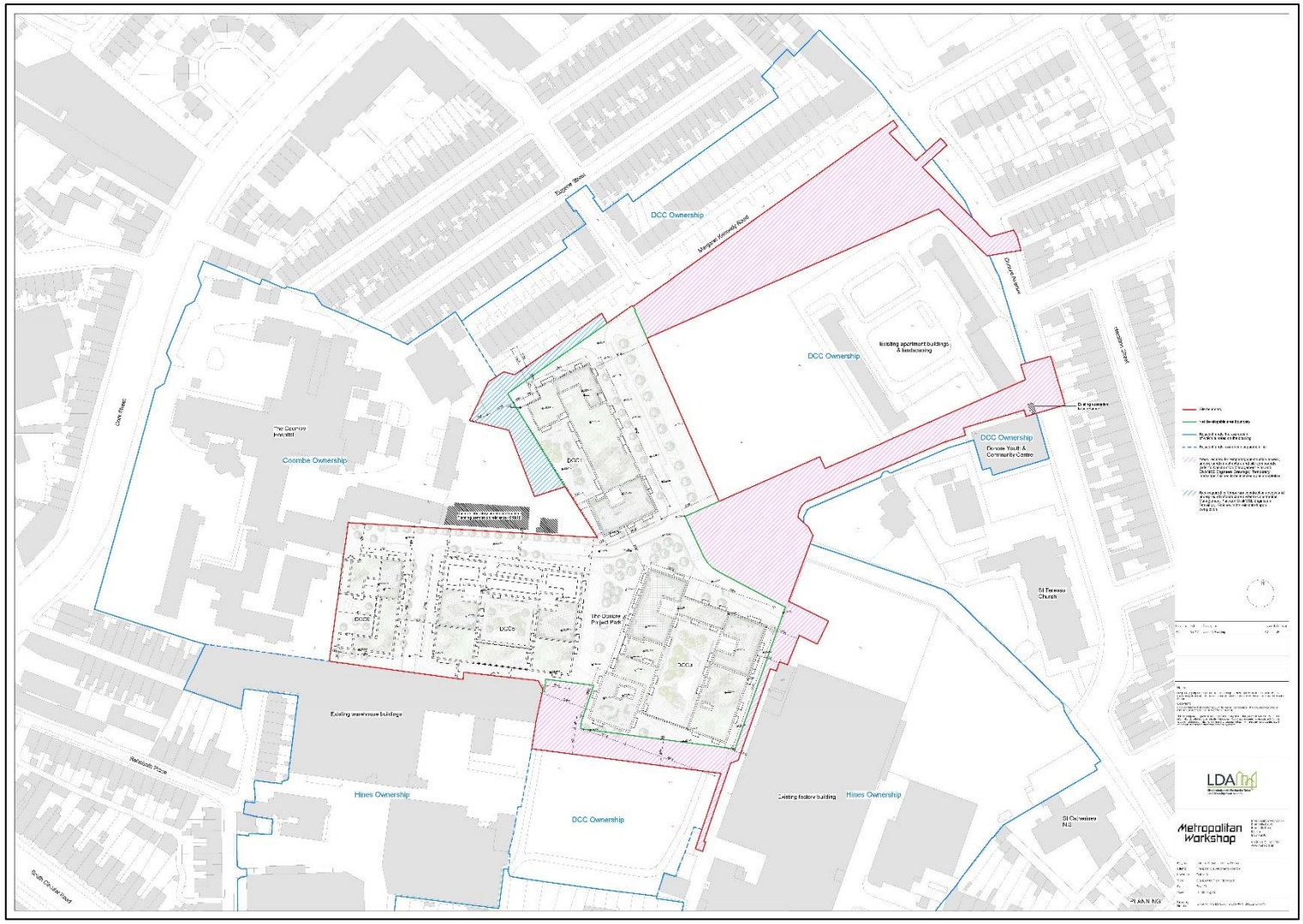


Figure 2-2: Proposed Site Layout Plan (Drawing number STG-MW-S1b-00-XX-DR-A-1100002-Site Layout Plan_Proposed-S4-P1, Metropolitan Workshop)

2.4 Project Overview

The Proposed Development, the planning application for which is accompanied by this EIAR, will consist of the construction of a residential scheme of 543 no. apartments on an overall site of 3.26 ha (GFA of c. 53,227 sqm) containing the following mix of apartments:

- 225 No. 1 bedroom apartments (36 no. 1-person & 189 no. 2-person)
- 274 No. 2 bedroom apartments (including 52 No. 2 bed 3 person apartments and 222 No. 2 bed 4 person apartments)
- 44 No. 3 bedroom 5-person apartments
- A retail/café unit (168 sq.m.), mobility hub (52 sq.m.) and 952 sq.m. of community, artist workspace, arts and cultural space, including a creche, set out in 4 No. blocks.

The breakdown of each block will contain the following apartments:

- Block DCC 1 comprises 111 No. apartments in a block of 6-7 storeys;
- Block DCC 3 comprises 247 No. apartments in a block of 6-15 storeys;
- Block DCC 5 comprises 132 No. apartments in a block of 2-7 storeys;
- Block DCC 6 comprises 53 No. apartments in a block of 7 storeys;

The Proposed Development will also provide for public open space of 3,408 sqm, communal amenity space of 4,417 sqm and an outdoor play space associated with the creche. Provision of private open space in the form of balconies or terraces is provided to all individual apartments.

The Proposed Development will provide 906 no. residential bicycle parking spaces which are located within secure bicycle stores. 5% of these are over-sized spaces which are for large bicycles, cargo bicycles and other non-standard bicycles. In addition, 138 spaces for visitors are distributed throughout the site.

A total of 79 no. car parking spaces are provided at undercroft level. Six of these are mobility impaired spaces (2 in each of DCC1, DCC3 & DCC5). 50% of standard spaces will be EV fitted. Up to 30 of the spaces will be reserved for car sharing (resident use only). A further 15 no. on-street spaces are proposed consisting of:

- 1 no. accessible bay (between DCC5 & DCC6)
- 1 no. short stay bay (between DCC5 & DCC6)
- 1 no. crèche set-down / loading bay (between DCC5 & DCC6)
- 1 no. set-down / loading bay (northern side of DCC5)
- 1 no. set-down/loading bay (northern side of DCC 3)
- 10 no. short stay spaces (north-east of DCC1)

In addition, 4 no. motorcycle spaces are also to be provided.

Vehicular, pedestrian and cyclist access routes are provided from a new entrance to the north-west from Margaret Kennedy Road. Provision for further vehicular, pedestrian and cyclist access points have been made to facilitate connections to the planned residential schemes on the Bailey Gibson & Player Wills sites for which there are extant permissions (Ref. No.'s ABP-307221-20 & ABP-308917-20).

The development will also provide for all associated ancillary site development infrastructure including site clearance & demolition of boundary wall along Margaret Kennedy Road and playing pitch on eastern side of site and associated fencing/lighting, the construction of foundations, ESB substations, switch room, water tank rooms, storage room, meter room, sprinkler tank room, comms room, bin storage, bicycle stores, green roofs, hard and soft landscaping, play equipment, boundary walls, attenuation area and all associated works and infrastructure to facilitate the development including connection to foul and surface water drainage and water supply.

2.4.1 Construction Phase

The Construction Phase for the Proposed Development will take place over a 35-month period, which will include site clearance and construction activities. A Construction and Environmental Management Plan (CEMP) has been prepared for the Proposed Development by Enviroguide Consulting (2022) and has been submitted with this application. The CEMP sets out the provisions for the Construction Phase of the Proposed Development.

There are a number of potential effects that may arise during the Construction Phase, which are subject to assessment in the relevant chapters of the EIAR and related application documentation. The CEMP includes a series of measures which will ensure that the potential effects from the Construction Phase are addressed. This list is non-exhaustive, but covers the major issues which are considered in the CEMP:

1. Traffic Management
2. Road Cleaning
3. Working Hours
4. Construction Methodology
5. Noise and Vibration
6. Sediment and Water Pollution Control Plan
7. Biodiversity Protection Measures
8. Surface Water Drainage Works

Construction activities will take place in two main phases. Phase 1 comprises the section of the Proposed Development as shown in green on Figure 2-3 Phasing Diagram. During Phase 1, site drainage will be installed during the enabling works and temporary construction haul roads will also be constructed. Phase 2 comprises the balance of the housing as shown in yellow in Figure 2-3.

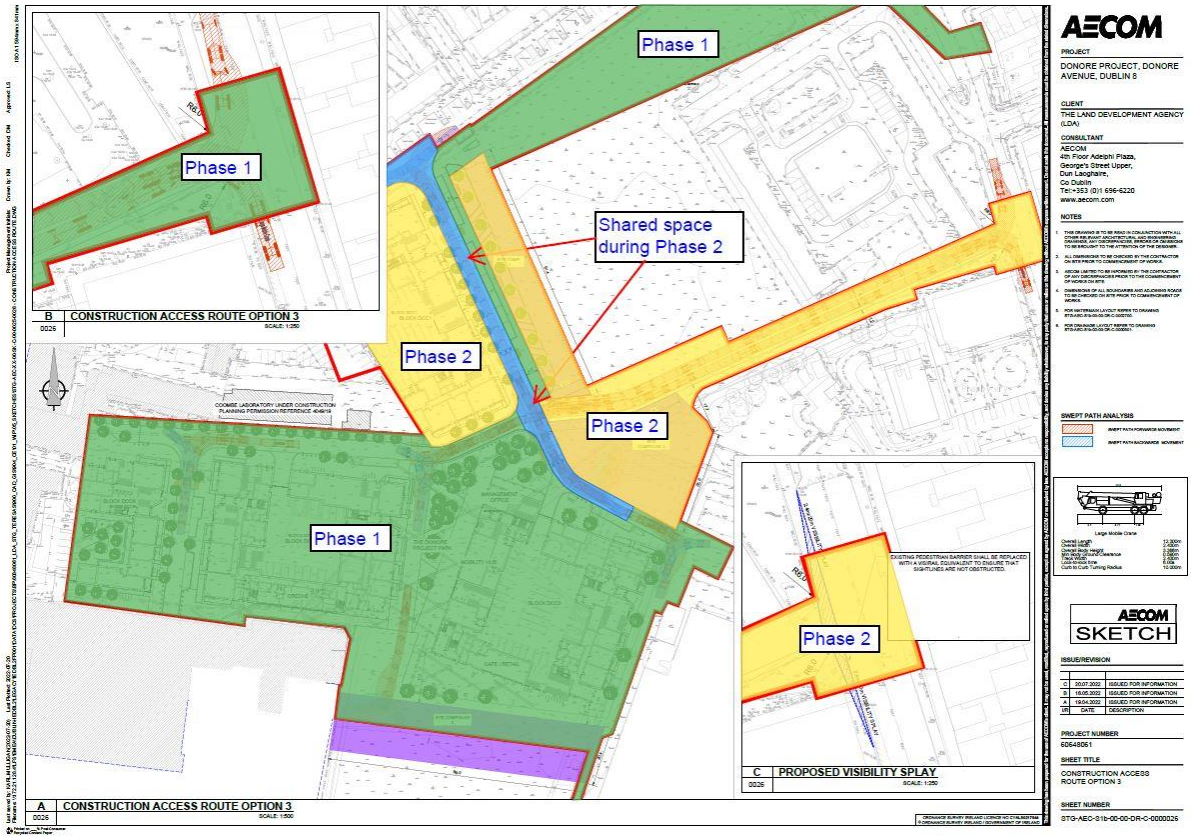


Figure 2-3: Phasing Diagram (AECOM, 2022)

The construction methodology that will be utilised on the site of the Proposed Development will have four main attributes to minimise the impact of the Construction Phase:

1. Protection of Adjacent Areas
2. Excavation and Rock Breaking
3. Material Hoisting
4. Waste Management

2.4.2 Health and Safety

The Proposed Development will comply with all relevant Health and Safety legislation and best practice during the construction of the Proposed Development. Where possible potential risks have been omitted from the design so that the impact on the Construction Phase is reduced. The CEMP addresses these issues in greater detail.

2.4.3 Site Access

The site will be accessed from the Donore Avenue. A temporary haul road during the period of construction will be taken directly from Donore Avenue to the northeast of the site at a point next to the Donore Community Centre.

2.4.4 Operational Phase

The Proposed Development will comprise residential and commercial use consistent with the permitted land use zoning for the area, Z14. The Operational Phase of the Proposed

Development will consist of the normal day-to-day operations necessary for the management of a predominantly residential development, and the ongoing maintenance of the residential dwellings, retail unit, creche and public outdoor areas. Further detail on the potential impacts of the operational phase is provided in Chapters 4-12 of this EIAR.

2.5 Statutory Planning Context

The site of the Proposed Development is subject to National, Regional and Local level planning policy. The following outlines the key planning documents of relevance to the future development of the subject lands. This section will not address the detailed policies and objectives contained in the various plans which are relevant to the Proposed Development, as these are addressed in a separate bound Planning Report prepared by John Spain Associates, which accompanies this planning application as a standalone document. Summary information from the Planning Report is detailed in Chapter 3 of this EIAR.

2.5.1 National Policy

- National Planning Framework - Project Ireland 2040 (2018)
- Urban Development and Building Height Guidelines: Guidelines for Planning Authorities (2018)
- Sustainable Urban Housing: Design Standards for New Apartments (2020)
- Design Manual for Urban Roads and Streets (2019)
- Sustainable Residential Development in Urban: Guidelines for Planning AuthoritiesAreas (2009)
- The Urban Design Manual (A Best Practice Guide) (2009)
- Delivering Homes, Sustaining Communities (2008) and the accompanying Best Practice Guidelines - Quality Housing for Sustainable Communities (2007)
- Smarter Travel: A Sustainable Transport Future - A New Transport Policy for Ireland (2009)
- The Planning System and Flood Risk Management – Guidelines for Local Authorities (2009)
- Architectural Heritage Protection Guidelines for Planning Authorities (2011)

2.5.2 Regional Policy

- Eastern and Midland Regional Assembly – Regional Spatial & Economic Strategy (RSES), (2018)

2.5.3 Local Policy

- Dublin City Development Plan 2022-2028

The Dublin City Development Plan 2022-2028 was adopted by the Council on 12 November 2022 and will come into effect on 14 December 2022. As the text and maps of the adopted Plan have not been published as of the date of lodgement of this application, the Proposed Development is based on the draft plan and proposed material amendments as agreed by the Council on 12 November 2022. An Bord Pleanála will of course assess the scheme against the published plan. We have been provided with a copy of the finalised Material Alterations as agreed by the Council to inform this Planning Report.

Using the same formatting as set out in the Material Alterations to the Draft Plan, Amendments to the Draft Plan are shown by way of bold green and underlined text **{Amendment}**, while deletions are shown in bold red text with strike through. **(deletion).**

2.6 Description of Alternatives

2.6.1 Introduction

Consideration of reasonable alternatives is an important aspect of the EIA process and is necessary to evaluate the likely significant effects of a range of development strategies for the site of the Proposed Development within the constraints imposed by environmental and planning conditions. This section provides an overview of how the Proposed Development has evolved to date by way of consideration of alternative designs and how the Proposed Development considered different layout options. Various options were considered as the scheme progressed and key considerations and amendments to the design were incorporated, having regard to the key environmental issues pertaining to the lands.

Article 5 of the EIA Directive and Schedule 6 of the Planning and Development Regulations 2001 – 2022 require that the EIAR contains:

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

This section of the EIAR provides an explanation of the reasonable alternatives examined throughout the design and consultation process. This serves to indicate the main reasons for choosing the Proposed Development, taking into account and providing a comparison of the environmental effects. The alternatives may be described at the following levels:

- 'Do-nothing' alternative
- Alternative locations
- Alternative designs
- Alternative layouts
- Alternative processes
- Alternative mitigation measures

Pursuant to Section 3.4.1 of the Environmental Protection Agency (EPA) *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* (EPA, 2022), the consideration of alternatives also needs to be cognisant of the fact that "*in some instances some of the alternatives described below will not be applicable - e.g., there may be no relevant 'alternative location'…"*

In accordance with EPA Guidelines (EPA, 2022), different types of alternatives may be considered at several key phases 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 (EPA, 2022) 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 key environmental and practical considerations which influenced the design of the Proposed Development and alternative layouts on the subject lands included the following:

- The quality of the urban environment to be delivered and the associated potential impact on human health
- The requirement for public open space, and the need to respond to existing network of open space
- The topography of the lands
- The emerging residential areas to the south and east and existing character of the wider area
- Consideration of the loss of vegetation and biodiversity within the Proposed Development site
- The visual impact of the Proposed Development on the wider area and nearby residential proposals
- The development context, including future adjacent residential and infrastructure development
- Access, permeability and connectivity with surrounding areas.

The following sections of this chapter of the EIAR contains an analysis of the alternative development options for the site, describing design options and changes which were incorporated into the scheme as the proposals progressed. The key considerations and amendments to the design of the scheme, having regard to and comparing the key environmental effects, are set out and discussed.

2.6.2 'Do-nothing' Alternative

The 'Do-nothing' alternative considers the potential effect on the site and the surrounding environment if the Proposed Development did not proceed. Each Chapter of this EIAR includes a description of the 'Do Nothing' alternative and should be referenced in conjunction with this Chapter.

Under the 'Do-nothing' scenario there would be no increase in traffic, noise, dust or waste, however, the site would fail to achieve the objectives of the National Planning Framework (NPF) - Project Ireland 2040, which requires delivery of 30-35,000 homes annually to 2027. To achieve the objective of compact growth as defined within the NPF, 40% of future housing delivery is to be delivered within and close to the existing built-up areas. The Proposed Development supports and assists in achieving the objectives of the NPF.

Under a 'Do-nothing' scenario, the St. Teresa's Gardens site would remain in its current condition. The site in its present condition is undeveloped, overgrown and fenced off, and offers no visual or physical amenity to the local area, potentially encouraging anti-social behaviour. A 'Do-nothing' scenario would fail to address the housing shortage in Dublin City Centre and would not be consistent with the objectives as set out in the Dublin City

Development Plan (DCDP) 2022-2028 to revitalise the St. Teresa's Gardens site in combination with the surrounding SDRA 11 lands. Hence a 'Do-Nothing' scenario is not considered viable or appropriate for this site. The Proposed Development is required in order to enable the future development of the residentially zoned lands to the south and east of the Proposed Development site.

Therefore, having regard to the opportunity to redevelop an underutilised, appropriately zoned site at a sustainable location close to public transport and road infrastructure, a 'Do-nothing' scenario would leave a suitably zoned and located site empty, which is considered to be an inefficient use of the site and contrary to the implementation of the policies and objectives of the national, regional and local planning policy.

2.6.3 Alternative Locations

As previously stated, the site of the Proposed Development is subject to zoning objective Z14 in the DCDP 2022-2028. The Department of Housing, Planning and Local Government's (now the Department of Housing, Local Government and Heritage) 2018 publication '*Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment'* notes specifically that the consideration of some types of alternatives, such as alternative locations, may not be appropriate in all cases. EIA is concerned with projects and the EPA's guidelines (2022) state that, in some instances, neither the Applicant nor the competent authority can realistically be expected to examine options that have already been previously determined by a higher authority, such as a national plan or regional programme for infrastructure, which are examined by means of a Strategic Environmental Assessment (SEA), the higher tier form of environmental assessment.

The Proposed Development will contribute positively to the development of the wider area and optimises underutilised land at an appropriate location which is well serviced by infrastructure, transport and local facilities, which has been appropriately zoned for development in the DCDP 2022-2028 and assessed by means of an SEA. The Proposed Development site and the surrounding area have the environmental capacity to accommodate the Proposed Development without any significant effects upon environmental sensitivities due to the site location. As such, it is not considered appropriate to evaluate alternate locations within the EIAR.

2.6.4 Alternative Uses

The subject lands are zoned Z14 for residential and mixed uses within the DCDP 2022-2028. The overall site is located in close proximity to the Dolphin's Barn, South Circular Road and Cork Street, which host a range of social infrastructure, in addition to the high-quality public transport provided by both LUAS and city bus routes.

The zoning matrix for Z14 zoned lands identifies residential and childcare facility as permissible uses. The Proposed Development therefore accords with the zoning objectives for the area under the Development Plan, as detailed in Chapter 3 of this EIAR.

The Proposed Development is in line with the objectives of Housing for All, as it represents an increase in housing supply in the area including social housing. As part of the Proposed

Development the existing vacant site is to be brought into full use for apartments, along with ancillary uses, further delivering on the aims of Housing for All.

The lack of housing supply in Ireland is a well-documented and ongoing issue. The Proposed Development incorporates the construction of 543 no. apartments, including social rented apartments, which will service the demand for housing in the area. As such this is considered the most appropriate use of the land.

2.6.5 Alternative Design & Layouts

During the design process for the Proposed Development, the Proposed Development has been prepared in accordance with the requirements of the Dublin City Development Plan 2022-2028 and has been the subject of several pre-application meetings with the Planning Authority prior to lodgement. Both the context and approach to the design and layout of the Site of the Proposed Development, and the emerging final design have been subject to consultation with all the relevant authorities prior to the finalised design and layout being prepared.

As part of the preliminary design process, several iterations of the site layout and alternative designs for the Proposed Development were considered and developed through a number of

design team meetings. Numerous issues were highlighted that informed the design process in areas including, but not limited to:

- Open space provision,
- Population and human health in an urban environment,
- Noise and visual impact,
- Biodiversity,
- Archaeology,
- Road and access arrangements,

Due consideration was given to these and other issues up to the formalisation of the final scheme, which is being submitted to An Bord Pleanála for approval. The process involved an evolving design whereby different solutions were tested to establish the optimum design.

A high-quality final layout and design has been achieved, regarding the position of the Proposed Development, as is presented in the Architectural Design Statement (Metropolitan Workshop, 2022). This proposal is a high density, high-quality, mixed-use development, close to employment and transport options. To further increase land efficiency, the Proposed Development places a variety of communal spaces on the rooftops of buildings. It is considered that the layout of the scheme as proposed is the optimal solution for the lands. It is further considered that the design ensures that the development potential of a strategically positioned and underutilised plot is maximised.

During the design process for the Proposed Development, the Design Team developed several iterations of the site layout plan, which have been progressed following feedback from the Applicant (the Land Development Agency (LDA)) and DCC, as well as from a series of pre-planning consultations with DCC's planning department. The Proposed Development has also been carefully considered as part of an overall development strategy for the LDA lands

in consultation with Hines (the developer of the adjoining lands) to ensure future developments integrate and contribute to the sustainable development and regeneration of the overall SDRA 11 lands. This strategy responds to the characteristics and context of the site, and for further information on the development rationale please refer to accompanying documentation including the Design Statement prepared by Metropolitan Workshop (2022) and included in this EIAR as Appendix C.

The proposals illustrated in Figure 2-5 have been extracted from the Design Statement (Metropolitan Workshop, 2022) and set out the progression of the design of the Proposed Development from inception to the current design, which ultimately corresponds with this planning application.

Figure 2-4: Design Progression of the Proposed Development

2.6.6 Alternative Process

Due to the nature of the current proposal, i.e., residential development with associated amenity space and a childcare facility, where the planning application will be submitted to An Bord Pleanála, it was not considered necessary to consider alternative processes for the Proposed Development.

2.6.7 Alternative Mitigation Measures

The EPA Guidelines (2022) also note that it may be possible to mitigate the potential effects of the Proposed Development in a variety of ways. In these circumstances the technical chapters within this EIAR will propose and describe alternative mitigation measures for the environmental aspects that they cover and may describe the various options and provide an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.

A bespoke site Construction Environmental Management Plan (CEMP) has been prepared for the Proposed Development by Enviroguide Consulting (2022). The main purpose of the CEMP is to provide a mechanism for implementation of the various mitigation and monitoring measures which are described in the EIAR, which include but are not limited to, waste and materials management; noise and vibration; dust and air quality; traffic and vehicle management; pollution incident control; and protection of vegetation and fauna. A summary of the mitigation measures to be incorporated into the CEMP is provided in Chapter 15 of this EIAR.

2.7 The Existence of the Project

The Proposed Development will create a sense of place through the creation of new spaces while respecting the context of the site and responding to future changes. The chosen design and layout creates people friendly streets and spaces through legible public open spaces that connect the distinct character areas within a sequence of interconnected shared courtyards, providing secondary ‘outdoor rooms’ leading to the main areas of public open space within the overall SDRA 11 area. The net residential density of the Proposed Development will be 264.9 units per hectare, which is based upon the total net developable site area of 2.05 hectares (gross site area 3.26 ha) and a total of 543 no. residential units. The proposed density makes use of the available area onsite, allowing a sustainable density while achieving a high-quality development and a sense of place.

A high-quality landscape treatment is proposed for the scheme, with significant levels of open space provision. A total of 3,408 sqm of open space is proposed throughout the scheme which equates to 16.64% of the net developable area. The landscape strategy considers a hierarchy of public, communal and private spaces throughout the Proposed Development offering a variety of amenity for this mixed tenure and dynamic development.

The Proposed Development will range in height from 2 no.– 15 no. storeys. The proposed building heights have been designed to take cognisance of both the existing surrounding residential development, the extant permissions for developments on the adjoining sites and the Urban Development and Building Height Guidelines which allow for increased height in appropriate locations.

The potential direct, secondary and indirect significant effects on Population & Human Health, Land & Soil, Hydrology and Hydrogeology, Landscape & Visual, Noise, Air Quality & Climate, Traffic, Built Services and Waste Management, associated with the Proposed Development are described and assessed in the relevant specialist chapters of this EIAR.

The Proposed Development also has the potential for cumulative impacts with neighbouring and surrounding projects. Specific permitted plans and projects adjoining the site of the Proposed Development include:

- The Bailey Gibson permission (BG1) (Ref. ABP-307221-20)
- The Bailey Gibson permission (BG2) (Ref. ABP-314171/22)
- The Player Wills permission (ABP-308917-20)
- The Coombe Laboratory Building permission (4049/19) and the Colposcopy Building permission (Ref. 3537/21), and
- The Part 8 permission for the demolition of the remaining two original flat complex blocks (Ref 2475/18)

The potential cumulative impacts arising from the Construction and Operational Phases of the Proposed Development with other planned, permitted and existing projects are assessed in detail in each of the technical chapters of this EIAR, and appropriate mitigation measures are proposed for any potential significant effects which have been identified. The zone of influence for assessing cumulative impacts in each technical chapter has been outlined in the relevant chapters.

3 POLICY AND PLANNING CONTEXT

3.1 Introduction

This Chapter describes the Proposed Development within the context of the relevant planning policy as it relates to the environment. The Proposed Development is located in the Local Authority area of Dublin City Council (DCC). The Proposed Development is described in further detail in Chapter 2 (Description of the Proposed Development).

The national and regional policy context provides the clear policy link between national policies and Local Authority planning policies and decisions. The relevant documents are the *National Planning Framework – Ireland 2040* and the *Regional Spatial and Economic Strategy for the Eastern and Midlands Regional Assembly*.

The National and Regional Planning Context has been described in the Planning Report produced by John Spain Associates (JSA, 2022) and included with the application documentation. This chapter sets out a summary of the National and Regional planning policy context together with the Local Planning and Development Context and the interaction of this policy context with the specialist chapters of this EIA report. Further detail is set out in the Planning Report.

The following sections describe how the Proposed Development complies with the stated and statutory requirements of Dublin City Council (DCC) with respect to planning and sustainable development. The relevant local planning policy with which the Proposed Development complies with is the recently adopted Dublin City Development Plan 2022-2028, which will become operational before the Board makes its decision on this application.

This chapter of the EIAR was prepared by David Ferguson, BA, MRUP, MIPI, Senior Planner with John Spain Associates, Planning & Development Consultants and reviewed by Stephen Blair, BA, MRUP, MIPI, Executive Director with John Spain Associates.

3.2 National and Regional Planning Policy Context

3.2.1 National Planning Framework (NPF)

The National Planning Framework (Ireland 2040 – Our Plan) was published in February 2018. The National Planning Framework (NPF) is the Government's high-level strategic plan for shaping the future growth and development of Ireland out to the year 2040. The plan will guide national, regional and local planning opportunities together with investment decisions for at least the next two decades.

The National Strategic Outcomes set out in the NPF are:

- Compact Growth;
- Enhanced Regional Accessibility;
- Strengthened Rural Economies and Communities;
- High-Quality International Connectivity;
- Sustainable Mobility;
- A Strong Economy, supported by Enterprise, Innovation and Skills;

- Enhanced Amenities and Heritage;
- Transition to a Low Carbon and Climate Resilient Society;
- Sustainable Management of Water, Waste and other Environmental Resources;
- Access to Quality Childcare, Education and Health Services;

The shared goal for Compact Growth states:

"Carefully managing the sustainable growth of compact cities, towns and villages will add value and create more attractive places in which people can live and work. All our urban settlements contain many potential development areas, centrally located and frequently publicly owned, that are suitable and capable of re-use to provide housing, jobs, amenities and services, but which need a streamlined and co-ordinated approach to their development, with investment in enabling infrastructure and supporting amenities, to realise their potential. Activating these strategic areas and achieving effective density and consolidation, rather than more sprawl of urban development, is a top priority."

In relation to residential development the plan states:

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

In terms of strategy for Dublin, the NPF states:

"Supporting the future growth and success of Dublin as Ireland's leading global city of scale, by better managing Dublin's growth to ensure that more of it can be accommodated within and close to the city.

Enabling significant population and jobs growth in the Dublin metropolitan area, together with better management of the trend towards overspill into surrounding counties.

Addressing infrastructural bottlenecks, improving citizens' quality of life and increasing housing supply in the right locations."

A core objective of the NPF is achieving compact growth and the framework targets a 'significant proportion of future urban development on infill/brownfield development sites within the built footprint of existing urban areas'.

The NPF seeks to achieve 'better use of under-utilised land and buildings, including 'infill', 'brownfield' and publicly owned sites and vacant and under- occupied buildings, with higher housing and jobs densities, better serviced by existing facilities and public transport'.

National Policy Objective 2a sets out "*a target that half (50%) of future population and employment growth will be focused in the existing five cities and their suburbs".*

Objective 3a sets a target to "*deliver at least 40% of all new homes nationally, within the built-up footprint of existing settlements.*"

Objective 3b states *"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 4 aims to "*ensure the creation of attractive, liveable, well designed, high urban places that are home to diverse and integrated communities that enjoy a high quality of life and well-being."*

National Policy Objective 5 states *"to 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 seeks to *"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 relates to applying a tailored approach to urban development, with a particular focus including Dublin, and encouraging population growth in strong employment and service centres of all sizes, supported by employment growth.

National Policy Objective 11 states: *"In meeting urban development requirements, there will be a presumption in favour of development that can encourage more people and generate more jobs and activity within existing cities, towns and villages, subject to development meeting appropriate planning standards and achieving targeted growth."*

The NPF states that "…*In particular, general restriction on building height or universal standards for car parking or garden size may not be applicable in all circumstances in urban areas and should be replaced by performance based criteria appropriate to general locations e.g., city/ town centre, public transport hub, inner suburban, public transport corridor, outer suburban, town, village etc."*

National Policy Objective 13 states that: "*In urban areas, planning and related standards, including in particular building height and car parking will be based on performance criteria that seek to achieve well-designed high-quality outcomes in order to achieve targeted growth. These standards will be subject to a range of tolerance that enables alternative solutions to be proposed to achieve stated outcomes, provided public safety is not compromised and the environment is suitably protected."*

National Policy Objective 27 seeks to *"Ensure the integration of safe and convenient alternatives to the car into the design of our communities, by prioritising walking and cycling accessibility to both existing and proposed developments and integrating physical activity facilities for all ages."*

The NPF outlines there is a projected total requirement to accommodate 550,000 additional households to 2040. National Policy Objective 33 seeks to "*Prioritise the provision of new homes at locations that can support sustainable development and at an appropriate scale of provision relative to location."*

Objective 35 of the National Planning Framework aims to*: "Increase residential density in settlements through a range of measures including reductions in vacancy, re-use of existing*

buildings, infill development schemes, area of site- based regeneration and increased building heights."

The NPF also states that *"to avoid urban sprawl and the pressure that it puts on both the environment and infrastructure demands, increased residential densities are required in our urban areas."*

The Proposed Development accords with the stated objectives of the NPF, in particular with the key objectives and principles of compact growth. The proposed scheme provides for the redevelopment of an underutilised site in a central and accessible location, and the NPF includes a presumption in favour of development that can encourage more people and generate more jobs and activity within existing cities. The scheme will result in the creation of an attractive, liveable, well designed urban place.

In accordance with the objectives of the NPF, the Proposed Development ensures an efficient use of land, maximising the sites potential in an existing urban area proximate to quality public transport including existing bus services and the Luas Redline; and planned improvements such as BusConnects. The site is well serviced by existing amenities and facilities, with accessibility to a variety of education, healthcare, sports and recreation, and social and cultural facilities and amenities.

In summary, the NPF shows broad support for a higher density residential development, which supports compact growth in a central location, particularly given that it is an underutilised site with excellent public transport accessibility and availability. The Proposed Development is of a high architectural quality and makes efficient use of land on this brownfield site, consistent with the objectives of the NPF.

3.2.2 Regional Spatial and Economic Strategy for the Eastern and Midland Region

The Regional Spatial & Economic Strategy (RSES) was adopted by the Eastern & Midland Regional Assembly (EMRA) on 3rd of May 2019 and came into effect on the 28th of June 2019.

The vision for the RSES is to *"create a sustainable and competitive region that supports the health and wellbeing of our people and places, from urban to rural, with access to quality housing, travel and employment opportunities for all."*

The Strategy is intended to:

- *"Support the continued growth of Dublin as our national economic engine*
- *Deliver sustainable growth of the Metropolitan Area through the Dublin Metropolitan Area Strategic Plan (MASP)*
- *Support vibrant rural areas with a network of towns and villages*
- *Facilitate the collaboration and growth of the Dublin – Belfast corridor*
- *Embed a network of key towns through the Region to deliver sustainable regional development"*

The principal purpose of the RSES is to support the implementation of Project Ireland 2040 – the National Planning Framework (NPF) and National Development Plan (NDP) and the economic policies and objectives of the Government by providing a long-term strategic planning and economic framework for the development of the region.

The growth and settlement strategy of the RSES reflects the compact growth / urban consolidation objectives of the NPF. It seeks the consolidation and re- intensification of infill, brownfield and underutilised lands with Dublin City and its suburbs with 50% of all new homes targeted for Dublin and its suburbs to be located in the existing built-up area. This is to be achieved in tandem with the delivery of key infrastructure to achieve, in Dublin City Council's administrative area, an increase in population of circa 100,000 people by 2031.

The proposed redevelopment of the Proposed Development site for a higher density apartment scheme, located in Dublin 8, accords with the RSES which supports the consolidation and re-intensification of infill sites to provide high density and people intensive uses within the existing built-up area of Dublin city and suburbs.

As set out in this report, the Proposed Development site is in close proximity to an extensive range of public transport including Dublin Bus, the Luas, and future public transport improvements (including BusConnects). Thus, the Proposed Development accords with the RSES which seeks to ensure that the development of higher density schemes are coordinated with the delivery of key water infrastructure and public transport projects.

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

'Housing for All, A New Housing Plan for Ireland' was launched in September 2021, with the goal of increasing housing supply up to 2030 (effectively replacing the previous strategy, 'Rebuilding Ireland'). Housing for All seeks to increase housing availability and affordability, and to create a sustainable housing system into the future.

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

The plan contains a range of measures to ensure the delivery of over 300,000 social, affordable, cost rental and private homes by 2030. These are backed by funding through the Exchequer, the Land Development Agency, and the Housing Finance Agency investment. The plan commits to over €20 billion in state investment in housing over the next five years. The aims of Housing for All are to be delivered on through four pathways:

- *"Pathway to supporting home ownership and increasing affordability*
- *Pathway to eradicating homelessness, increasing social housing delivery and supporting social inclusion*
- *Pathway to increasing new housing supply*
- *Pathway to addressing vacancy and efficient use of existing housing stock*"

These pathways are underpinned by long-term strategic actions to address systemic challenges. It aims to deliver a housing system which has environmental, social and economic sustainability at its heart and meets the needs of all.

The Proposed Development is in line with the objectives of Housing for All, as it represents an increase in housing supply in the area including social housing. As part of the Proposed Development the existing vacant site is to be brought into full use for apartments, along with community, cultural, arts, and childcare uses, further delivering on the aims of Housing for All.

The lack of housing supply in Ireland is a well-documented and an ongoing issue. The Proposed Development incorporates the construction of 543 no. apartments, all of which are social or cost rental apartments, which will service the demand for housing in the area.

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

The Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas (SRDUA) assist planning authorities, developers, architects and designers in delivering quality residential development.

The Guidelines provide guidance on the core principles of urban design when creating places of high quality and distinct identity. The Guidelines recommend that planning authorities should promote high quality design in their policy documents and in their development management process. To assist with this, the Guidelines are accompanied by a Design Manual which demonstrates how design principles can be applied in the design and layout of new residential developments, at a variety of scales of development and in various settings. The twelve criteria of the Urban Design Manual are addressed in the Architectural Design Statement prepared by Metropolitan Workshop.

These Guidelines support a plan-led approach to development as provided for in the Planning and Development Acts 2000 to 2022. Section 2.1 of the Guidelines note that:

"the scale, location and nature of major new residential development will be determined by the development plan, including both the settlement strategy and the housing strategy."

The Guidelines reinforce the need to adopt a sequential approach to the development of land and note in Section 2.3 and that:

"the sequential approach as set out in the Departments Development Plan Guidelines (DoEHLG, 2007) specifies that zoning shall extend outwards from the centre of an urban area, with undeveloped lands closest to the core and public transport routes being given preference, encouraging infill opportunities…"

In respect of development within cities and larger towns, Paragraph 5.0 of the Guidelines states that it is '…Government policy to promote sustainable patterns of settlement, particularly higher residential densities in locations which are…served by public transport'.

In respect of general design guidance, Paragraph 5.1 of the Guidelines states that:
"The objective should be the achievement of an efficient use of land appropriate to its context, while avoiding the problems of over-development."

Factors to be considered (Paragraph 5.2) include:

- "*acceptable building heights;*
- *avoidance of overlooking and overshadowing; and*
- *provision of adequate private and public open space, including landscaping where appropriate."*

Paragraph 5.8 of the Guidelines states that "*minimum net densities of 50 dwellings per hectare, subject to appropriate design and amenity standards, should be applied within public transport corridors, with the highest densities being located at rail stations / bus stops, and decreasing with distance away from such nodes*." Public transport corridors are defined as land *"within 500 metres walking distance of a bus stop, or within 1km of a light rail stop."*

The Guidelines focus on the provision of sustainable residential development, including the promotion of layouts that:

- *"prioritise walking, cycling and public transport, and minimise car use;*
- *are easy to access for all users and to find one's way around;*
- *promote the efficient use of land and of energy, and minimize greenhouse gas emissions; and*
- *provide a mix of land uses to minimise transport demand.*
- *Reduce traffic speeds in housing developments"*

Having regard to the above, the Proposed Development accords with the sequential approach to the development as the Proposed Development site is zoned Z14 within the Dublin City Development Plan 2016-2022 with the objective to "*to seek the social, economic and physical development and/or rejuvenation of an area with mixed use, of which residential and 'Z6' would be the predominant uses.*" The proposed use, predominantly consisting of residential, is considered appropriate under the Z14 zoning.

Paragraph 5.8 of the Guidelines states that "*minimum net densities of 50 dwellings per hectare, subject to appropriate design and amenity standards, should be applied within public transport corridors, with the highest densities being located at rail stations / bus stops, and decreasing with distance away from such nodes*." Public transport corridors are defined as land "*within 500 metres walking distance of a bus stop, or within 1km of a light rail stop*."

The net residential density of the proposed development will be 264.9 units per hectare with gross density of 166.5 u/ha, which is based on the extent of developable site area for the residential blocks of 2.05 ha and a total of 543 no. residential units. The guidelines clearly state that increased densities should be provided on site within 500m of a bus stop and within 1km of a light rail stop. The subject site benefits from high levels of connectivity in the context of public transport, with excellent availability of Dublin Bus routes on Cork Street, and is a short walking distance to the Fatima Luas stop. New infrastructure is also proposed in close proximity to the site including BusConnects. A Public Transport Capacity Assessment was carried out by AECOM and demonstrates existing capacity on nearby routes.

It is clear that it is national policy to promote increased densities in excess of 50 units per hectare on zoned lands adjacent to public transport corridors. To achieve this increased density in a sustainable manner requires increased building heights to make the most of the zoned residential lands. As such, in order to sustainably deliver increased densities for residential development within existing urban areas, increased heights must be considered in appropriate locations.

3.2.5 Sustainable Urban Housing: Design Standards for New Apartments 2020 - Guidelines for Planning Authorities

The Sustainable Urban Housing Design Standards for New Apartments were published by the Minister for Housing, Planning and Local Government and published in March 2018 under section 28 of the Planning and Development Acts 2000 to 2022. The guidelines update previous guidance from 2015 in the '*context of greater evidence and knowledge of current and likely future housing demand in Ireland taking account of the Housing Agency National Statement on Housing Demand and Supply, the Government's action programme on housing and homelessness Rebuilding Ireland and Project Ireland 2040 and the National Planning Framework, published since the 2015 guidelines'*.

Any application which provides for new apartment development must have regard to the Apartment Guidelines 2020. The Guidelines set out a number of Specific Planning Policy Requirements (SPPR), should any conflict arise between the SPPRs and the respective Development Plan the SPPRs take precedence.

Location

The Guidelines identify a number of locations suitable for apartment development, including 'Central and / or Accessible Urban Locations', 'Intermediate Urban locations' and Peripheral and/or Less Accessible Locations'. For Central and / or Accessible Urban Locations it states:

"*Such locations are generally suitable for small- to large-scale (will vary subject to location) and higher density development (will also vary), that may wholly comprise apartments, including:*

- *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., minimum 10-minute peak hour frequency) urban bus services.*

The range of locations outlined above is not exhaustive and will require local assessment that further considers these and other relevant planning factors.

The Proposed Development site is situated within walking distance of existing high-quality bus and light rail services through Dublin City; these include high frequency bus services, which are a 4-minute walk located on Cork Street (Dublin Bus Services) and light rail services serving Fatima Luas stop.

The Proposed Development site therefore constitutes a 'central and / or accessible urban location' as defined within the 2020 Apartments Guidelines. In addition the nearest Luas stop is Fatima Luas Stop which is a ten -twelve minute walk from the Proposed Development site.

The capacity of these services has been assessed as part of the Public Transport Capacity Assessment report carried out by AECOM. This report concludes "*that there is sufficient capacity on existing public transport services to cater for the level of forecast trip demand from the Donore Project development site."*

SPPR 1 of the Apartment Guidelines states that:

"Apartments may include up to 50% one-bedroom or studio type units (within no more than 20-25% of the total Proposed Development as studios) and there shall be no minimum requirement for apartments with three or more bedrooms".

The Proposed Development provides for a mix of 225 no. 1-bedroom apartments (41.4%), of which only 36 are studios (6.6% of total units), 274 no. 2-bedroom apartments (50.5%), and 44 no. 3-bedroom apartments (8.1%). Within the overall scheme, 52 no. (9.6%) of the scheme comprise 2 bed 3 person units The proposed development is therefore consistent with the apartment Guidelines in relation to unit mix.

SPPR 2 of the Guidelines states that:

"For all building refurbishment schemes on sites of any size, or urban infill schemes on sites of up to 0.25ha:

- *Where up to 9 residential units are proposed, notwithstanding SPPR 1, there shall be no restriction on dwelling mix, provided no more than 50% of the development (i.e., up to 4 units) comprises studio-type units.*
- *Where between 10 to 49 residential units are proposed, the flexible dwelling mix provision for the first 9 units may be carried forward and the parameters set out in SPPR 1, shall apply from the 10th residential7 unit to the 49th.*
- *For schemes of 50 or more units, SPPR 1 shall apply to the entire development;"*

This policy does not apply as it relates to residential mix on building refurbishment sites, or urban infill schemes on sites of up to 0.25 ha as there are no buildings currently present on site. The Proposed Development site has an area of c. 3.26 ha and can be considered a large-scale urban development site, as reflected in the Dublin City Development Plan.

SPPR 3 of the guidelines sets out the minimum apartment floor areas. These are detailed as follows:

"Minimum Apartment Floor Areas:

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

Additionally, the Guidelines provide for a minimum floor area of 63 sq. m for 2-bedroom (3 person) apartments. The proposed apartments meet and exceed in many places the minimum floor areas as set out in the Guidelines, and this is detailed in the Housing Quality Assessment prepared by Metropolitan Workshop.

The Apartment Guidelines 2020 state under SPPR4 that:

"it is a policy requirement that apartment schemes deliver at least 33% of the units as dual aspect in more central and accessible and some intermediate locations, i.e. on sites near to city or town centres, close to high quality public transport or in SDZ areas, or where it is necessary to ensure good street frontage and subject to high quality design."

The proposed scheme provides for 48% no. dual / triple aspect units of the overall scheme. This is in excess of the minimum requirement of 33% as provided for under SPPR4 of the Apartment Guidelines 2020, which would apply to the Proposed Development site and Proposed Development given the site's location adjacent to a high-quality public transport corridor.

The daylight and sunlight assessment report prepared by 3D Design Bureau, which accompanies this application, illustrates that the proposed residential units will achieve a good level of daylight generally in compliance with the recommendations of the BRE Guidelines.

SPPR 5 of the Guidelines states that:

"Ground level apartment floor to ceiling heights shall be a minimum of 2.7m and shall be increased in certain circumstances, particularly where necessary to facilitate a future change of use to a commercial use. For building refurbishment schemes on sites of any size or urban infill schemes on sites of up to 0.25ha, planning authorities may exercise discretion on a case-by-case basis, subject to overall design quality."

All ground floor apartments provide for a minimum of 2.7m floor to ceiling height in accordance with SPPR5. The floor to ceiling heights for all floors above the ground floor level have been designed to achieve greater internal floor to ceiling heights than the minimum of 2.4m.

SPPR 6 of the Guidelines states the following:

"A maximum of 12 apartments per floor per core may be provided in apartment schemes. This maximum provision may be increased for building refurbishment schemes on sites of any size or urban infill schemes on sites of up to 0.25 ha, subject to overall design quality and compliance with building regulations".

The Proposed Development provides for fewer than 12 apartments to be served per floor per core, in line with the provisions of SPPR6. This is set out in the architectural drawings prepared by Metropolitan Workshop.

3.2.6 Transport Strategy for the Greater Dublin Area

The Transport Strategy for the Greater Dublin Area 2016 – 2035 was prepared by the National Transport Authority (NTA) in 2016. It has been an essential component, along with investment programmes in other sectors, for the development of the Greater Dublin Area, which cover Dublin, Meath, Kildare and Wicklow. The Vision of this strategy is for Dublin to be a competitive, sustainable city-region with a good quality of life for all by 2030.

The current Strategy includes five overarching objectives to achieve the vision which are as follows:

- Build and strengthen communities
- Improve economic competitiveness
- Improve the build environment
- Respect and sustain the natural environment
- Reduce personal stress

The Strategy sets out measures to achieve the vision and objectives for the GDA. These include better integration of land use planning and transportation, consolidating growth in

identified centres, providing more intensive development in designated town and district centres and control parking supply.

The Strategy builds on previous strategies and investment programmes, and for this reason several major infrastructure schemes that are included in the government's Transport 21 investment framework are included in all of the strategy options.

The site is located approx. 10 minutes' walk from Fatima stop on the Luas Red Line. The BusConnects project will improve dedicated bus facilities and improve the Dublin Bus network. Proposed Core Bus Corridor no. 9 is proposed to run along Cork Street, to the north of the Proposed Development site. This will also deliver improved cycling facilities along Cork Street. Overall, the proposed density of development and the excellent availability of public transport is considered to be consistent with the vision and objectives of the Transport Strategy for the GDA.

3.2.7 Draft Transport Strategy for the Greater Dublin Area 2022-2042

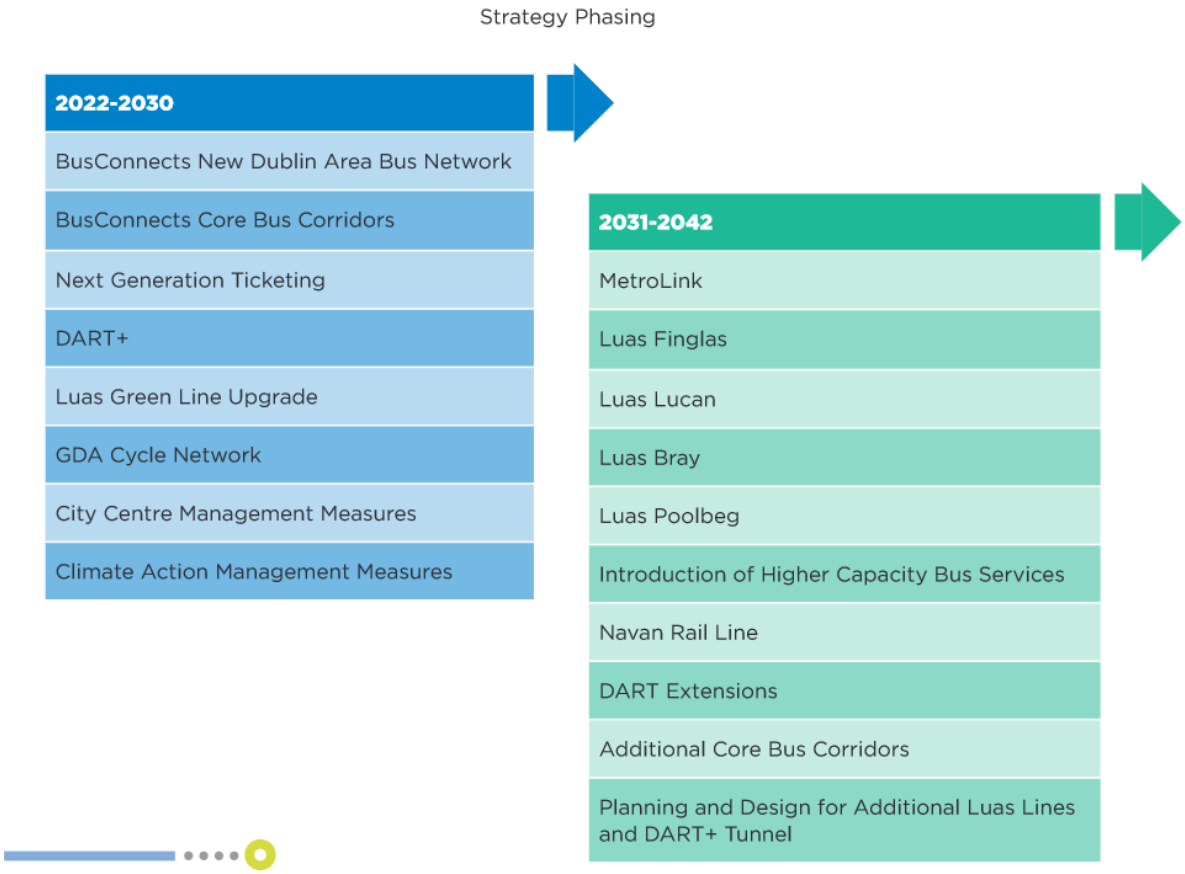
The NTA has prepared an updated Draft Transport Strategy for the Greater Dublin Area 2022-2042. This strategy sets out the framework for investment in transport infrastructure and services over the next two decades to 2042. This Transport Strategy has been developed to be consistent with the spatial planning policies and objectives set out in the Regional Spatial and Economic Strategy (RSES) as adopted by the Eastern and Midland Regional Assembly, and finalised in January 2020. These objectives in turn are consistent with the National Planning Framework and the National Development Plan as set out in Project Ireland 2040 The overall aim of the Transport Strategy is:

"To provide a sustainable, accessible and effective transport system for the Greater Dublin Area which meets the region's climate change requirements, serves the needs of urban and rural communities, and supports economic growth."

Key objectives of this strategy include:

- *An Enhanced Natural and Built Environment To create a better environment and meet our environmental obligations by transitioning to a clean, low emission transport system, reducing car dependency, and increasing walking, cycling and public transport use.*
- *Connected Communities and Better Quality of Life To enhance the health and quality of life of our society by improving connectivity between people and places, delivering safe and integrated transport options, and increasing opportunities for walking and cycling.*
- *A Strong Sustainable Economy To support economic activity and growth by improving the opportunity for people to travel for work or business where and when they need to, and facilitating the efficient movement of goods*
- *An Inclusive Transport System To deliver a high quality, equitable and accessible transport system, which caters for the needs of all members of society*

We note the following aspects of the strategy as set out in the 'Strategy – Phasing Diagram':



3.2.8 Urban Development and Building Heights Guidelines (2018)

The Urban Development and Building Heights Guidelines were adopted in 2018 and set out national planning policy guidelines on building heights in urban areas in response to specific policy objectives set out in the National Planning Framework and Project Ireland 2040.

The Guidelines promote an increase in building height in the right locations, and set out certain criteria and requirements for developments of increased height.

Paragraph 3.1 of the Guidelines states that:

"In relation to the assessment of individual planning applications and appeals, it is Government policy that building heights must be generally increased in appropriate urban locations. There is therefore a presumption in favour of buildings of increased height in our town/city cores and in other urban locations with good public transport accessibility. Planning authorities must apply the following broad principles in considering development proposals for buildings taller than prevailing building heights in urban areas in pursuit of these guidelines:

Does the proposal positively assist in securing National Planning Framework objectives of focusing development in key urban centres and in particular, fulfilling targets related to brownfield, infill development and in particular, effectively supporting the National Strategic Objective to deliver compact growth in our urban centres?

The Proposed Development is on a site zoned for strategic, residential focused regeneration.

The site is generally brownfield and is located in the central urban area of Dublin City. The site is located in close proximity to existing sustainable transport routes, and therefore has the capacity to deliver development of an increased height, and sustainable scale, in line with the principles of compact growth set out in the NPF.

Is the proposal in line with the requirements of the development plan in force and which plan has taken clear account of the requirements set out in Chapter 2 of these guidelines?

Where the relevant development plan or local area plan pre-dates these guidelines, can it be demonstrated that implementation of the pre-existing policies and objectives of the relevant plan or planning scheme does not align with and support the objectives and policies of the National Planning Framework?"

The Dublin City Development Plan 2022-2028 is consistent with the Guidelines, and the Proposed Development has been designed to be in compliance with its provisions.

While the Proposed Development does not rely upon the provisions of SPPR 3 we note the criteria and principles of the Building Height Guidelines. For a full response to the Criteria and principles of the Building Height Guidelines please see the Planning Report prepared by JSA.

Development Management Principles

"In relation to the assessment of individual planning applications and appeals, it is Government policy that building heights must be generally increased in appropriate urban locations. There is therefore a presumption in favour of buildings of increased height in our town/city cores and in other urban locations with good public transport accessibility. Planning authorities must apply the following broad principles in considering development proposals for buildings taller than prevailing building heights in urban areas in pursuit of these guidelines:

- *Does the proposal positively assist in securing National Planning Framework objectives of focusing development in key urban centres and in particular, fulfilling targets related to brownfield, infill development and in particular, effectively supporting the National Strategic Objective to deliver compact growth in our urban centres?*
- *Is the proposal in line with the requirements of the development plan in force and which plan has taken clear account of the requirements set out in Chapter 2 of these guidelines?*
- *Where the relevant development plan or local area plan pre-dates these guidelines, can it be demonstrated that implementation of the pre-existing policies and objectives of the relevant plan or planning scheme does not align with and support the objectives and policies of the National Planning Framework?*

Development Management Criteria

In the event of making a planning application, the applicant shall demonstrate to the satisfaction of the Planning Authority/ An Bord Pleanála, that the proposed development satisfies the following criteria:

At the scale of the relevant city/town

- *The site is well served by public transport with high capacity, frequent service and good links to other modes of public transport.*
- *Development proposals incorporating increased building height, including proposals within architecturally sensitive areas, should successfully integrate into/ enhance the character and public realm of the area, having regard to topography, its cultural context, setting of key landmarks, protection of key views.*
- *Such development proposals shall undertake a landscape and visual assessment, by a suitably qualified practitioner such as a chartered landscape architect.*
- *On larger urban redevelopment sites, proposed developments should make a positive contribution to place-making, incorporating new streets and public spaces, using massing and height to achieve the required densities but with sufficient variety in scale and form to respond to the scale of adjoining developments and create visual interest in the streetscape.*

At the scale of district/ neighbourhood/ street

The proposal responds to its overall natural and built environment and makes a positive contribution to the urban neighbourhood and streetscape

- *The proposal is not monolithic and avoids long, uninterrupted walls of building in the form of slab blocks with materials / building fabric well considered.*
- *The proposal enhances the urban design context for public spaces and key thoroughfares and inland waterway/ marine frontage, thereby enabling additional height in development form to be favourably considered in terms of enhancing a sense of scale and enclosure while being in line with the requirements of "The Planning System and Flood Risk Management – Guidelines for Planning Authorities" (2009).*
- *The proposal makes a positive contribution to the improvement of legibility through the site or wider urban area within which the development is situated and integrates in a cohesive manner.*
- *The proposal positively contributes to the mix of uses and/ or building/ dwelling typologies available in the neighbourhood.*

At the scale of the site/building

- *The form, massing and height of proposed developments should be carefully modulated so as to maximise access to natural daylight, ventilation and views and minimise overshadowing and loss of light.*
- *Appropriate and reasonable regard should be taken of quantitative performance approaches to daylight provision outlined in guides like the Building Research Establishment's 'Site Layout Planning for Daylight and Sunlight' (2nd edition) or BS 8206-2: 2008 – 'Lighting for Buildings – Part 2: Code of Practice for Daylighting'.*
- *Where a proposal may not be able to fully meet all the requirements of the daylight provisions above, this must be clearly identified and a rationale for any alternative, compensatory design solutions must be set out, in respect of which the planning authority or An Bord Pleanála should apply their discretion, having regard to local factors including specific site constraints and the balancing of that assessment against the desirability of achieving wider planning objectives. Such objectives might include securing comprehensive urban regeneration and or an effective urban design and streetscape solution.*

Specific Assessments

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

- *Specific impact assessment of the micro-climatic effects such as downdraft. Such assessments shall include measures to avoid/ mitigate such micro-climatic effects and, where appropriate, shall include an assessment of the cumulative micro-climatic effects where taller buildings are clustered.*
- *In development locations in proximity to sensitive bird and / or bat areas, proposed developments need to consider the potential interaction of the building location, building materials and artificial lighting to impact flight lines and / or collision.*
- *An assessment that the proposal allows for the retention of important telecommunication channels, such as microwave links."*

While not relying on the provisions of SPPR3, the Proposed Development meets all of these development management criteria and is thus fully consistent with the Guidelines. For response to the criteria contained within the above assessment please see Planning Report prepared by JSA enclosed with this application.

3.2.9 Design Manual for Urban Roads and Streets (DMURS)

The Design Manual for Urban Roads and Streets was adopted in 2013 and updated in 2022 set out design guidance and standards for constructing new and reconfiguring existing urban roads and streets in Ireland. It also outlines practical design measures to encourage more sustainable travel patterns in urban areas.

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

The principal design guidance of DMURS has been considered in the design of this development. The Transport & Traffic Assessment prepared by AECOM provides further detail in respect of consistency of the Proposed Development with DMURS.

The design of the Proposed Development is in compliance with the recommendations of DMURS as it includes proposals for buildings and active uses fronting on to streets and the provision of new streets within the development creating a pedestrian and cycle friendly urban environment. Pedestrian and cyclist permeability throughout the site will be accommodated through proposed pedestrian and cyclist entrances.

The proposed new access and junction from Margaret Kennedy Road accords with DMURS and ensures that unobstructed sightlines of 45m are achievable in both directions along Margaret Kennedy Road.

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

The Planning System and Flood Risk Management Guidelines were published by the Minister for the Environment, Heritage & Local Government in November 2009 under Section 28 of the Planning & Development Acts 2000 to 2022. The Planning System And Flood Risk Management Guidelines require the planning system at all levels to avoid development in areas at risk of flooding, particularly floodplains, unless there are proven wider sustainability grounds that justify appropriate development and where the flood risk can be reduced or managed to an acceptable level without increasing flood risk elsewhere; adopt a sequential approach to flood risk management when assessing the location for new development based on avoidance, reduction and mitigation of flood risk; and incorporate flood risk assessment into the process of making decisions on planning applications and planning appeals.

A Site-Specific Flood Risk Assessment (SFRA) has been prepared AECOM, which assesses the risk of flooding to the proposed development. As part of the SFRA, the site was assessed for tidal/coastal flooding, pluvial, fluvial, groundwater and infrastructure flooding sources and the SFRA confirms that "*any associated risk is deemed to be within acceptable limits*."

3.3 Local Planning Policy Context

3.3.1 Dublin City Development Plan 2022-2028

The DCC Development Plan 2022-2028 was adopted by the Council on 12 November 2022 and will come into effect on 14 December 2022. As the text and maps of the adopted Plan have not been published as of the date of lodgement of this application, the proposed is understood to be the final wording as detailed in the draft plan and proposed material amendments as agreed by the Council on 12 November 2022. An Bord Pleanála will of course assess the scheme against the published plan. We have been provided with a copy of the finalised Material Alterations as agreed by the Council to inform this Planning Report.

Using the same formatting as set out in the Material Alterations to the Draft Plan, Amendments to the Draft Plan are shown by way of bold green and underlined text **{Amendment}**, while deletions are shown in bold red text with strike through. **(deletion).**

Core Strategy

As set out within Chapter 2 by 2028:

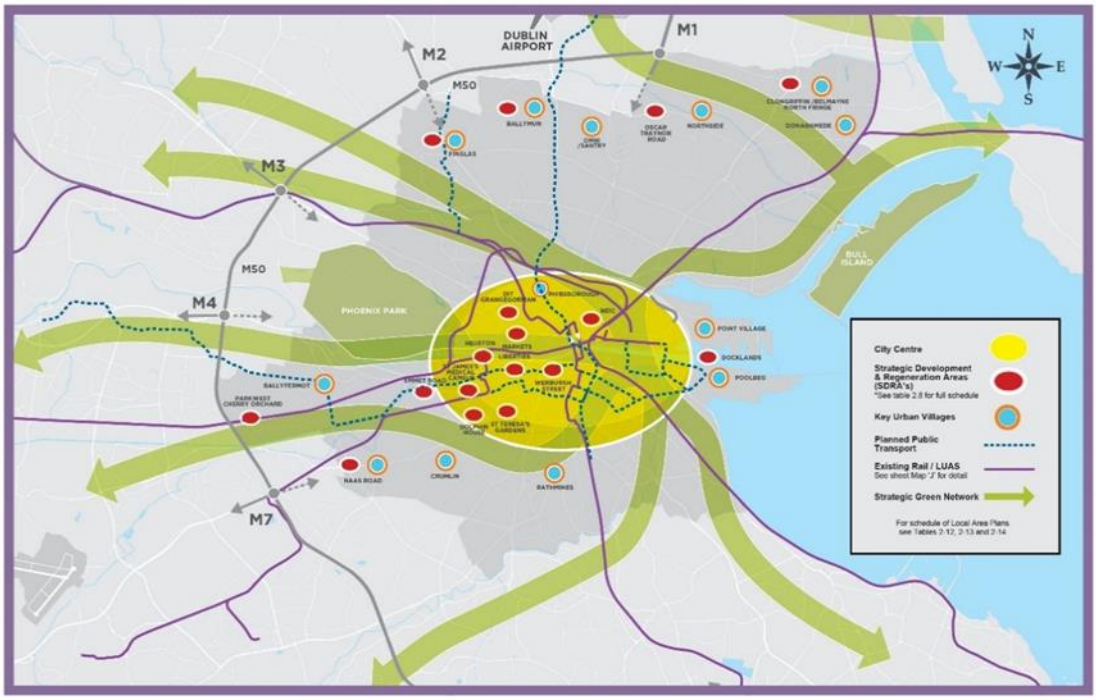
"the city must accommodate between ***~~(21,350 - 31,450)~~*** ***{20,120 – 31,520}*** *additional people, up to an overall population target of between 625,750 and 640,000 people by 2028.*

In regard to SDRA's the Plan states:

"The SDRA lands are critical to the core Strategy. All SDRAs (both new and previously identified) have been examined to determine capacity for future housing growth, taking into account sustainable densities and relevant SDZs and LAPs where relevant. ***{This detailed assessment gave a potential yield from the 17 SDRAs of between 34,750 – 35,950 new dwellings on approximately 358 hectares. (Table 13-1 in Chapter 13 shows a breakdown of these figures by individual SDRA).}"***

In regard to SDRA 11 the proposed residential yield is c.1500 housing units.

Figure 2-1



We note also **Policy CSO 7: Promote Delivery of Residential Development and Compact Growth which aims:**

To promote the delivery of residential development and compact growth through active land management measures and a co-ordinated approach to developing appropriately zoned lands aligned with key public transport infrastructure, including the SDRAs, vacant sites and underutilised areas

The Proposed Development will encourage compact growth by delivering 543 no. residential units on an appropriately zoned, underutilised brownfield site. The site is well served by existing public transport networks within the existing urban extent of the city.

Land Use Zoning

The site is zoned Z14 Strategic Development and Regeneration Areas (SDRAs) under the adopted Development Plan 2022-2028, with a stated objective: *"To seek the social, economic and physical development and/or regeneration of an area with mixed use, of which residential would be the predominant use*."

The zoning matrix for Z14 zoned lands identifies residential and childcare facility as permissible uses. The Proposed Development therefore accords with the zoning objectives for the area under the Development Plan.

Accompanying text states:

"These are areas, where proposals for substantial, comprehensive development or re-development have been, or are in the process of being prepared. A number of the Z14 areas relate to important public housing regeneration areas and others relate to former brownfield lands with capacity for significant redevelopment. A number of sites that are zoned Z14 are also identified as Strategic Development Regeneration Areas. Development principles to guide the development of each these SDRAs are set out in Chapter 13. It should be noted that some of the SDRAs have existing LAPs and SDZ Planning Schemes to guide their development and regeneration.

"Z14 areas are capable of accommodating significant mixed-use development, of which residential would be the predominant use; therefore, developments must include proposals for additional physical and social infrastructure/facilities to support same."

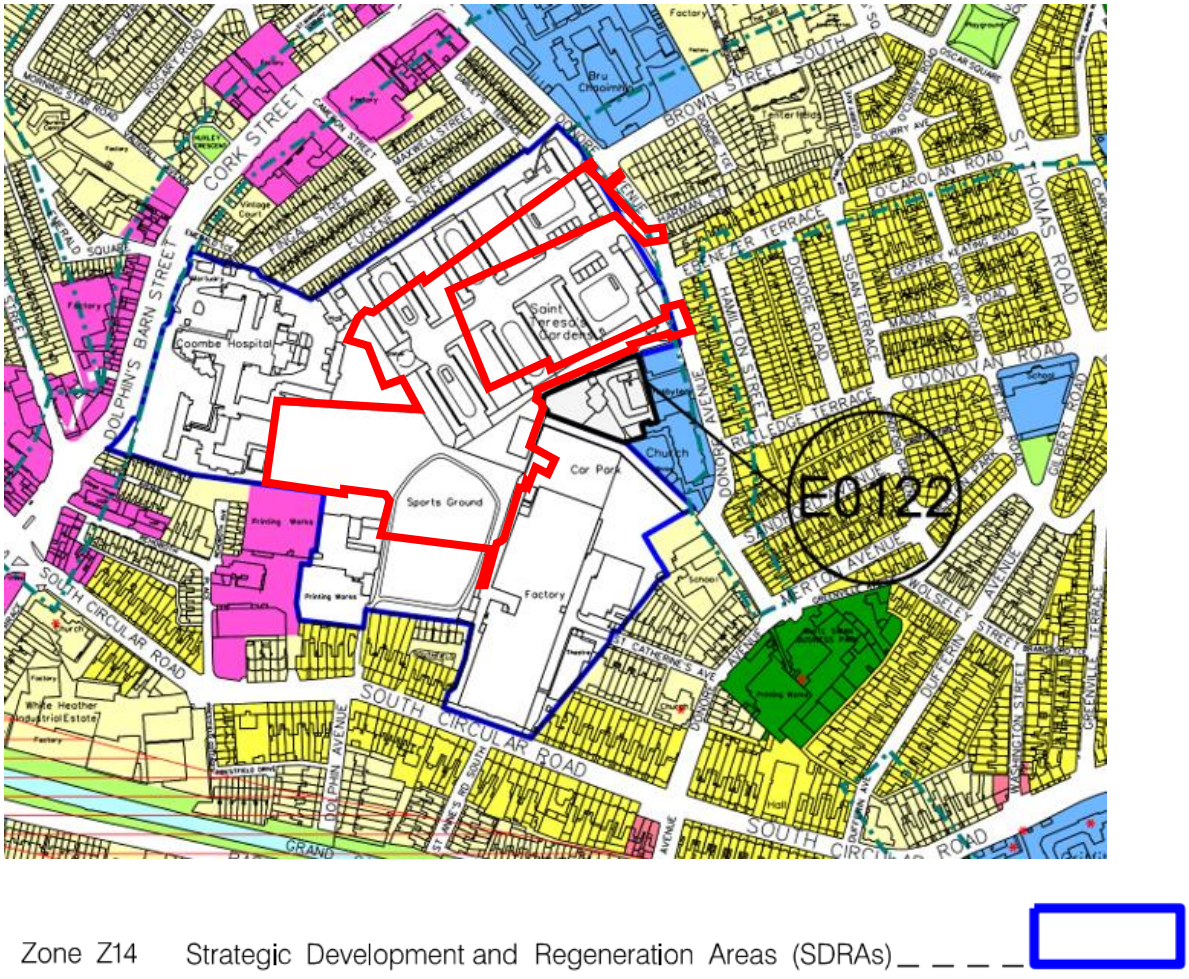


Figure 3.5: Land Use Zoning –Dublin City Development Plan 2022-2028 (as amended by Material Alterations).

Chapter 3: Climate Action

Policy CA1 National Climate Action Policy

"To support the implementation of national objectives on climate change including the ~~*('Climate Action Plan 2019 to Tackle Climate Breakdown')*~~ *{'Climate Action Plan 2021:*

***Securing Our Future' (including any subsequent updates to or replacement thereof)}**, the 'National Adaptation Framework' 2018 and the 'National Energy and Climate Plan for Ireland 2021-2030' and other relevant policy and legislation.*

Policy CA2 Mitigation and Adaptation

*"To prioritise **{and implement}** measures to address climate change by both effective mitigation and adaptation responses in accordance with available guidance and best practice."*

Policy CA3– Climate Resilient Settlement Patterns, Urban Forms and Mobility

"To support the transition to a low carbon, climate resilient city by seeking sustainable settlement patterns, urban forms and mobility in accordance with the National Planning Framework 2018 and the Regional Spatial and Economic Strategy 2019"

"{Policy - Improving Mobility Links in Existing Areas

To support retrofitting of existing built-up areas with measures which will contribute to their meeting the objective of a low-carbon city, such as reopening closed walking and cycling links or providing new links between existing areas.}"

The proposed development will provide for increased permeability in the area and provide for connectivity lines with adjacent developments. New and improved shared surfaces and links are proposed.

Policy CA6 – Energy Efficiency in the Built Environment

"To support high levels of energy conservation, energy efficiency and the use of renewable energy sources in existing buildings, including retro-fitting of appropriate energy efficiency measures in the existing building stock, and to actively retrofit Dublin Council housing stock to a B2 Building Energy Rating (BER) in line with the Government's Housing for All Plan retrofit targets for 2030."

The proposed development will contribute to achieving sustainable settlement patterns by delivering residential units within an urban centre which will minimise transport requirements and therefore energy usage of future residents.

Policy CA7 – Climate Mitigation Actions in the Built Environment
*"To ~~(promote)~~ **{require}** low carbon development in the city which will seek to reduce carbon dioxide emissions and which will meet the highest feasible environmental standards during construction and occupation ~~(.)~~ **{, see Section 15.7.1 when dealing with development proposals.}** New development should generally demonstrate/ provide for:*

A. building layout and design which maximises daylight, natural ventilation, active transport and public transport use;
B. sustainable building/services/site design to maximise energy efficiency;
C. sensitive energy efficiency improvements to existing buildings;
D. energy efficiency, energy conservation, and the increased use of renewable energy in existing and new developments;

E. on -site renewable energy infrastructure and renewable energy;
F. minimising the generation of site and construction waste and maximising reuse or recycling;
G. the use of construction materials that have low to zero embodied energy and CO2 emissions; and
H. connection to (existing and planned) decentralised energy networks including the Dublin District Heating System where feasible."

"Policy CA8 – Climate Adaption Actions in the Built Environment

Development proposals ~~(should)~~ {must} demonstrate sustainable, {climate adaptation, circular} design principles for new buildings / services / site. The Council will promote and support development which is resilient to climate change. This would include:

A. measures such as green roofs and green walls to reduce internal overheating and the urban heat island effect;
B. ensuring the efficient use of natural resources (including water) and making the most of natural systems both within and around buildings;
C. minimising pollution by reducing surface water runoff through increasing permeable surfaces and use of Sustainable Drainage Systems (SuDS);
D. reducing flood risk, damage to property from extreme events– residential, public and commercial;
E. reducing risks from temperature extremes and extreme weather events to critical infrastructure such as roads, communication networks, the water/drainage network, and energy supply;
F. promoting {, developing} and protecting biodiversity, {novel urban ecosystems} and green infrastructure."

Policy CA9 – Climate Action Energy Statements

"All new developments involving 30 residential units and/ or more than 1,000 sq. m. of commercial floor space, or as otherwise required by the Planning Authority, will be required to submit a Climate Action Energy Statement as part of the overall Design Statement to demonstrate how low carbon energy and heating solutions, have been considered as part of the overall design and planning of the proposed development"

The proposed development incorporates various features outlined in the *'Climate Action Plan 2021: Securing Our Future', the 'National Adaptation Framework' 2018* and the *'National Energy and Climate Plan for Ireland 2021-2030* to minimise the carbon emissions of the construction and operation of the development. Actions include the reduction of car parking provision, of energy efficient design, the location of the development within an existing urban area and close to public transport infrastructure, the layout of the development to encourage sustainable modes of transport etc. as outlined in the Architectural Design Statement accompanying this application, prepared by MW.

As set out in Energy and Sustainability Statement prepared by AECOM:

"The design will be heavily influenced by the sustainability principles of reduce, reuse, renewables and continual improvement (renewal) of the approach. The energy design will also be heavily influenced by Part L of the Building Regulations - Conservation of Fuel and Energy (Dwellings) 2021 and Part L of the Building Regulations – Conservation of Fuel and Energy (Buildings other than Dwellings) 2021.

Passive energy reductions will be maximised through the specification of a high performing building fabric. Active energy reductions include the provision of a high efficiency air to water heat pump systems for space heating & domestic hot water, provision of mechanical heat recovery ventilation, specification of high efficiency lighting & controls and other discrete energy measures."

The Energy and Sustainability Report prepared by AECOM sets out a response to A-H above including passive energy reduction, sustainable transport infrastructure, design efficiency, renewable energy, embodied energy and future use of district heating. Please also see Construction and Demolition Waste Management Plan prepared by AECOM in regard to generation of waste and measures employed to reduce this.

The proposed development includes various SuDS features outlined in Policy CA8 including a mix of extensive green roof; and intensive green roof; permeable paving on roof terrace; swales; tree pits; porous asphalt; bio-retention / rain gardens and landscaped areas that will provide habitats for biodiversity. Green infrastructure is set out within the Landscape Design Statement and the Engineering Planning Report both prepared by AECOM. A Site-Specific Flood Risk Assessment is enclosed with the application. As outlined in the AECOM Energy and Sustainability the proposal entails a range of measures to adapt to climate change.

Shape and Structure of the City

Policy SC1 of the Dublin City Development Plan 2022-2028 states:

"To consolidate and enhance the inner city, promote compact growth and maximise opportunities provided by existing and proposed public transport by linking the critical mass of existing and emerging communities such as Docklands, Heuston Quarter, Grangegorman, Stoneybatter, Smithfield, the Liberties ~~*(and)*~~ *the North East Inner City* ***{and the south and north Georgian cores}*** *with each other, and to other regeneration areas."*

The proposed development will provide for a significant quantum of compact urban growth, at a site identified as a strategic regeneration area. The site benefits from access to existing and proposed sustainable transport links, and the proposed development will assist in the full utilisation of those links. The proposed development will assist in the comprehensive regeneration of the SDRA and this part of the inner city and provide for much needed housing.

Policy SC10 of the Dublin City Development Plan 2022-2028 states:

"To ensure appropriate densities and the creation of sustainable communities in accordance with the principles set out in Guidelines for Planning Authorities on Sustainable Urban Development (Cities, Towns and Villages), (Department of Environment, Heritage and Local Government, 2009), and its companion document, Urban Design Manual: A Best Practice Guide and any amendment thereof."

The proposed development is of a sustainable density and is higher than those of the neighbouring communities adjacent to the site. The proposed development incorporates an increased residential density relative to that of the existing in order to facilitate the appropriate and sustainable use of public transport in the area, and to provide for much needed housing. The Sustainable Residential Development in Urban Areas (2009) guidelines promotes minimum densities in city areas of 50 units per hectare. The proposed development exceeds this threshold, in order to deliver on the objective to construct more cost rental and social homes at sustainable densities. The proposed development has been designed to respond positively to the criteria of the accompanying Urban Design Manual, and this has been set out in the Architectural Design Statement prepared by Metropolitan Workshop accompanying this application.

Policy SC11 of the Dublin City Development Plan 2022-2028 states:

"In alignment with the Metropolitan Area Strategic Plan, to promote compact growth and sustainable densities through the consolidation and intensification of infill and brownfield lands, particularly on public transport corridors, which will:

• enhance the urban form and spatial structure of the city.

• be appropriate to their context and respect the established character of the area.

• include due consideration of the protection of surrounding communities and provide for enhanced amenities for existing and future residents.

• be supported by a full range of social and community infrastructure such as schools, shops and recreational areas.

• and have regard to the criteria set out in Chapter 15: Development Standards, including the criteria and standards for good neighbourhoods, quality urban design and excellence in architecture."

The proposed development represents a comprehensive regeneration of a brownfield site, in close proximity to existing and proposed public transport and cycling infrastructure. The proposed development will enhance the urban form of the area, by providing for much needed housing, along with open space and ancillary facilities. The proposed development has been designed in a sensitive way, with varying heights which respond to the existing and emerging character of the SDRA. The site benefits from existing connections to community infrastructure, and as part of the overall proposal for the SDRA, community uses are proposed which will further enhance residential amenity in the area. The proposed architecture and urban design response is of a high quality and has been designed with regard to the provisions of Chapter 15 of the Dublin City Development Plan 2022-2028.

Policy SC12 of the Dublin City Development Plan 2022-2028:

"To promote a variety of housing and apartment types and sizes, as well as tenure diversity and mix, which will create both a distinctive sense of place in particular areas and neighbourhoods, including coherent streets and open spaces and provide for communities to thrive."

The proposed development incorporates a mix of housing types and tenures, including social and cost rental housing. A range of apartment sizes is also proposed, which will add to housing variety and choice in the area. The majority of the proposed apartments are one-bedroom and two-bedroom apartments, which will complement the existing houses to provide a significant level of variety in the housing stock of the area. The proposed development will incorporate public, private, and communal open space, resulting in a high level of residential amenity for future occupants.

"Policy SC13 – Green Infrastructure

To recognise and promote Green Infrastructure and landscape as a key mechanism to address climate change and as an integral part of the form and structure of the city, including streets and public spaces.

The proposed development incorporates elements of Green Infrastructure into its design in the form of Green Roofs which are also a component of the SuDS of the development and a significant quantum landscaped areas which include pollinator friendly planting.

"Policy SC14 – Building Height Strategy

To ensure a strategic approach to building height in the city that accords with The Urban Development and Building Height Guidelines for Planning Authorities (2018) and in particular, SPPR 1 to 4 "

Please see Section 7.0 of the Planning Report prepared by JSA which sets out a detailed response to the Urban Development and Building Height Guidelines.

Policy SC16 of the Dublin City Development Plan 2022-2028 states:

"To recognise the predominantly low rise character of Dublin City whilst also recognising the potential and need for increased height in appropriate locations including the city centre, Strategic Development Zones, Strategic Development Regeneration Areas, Key Urban Villages and other locations as identified in Appendix 3, provided that proposals ensure a balance ***{with}*** ~~***(between)***~~ *the reasonable protection of existing amenities and environmental sensitivities, protection of residential amenity and the established character of the area."*

The Proposed Development is located within an identified Strategic Development and Regeneration Area (SDRA 11) and is therefore considered suitable for increased building heights. The proposed development has been designed to balance the need to deliver much needed housing at a sustainable density with the protection of existing residential communities in the area. The proposed development seeks to deliver on the wider aims of the SDRA, and provide for the creation of a new, sustainable community at this location.

Policy SC17 of the Dublin City Development Plan 2022-2028 states:

"To protect and enhance the skyline of the city, and to ensure that all proposals with enhanced scale and height:

- *follow a design led approach;*

- *include a masterplan for any site over 0.5ha **{(in accordance with the criteria for assessment set out in Appendix 3)}**;*
- *make a positive contribution to the urban character of the city and that responds positively to the existing or emerging context;*
- *deliver vibrant and equitable neighbourhoods that are walkable, compact, green, accessible, mixed and balanced; **(~~and~~)***
- ***{Do not affect the safety of aircraft operations at Dublin Airport (including cranage); and}***
- *have regard to the performance-based criteria set out in Appendix 3.*

All new proposals in the inner city must demonstrate sensitivity to the historic city centre, the River Liffey and quays, Trinity College, the cathedrals, Dublin Castle, the historic squares and the city canals, and to established residential areas and civic spaces of local and citywide importance."

The Proposed Development incorporates increased height in a sensitive way, in an identified regeneration area. The Proposed Development is of a high-quality architectural design and incorporates a variety of building heights and varied massing to provide visual interest. The Proposed Development responds positively to the existing and emerging character of the area and seeks to integrate the existing prevailing heights with emerging proposals for higher buildings in the area. The existing site benefits from access to public transport and cycling links, and the proposed development will contribute to the continued utilisation of sustainable transport methods.

A Masterplan has been prepared by MW and is enclosed within the Architectural Design Statement.

The Mechanical and Electrical Report prepared by AECOM outlines that the proposed development will not impact safe air navigation or telecommunications.

The Proposed Development incorporates a range of sustainability measures such as energy efficiency, SuDS, renewable energy and other technologies as set out in the AECOM Energy and Sustainability Statement, and it is envisaged that the proposed development will facilitate a sustainable community.

The Proposed Development has been designed with regard to existing view corridors, along with the provisions of Appendix 3 of the Development Plan, please see above for conclusions to the Townscape and Visual Impact Assessment carried out as part of the EIAR.

Please see Planning Report (Appendix B of this EOAR) for a full response to Table 3 of this Appendix.

Chapter 5: Quality Housing and Sustainable Neighbourhoods

"Policy QHSN1 – National and Regional Policy

To accord with the provisions of the National Planning Framework 2018, the Regional Spatial and Economic Strategy for the Eastern and Midland Region 2019 (including the Metropolitan Area Strategic Plan) and the Ministerial Circular relating to Structural Housing Demand in Ireland and Housing Supply Targets, and the associated Section 28 Guidelines: Housing Supply Target Methodology for Development Planning (2020) and make provision for the scale of population growth and housing supply targets outlined in these plans and guidelines."

The proposed development has been designed with due regard to the relevant local, regional, and national planning policies and guidelines as set out in this Chapter and in further detail in the Planning Report prepared by JSA.

"Policy QHSN2 – National Guidelines

To have regard to the DEHLG Guidelines on 'Quality Housing for Sustainable Communities – Best Practice Guidelines for Delivering Homes Sustaining Communities' (2007), 'Sustainable Urban Housing: Design Standards for New Apartments' (2020), 'Sustainable Residential Development in Urban Areas' and the accompanying 'Urban Design Manual: A Best Practice Guide' (2009), Housing Options for our Aging Population ***(~~2020)~~ {2019, the Design Manual for Quality Housing (2022),}*** ***(~~and~~)*** *the Design Manual for Urban Roads and Streets (DMURS) (2019)* ***{the Urban Development and Building Height Guidelines for Planning Authorities (2018) and the Affordable Housing Act 2021 including Part 2 Section 6 with regard to community land trusts and/or other appropriate mechanisms in the provision of dwellings.}"***

The proposed development is designed in accordance with the DEHLG Guidelines on 'Quality Housing for Sustainable Communities – Best Practice Guidelines for Delivering Homes Sustaining Communities' (2007), 'Sustainable Urban Housing: Design Standards for New Apartments' (2020), 'Sustainable Residential Development in Urban Areas' and the accompanying 'Urban Design Manual: A Best Practice Guide' (2009), Housing Options for our Aging Population 2020 and the Design Manual for Urban Roads and Streets' (DMURS) (2019), as explained in Section 7.0 of this Report. AECOM's TTA also sets out compliance with the DMURS."

Policy QHSN4 of the Dublin City Development Plan 2022-2028 states:

"To promote the transformation of the key regeneration areas into successful socially integrated neighbourhoods and promote area regeneration in parts of the city which require physical improvement and enhancement in terms of quality of life, housing and employment opportunities and to ensure a balanced community is provided in regeneration areas."

The proposed development will assist in the comprehensive regeneration of the St Teresa's Gardens and Environs SDRA 11, and will provide for a mixed-tenure, sustainable community through the provision of cost rental and social housing. The proposed development represents the comprehensive regeneration of a brownfield site in an accessible urban location and will provide for a high quality of placemaking and urban design. The proposed development will enhance residential amenity in the area, through the provision of a new public open space, in addition to integrating with the adjacent proposed developments in the SDRA.

"Policy QHSN5 – Urban Consolidation

To promote and support residential consolidation and sustainable intensification through the consideration of applications for infill development, backland development, mews development, re-use/adaption of existing housing stock and use of upper floors, subject to the provision of good quality accommodation."

The site of the proposed development is currently vacant. The development of residential buildings on this site will allow for a more efficient use of land and will support residential consolidation in the City. Overall, the scheme will provide for high quality apartments, that will successfully integrate with the character of the surrounding area, further specific information is contained within MW's HQA including a large number of oversized and dual / triple aspect units reflecting the quality of the accommodation proposed.

"Policy QHSN9 – Urban Density

To promote residential development at sustainable densities throughout the city in accordance with the Core Strategy, particularly on vacant and/or underutilised sites, having regard to the need for high standards of urban design and architecture and to successfully integrate with the character of the surrounding area."

As set out widely within this Planning Report and other documentation enclosed, the higher densities of the proposed development are appropriate in the context of the Urban Development and Building Height Guidelines 2018 due to the proximity of the site to high-quality public transport links and potential for the proposed development to support compact urban growth. The proposed development accords with the Guiding Principles for the St. Teresa's Gardens Strategic Development & Regeneration Area 11 (as explained fully within the Planning Report and Architectural Design Statement prepared by MW).

"Policy QHSN10 – 15-Minute City

It is the Policy of Dublin City Council to promote the ***~~(concept)~~{realisation}*** *of the 15-minute city which provides for liveable, sustainable urban neighbourhoods and villages throughout the city that deliver healthy placemaking, high quality housing and well designed,* ***{intergenerational and accessible,}*** *safe and inclusive public spaces served by local services, amenities****(, sports facilities)*** *and sustainable modes of* ***{public and accessible}*** *transport* ***{where feasible}****."*

The Proposed Development is fully consistent with and supports the core principles of the 15 minute city concept by providing a place to live which is within walking distance of essential and recreational services, public transport, facilities and amenities. The proposed mobility hub will further support the accessibility of the area. The Proposed Development is located in close proximity to existing services and facilities, however a creche will also be provided as part of the development to ensure sufficient social infrastructure. Further details are set out in the Community and Social Audit submitted with the application.

"Policy QHSN12 – Healthy Dublin City Framework and the Healthy Ireland Framework 2019 – 2025

To support the Healthy Dublin City Framework and the Healthy Ireland Framework 2019-2025 in promoting a long term vision of improving the physical and mental health and well-being of the population at all stages of life."

The Proposed Development encourages an active lifestyle by making active transport an attractive mode of transport. The proposed development also provides ample open and green recreational areas.

These actions contribute to the overall physical and mental well-being of residents and users of the proposed development.

"Policy QHSN16 – Sustainable Neighbourhoods

It is the Policy of Dublin City Council to promote sustainable neighbourhoods which cater to the needs of persons in all stages of their lifecycle, {e.g.}~~(i.e.)~~ children, people of working age, older people{, people living with dementia} and people with disabilities."

The Proposed Development will provide a range of unit sizes and tenures catering for a broader cohort of the population and supporting the creation of a more sustainable neighbourhood.

"Policy QHSN45 – High Quality Neighbourhood and Community Facilities

It is the Policy of Dublin City Council to encourage and facilitate the timely and planned provision of a range of high-quality neighbourhood and community facilities which are multifunctional in terms of their use, adaptable in terms of their design and located to ensure that they are accessible and inclusive to all. {To also protect existing community uses and retain them where there is potential for the use to continue.}"

The Proposed Development will deliver a range of high-quality neighbourhood and community facilities including , public open and green spaces, and children's play areas. The proposed development also includes a range of community, arts and cultural spaces within the overall development.

"Policy SMT1 – Modal Shift and Compact Growth

To continue to promote modal shift from private car use towards increased use of more sustainable forms of transport such as active mobility and public transport, and to work with the National Transport Authority (NTA), Transport Infrastructure Ireland (TII) and other transport agencies in progressing an integrated set of transport objectives to achieve compact growth."

"Policy SMT2 – Decarbonising Transport

To support the decarbonising of motorised transport and facilitate the rollout of alternative low emission fuel infrastructure, prioritising electric vehicle (EV) infrastructure."

"Policy SMT5 – Mobility Hubs

To support the development of mobility hubs at key public transport locations and local mobility hubs in tandem with new developments to include shared car and micro mobility initiatives, creating a vibrant, accessible and liveable place to support the transportation experience."

The Proposed Development will encourage the use of more sustainable forms of transport by creating a highly permeable development that prioritises the provision of active transport infrastructure and the safety of pedestrians and cyclists. A significant quantum of EV Charging Infrastructure is also provided (50% of all parking spaces).

A mobility hub is proposed to support sustainable transport facilities as part of the development.

"Policy SMT10 – Pedestrian network

To protect, improve and expand on the pedestrian network ***~~(inclusive of facilities for people with mobility impairment and/or disabilities, including the elderly and people with children,)~~*** *linking key public buildings, shopping streets, public transport points and tourist and recreational attractions* ***{whilst ensuring accessibility for all, including people with mobility impairment and/or disabilities, older persons and people with children.}****"*

Objective SMTO2 – Improving the Pedestrian Network

*To improve the pedestrian network****{, and prioritise measures such as the removal of slip lanes, the}*** *introduction of tactile paving, ramps****{, raised tables}*** *and kerb dishing at appropriate locations, including pedestrian crossings,* ***{street junctions,}*** *taxi ranks, bus stops and rail platforms in order to optimise* ***{safe}*** *accessibility for all users."*

The Proposed Development will improve connectivity for pedestrians by allowing the public to pass through the development.

All public areas have been designed with DMURS and Part M of the Building Regulations in mind enabling users with reduced mobility to move easily throughout the scheme. Compliance with DMURS has been set out in the TTA prepared by AECOM. Please see community safety strategy within the Architectural Design Statement prepared by MW.

The design includes dipped kerbs, tactile paving and other landscape features to improve accessibility for a wide variety of users with impaired mobility continuing priority pedestrian access across the site.

"Policy SMT15 – Walking, Cycling and Active Travel

To prioritise the development of ***{safe and connected}*** *walking and cycling facilities and* ***{prioritise}*** ***~~(encourage)~~*** *a shift to active travel for people of all ages and abilities, in line with the city's mode share targets."*

The Proposed Development has been designed to promote the use of active transport where possible by designing a permeable development that prioritises the safety and convenience of pedestrians and cyclists. A mobility hub is included within the development to encourage active travel by residents of the scheme.

"Objective SMTO10 – Cycle Parking Spaces

To provide publicly accessible cycle parking spaces, both standard bicycle spaces and non-standard for adapted and cargo bikes, in the city centre and the urban villages, and near the entrance to all publicly accessible buildings such as schools, hotels, libraries, theatres, churches etc. as required."

The proposed development provides 906 no. residential bicycle spaces located in secure storage and a further 138 visitor spaces dispersed throughout the development at surface level.

"Policy SMT27 – Expansion of the EV Charging Network

To support the expansion of the EV charging network by increasing the provision of designated charging facilities for Electric Vehicles on public land and private developments in partnership with the ESB and other relevant stakeholders; and to support the Dublin Regional EV Parking Strategy."

The proposed development will deliver 50% of standard car parking spaces Electric Vehicle charging points and all spaces will be ducted for future use.

"Policy SMT30 – Design Manual for Urban Roads and Streets

To design new streets and roads within urban areas in accordance with the principles, approaches and standards contained within the Design Manual for Urban Roads and Streets (DMURS) and to carry out upgrade works to existing road and street networks in accordance with these standards where feasible."

The proposed development has been designed in accordance with the principles, approaches and standards contained within the Design Manual for Urban Roads and Streets (DMURS). A DMURS Design Statement Technical Note has been prepared by

Chapter 9: Sustainable Environmental Infrastructure And Flood Risk

"Policy SI2 – Integrating Water Services with Development

To ensure that development is permitted in tandem with available water supply and wastewater treatment and to manage development, so that new schemes are permitted only where adequate capacity or resources exist or will become available within the life of a planning permission."

Irish Water have confirmed the feasibility of the proposed development in relation to water and wastewater supply and treatment.

"Policy GI9 – European Union Natura 2000 Sites

To conserve, manage, protect and restore the favourable conservation condition of all qualifying interest/special conservation interests of all European sites designated, or proposed to be designated, under the EU Birds and Habitats Directives, as Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) (European / Natura 2000 sites)."

An Appropriate Assessment Screening Report and Natura Impact Statement has been prepared by Altemar and are submitted with this application.

"Policy GI28 – New Residential Development

To ensure that in new residential developments, public open space is provided which is sufficient in amenity, quantity and distribution to meet the requirements of the projected population, including play facilities for children and that it is accessible by safe secure walking and cycling routes."

The Proposed Development includes extensive public and communal open space located in various locations across the development that will provide a range of recreational areas for future residents of the development and the public. The Proposed Development includes a playground and play areas. The design of the proposed development includes various features that make walking and cycling safe.

"Policy GI51 – Children's Playing Facilities – General

To seek the provision of children's playing facilities that encompasses local and public places and spaces for play that are accessible and inclusive for children and young people of all ages, abilities and socio-economic backgrounds."

"Policy GI52 – Children's Playing Facilities in New Residential Developments

To seek the provision of children's playing facilities in new residential developments ***{and mixed developments with a residential element}****. To provide playgrounds to an appropriate standard of amenity, safety, and accessibility and to create safe and accessible places for socialising and informal play."*

High quality landscaping proposals are proposed for each of the communal open space areas with a mixture of soft and hard surfaces, to provide opportunities for play and relaxation. All spaces are well overlooked and have good orientation. A detailed landscape plan and report has been prepared by AECOM Landscape and is included with the planning application.

Informal play areas are provided throughout the scheme within the main public open space areas and within the proposed communal courtyards and roof terraces catering for toddlers and young children. Play equipment within this area are well located so as to maintain a distance between boundary walls, which have increased heights to maintain safety, with sufficient buffers from the residential units to maintain residential amenity. Please refer to the accompanying landscape drawings prepared by AECOM Landscape, together with their Landscape Design Report which sets out the play strategy for the subject site. An outdoor play area will be provided adjacent to the creche.

In addition, as per the guiding principles for SDRA 11 as set out in the Development plan, play areas for older children, including the proposed municipal playing pitch, are to be provided on the adjoining sites within the SDRA. As set out within the JSA Community and Social Audit there are a large number of open spaces in the area, notably Weaver Park to the north east contains a range of play space for older children including a skatepark.

Building Height

The Appendix 3 of the adopted Development Plan sets out the key criteria against which all proposals for buildings of increased height and scale are to be considered. These are as follows:

"The potential contribution to the development of new homes, economic growth and regeneration in line with the compact urban growth principles set out in the NPF and Project Ireland 2040.

• *Proximity to high quality public transport connectivity, including key public transport interchanges or nodes.*

• *Proximity to a range of employment, services and facilities.*

• *Provision of adequate social and community infrastructure.*

• *The availability of good walking, cycling and public transport infrastructure.*

• *Appropriate mix of uses, housing typologies and tenures.*

• *The provision of high quality public open space and public amenities.*

• *The resilience of the location from a public access and egress perspective in the event of a major weather or emergency or other incidents.*

• *That the ecological and environmental sensitivities of the receiving environments have been adequately assessed and addressed.*

• *Appropriate design response that considers the characteristics of the site, any development constraints and prevailing character.*

• *Adequate infrastructural capacity."*

The Proposed Development will result in the construction of 543 no. residential apartments in a highly accessible location, within a defined regeneration area. The proposed development accords with the principles of compact growth and consolidation of the city as set out in the NPF.

The Proposed Development is located in close proximity to existing and proposed public transport links, including the Luas stop at Fatima, and the Cork Street bus corridor, which is proposed to be improved as part of the BusConnects bus network redesign. The proposed development is also located close to the cycling infrastructure at the Grand Canal.

The existing site is located in the central area of the city, and a wide variety of services, employment opportunities, and facilities are located within a short walking, cycling, or public transport distance.

The Proposed Development will have access to a range of social and community infrastructure, including the proposed community uses and municipal playing pitch within the SDRA itself. The full details of the social and community infrastructure in the area are set out in the Community and Social Audit accompanying this application.

The site is located in a highly accessible part of the city, and the Proposed Developmentwill retain this access. The site has access to public transport services on the Luas Red Line and Cork Street bus corridor and is within walking distance of the city centre. The Proposed Developmentwill encourage the use of sustainable transport modes through the provision of adequate cycle parking and enhanced access through the site to public transport routes. A Public Transport Capacity Assessment has been prepared by AECOM and enclosed with this application.

The Proposed Developmentincorporates a variety of housing types and tenures, including one, two, and three-bedroom apartments, and social and cost rental apartments. The proposed housing types and tenures will add to the variety and choice of housing in the area.

The Proposed Developmentincorporates the provision of public open space, along with amenities including a retail/café unit, mobility hub and community, artist workspace, arts and cultural space, including a creche.

The Proposed Developmentis to be compliant with all applicable standards in terms of access and egress. The design of the Proposed Developmentis such that emergency access and egress can be facilitated as necessary during emergency events, as fully assessed within Risk Management Chapter of the EIAR.

An EIAR has been submitted with this application as the Proposed Developmentmeets the threshold for mandatory EIA. The EIAR sets out the likely significant effects of the Proposed Developmenton the receiving environment.

The Proposed Developmenthas been designed to respond to the existing and emerging character of the area. The architectural design of the proposed buildings is of a high quality and will add interest and variety to the area.

The application is accompanied by a Confirmation of Feasibility and a from Irish Water, which sets out that the existing infrastructure can accommodate the proposed development.

SDRA 11 St Teresa's Gardens and Environs

The proposed street network has been developed in response to the SDRA guiding principles map, including street layout and key connections to the surrounding neighbourhoods. The Donore Project lies at the centre of SDRA 11 with a network of streets that will encourage permeability across the site and through adjacent lands. The street layout and public space design has been coordinated with the adjacent development at Player Wills + Bailey Gibson Lands and provides a key linking piece between Donore Avenue, South Circular Road and the Coombe Hospital lands.

The Proposed Developmentaccords with the other elements of the guiding principles diagram for the SDRA in terms of block structure, height, location of open spaces, pedestrian and cyclist access through the site as further detailed below. The quality and quantum of public open space proposed meets the requirements set out in SDRA 11 including passive supervision and is part of a wider landscape strategy.

As set out in the MW Architectural Design Statement:

"A public space provided between DCC3 and DCC5 called the Donore Project Park, will provide a landscaped pedestrian route through the site which ultimately connects Cork Street and Donore Avenue through to the South Circular Road. Potential connections with the Coombe Hospital lands are provided and temporarily landscaped prior to the Coombe Hospital lands being developed. The proposed site, along with development of the adjacent SDRA 11 lands, will include a highly permeable network of streets that will focus on pedestrian and cycle accessibility. Neighbouring residents and future occupants will be able to move freely as result of connections formed through the proposed development and this will allow everyone to take full advantage of the attractions and services offered. By encouraging a mix of occupiers and uses, including independent businesses and retailers, the development will encourage the sustainable growth and stability of new local services."

Further the development will also integrate with the wider regeneration area. The Proposed Developmentwill provide for a significant quantum of much needed housing including social housing, along with ancillary facilities including a creche community facilities and artist space.

Overall the Proposed Developmentcomprises a comprehensive design led response to the site and seeks to integrate with the wider regeneration of the area, in particular with separate proposals for the Player Wills and Bailey Gibson sites providing key linkage piece between Donore Avenue, South Circular Road and The Coombe Women & Infants University Hospital.

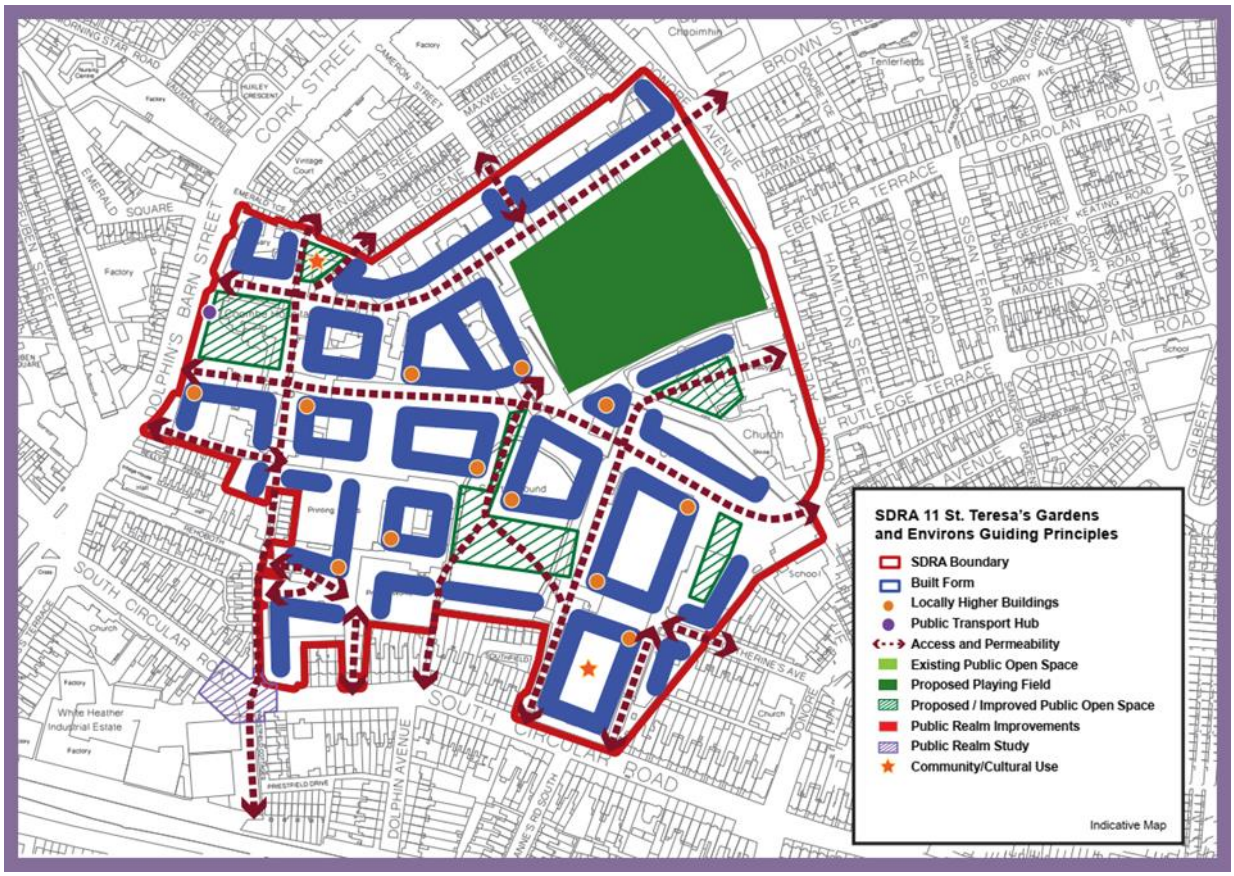


Figure 3.5: SDRA 11 St. Teresa's Gardens and Environs Guiding Principles. Source: Dublin City Development Plan 2022-2028.

Chapter 15: Development standards

Site Characteristics and Design Parameters

"Brownfield, Regeneration Sites and Large Scale Development

- *To encourage innovative, high quality urban design and architectural detail in all new development proposals.*
- *To analyse and review the surrounding built environment to ensure the new development is consistent with the character of the area.*
- *To respect and enhance existing natural features of interest.*
- *To contribute to the streetscape creating active and vibrant public realm.*
- *To create animation and create activity at street level and vertically throughout the building.*
- *To provide for appropriate materials and finishes in the context of the surrounding buildings.*
- *To ensure land contamination is appropriately dealt with and mitigated against.*
- *To provide high-quality new streets and open spaces connecting into the surrounding street pattern/ open space network.*
- *To create new compositions and points of interest.*
- *To provide an appropriate mix of uses comprising retail, residential, recreational, cultural, community- and/or employment generating uses to improve the existing range of uses and facilities in the area.*
- *To carefully integrate appropriate landscape planting and trees and retain and ecological features on the site.*
- *To prioritise pedestrian and cycle movements in connection with public transport infrastructure.*
- *To retain existing and create new features to make an easily navigational urban environment, including active building frontages with clearly defined edges and safe public routes.*
- *To build in capacity to incorporate services to meet changing demands including pipe subways and infrastructure to allow future connection to district energy networks.*
- *Ensure waste management facilities, servicing and parking are sited and designed sensitively to minimise their visual impact and avoid any adverse impacts on users of highways in the surrounding neighbourhood."*

A detailed response to the above criteria is set out within the application documentation however a summary is set out here in brief. The proposal will make a significant, positive contribution to the area through a high quality and comprehensive design response to the site. The improvement of permeability and connections through the area including high quality public realm and public open space form an important part of this.

The Proposed Development has been designed to respond to the existing and emerging character of the area. The architectural design of the proposed buildings is of a high quality and will add interest and variety to the area.

The priority for the design team is to propose a pedestrian friendly series of streets and spaces whereby the proposed site layout plan provides for a legible, permeable and distinctive layout. The proposed layout of the development provides for a straightforward, safe, easily accessible and easily navigable network of places for pedestrians and cyclists which integrates with the surrounding street layout at Donor Avenue / Margaret Kennedy Road as well as will permitted development at Player Wills and Bailey Gibson sites. These routes allow easy connections with nearby public transport within a 5 minute walk along Cork Street and Fatima Luas stop within close walking distance.

The proposed site layout has been developed with consideration for adjacent SDRA11 lands and associated extant permissions at Hines Phase 1 Bailey Gibson permitted under application Ref. ABP-307221-20 and Hines Player Wills permitted under Ref. ABP-308917-20 (both subject to Judicial Review). We also note CWTC Multi Family ICAV have recently submitted a Strategic Housing Development Application (Ref. 314171-22) for the development of 345 no. residential units that ranges in height from 2-7. Upon completion, the development of the SDRA 11 lands will provide an integrated network of buildings, streets and open spaces which in turn link to the adjoining neighbourhoods.

The Engineering Planning Report prepared by AECOM sets out the servicing arrangements for the development. The Energy and Sustainability Report details district heating compatibility.

Waste management facilities are suitably located within the footprint of the development and within carefully design structures to integrate with the visual appearance of the development.

“Sustainable Height and Density

Key criteria which all proposals for increased urban scale and height must demonstrate include:

- *The potential contribution to the development of new homes, economic growth and regeneration in line with the compact urban growth principles set out in the NPF and Project Ireland 2040.*
- *Proximity to high quality public transport connectivity, including key public transport interchanges or nodes.*
- *Proximity to a range of employment, services and facilities.*
- *Provision of adequate social and community infrastructure.*
- *The availability of good walking, cycling and public transport infrastructure.*
- *Appropriate mix of uses, housing typologies and tenures.*

- *The provision of high quality public open space and public amenities.*
- *The resilience of the location from a public access and egress perspective in the event of a major weather or emergency or other incidents.*
- *That the ecological and environmental sensitivities of the receiving environments have been adequately assessed and addressed.*
- *Appropriate design response that considers the characteristics of the site, any development constraints and prevailing character.*
- *Adequate infrastructural capacity"*

As set out within Section 6.0 of the Planning Report prepared by JSA, the Proposed Developmentsupports the objectives of the NPF, the RSES and other national policy guideline which aim to achieve compact urban growth principles.

As set out in the TTA prepared by AECOM the Proposed Developmentis adjacent to high quality public transport connectivity along the Cork Street and close to the Luas Green Line.

Significant employment and service areas in the area include The Coombe Women & Infants University Hospital, St James' Gate Enterprise Centre, the Digital Hub and close to Dublin City Centre.

As set out within the JSA Community and Social Audit there is a good provision social and community infrastructure to support the development. the proposal makes a contribution in this regard through the provision of a community facility.

The existing provision of walking, cycling and public transport infrastructure is set out within the TTA prepared by AECOM. Significant contributions are also made to this infrastructure by the Proposed Development.

High quality public open space and public amenities proposed are set out in the Architectural and Landscape design statements and associated documentation.

Please see Risk Management Chapter 14 of the EIAR and the SSFRA prepared by AECOM for further detail in regard to the resilience of the location from a public access and egress perspective in the event of a major weather or emergency or other incidents.

The ecological and environmental sensitivities of the receiving environments have been comprehensively assessed and addressed as part of the EIAR and NIS, and other enclosed documentation.

An appropriate design response that considers the characteristics of the site, any development constraints and prevailing character has been set out within the Architectural and Landscape design statements and associated documentation.

Adequate infrastructural capacity has been assessed as part of the EIAR and other enclosed documentation such as the EPR prepared by AECOM and the TTA prepared by AECOM.

The Proposed Developmenthas been designed to align with the Guiding Principles for SDRA 11 as set out in the Development Plan.

"*Architectural Design Statements*

Information requirements for Design Statements

- *Site Location and Description*
- *Context and Setting*
- *Urban Design Rationale*
- *Design Evolution / Alternatives Considered*
- *Block Layout and Design*
- *Site Connectivity and Permeability*
- *Height, Scale and Massing*
- *Materials and Finishes*
- *Open Spaces (Private, Communal, Public)*
- *Public Realm Contribution*
- *Compliance with Internal Design Standards*
- *Daylight and Sunlight*
- *Overlooking, Overbearing, Overshadowing*
- *Car and Cycle Parking*
- *Management/ Lifecycle Report*
- *Compliance with DMURS*
- *Safety and Security*
- *Universal Access*

In response to the above considerations, please see the following documentation prepared by the design team:

An Architectural Design Statement containing the above requirements has been prepared by MW and is submitted with this application which addresses the above considerations.

"Green Infrastructure and Landscaping

The proposal should indicate how existing natural features of the site will inform sustainable urban form and should include the following:

- *Analysis of the potential for the retention and integration of existing natural features, such as watercourses, mature planting and topography; this approach, in accordance with the National Landscape Strategy 2015–2025, ensures the landscape character of the area is retained and informs the proposed design.*
- *The connectivity of proposed open spaces to adjoining existing open space or natural assets should also be considered with reference to the city's green infrastructure in this development plan (Chapter 10) and any relevant local area plan(s); for sites which provide or adjoin habitats for species designated under the European Union Habitats Directive, Article 10 of the directive shall apply in regard to the need to provide connectivity and 'stepping stones' to ensure biodiversity protection.*
- *Potential applicants should refer to the Draft Dublin City Biodiversity Action Plan 2021 – 2025 or subsequent plans and consult the City Council's Parks, Biodiversity and Landscape Services Division to ascertain the significance of any ecologically sensitive areas which it may be appropriate to retain or integrate into a landscape plan. In such cases, the ecological attributes of the site and the impact of any development should be considered prior to final design."*

A Landscape Design Statement has been prepared by AECOM which details the landscape plans for the Proposed Developmentand outlines planting and landscaping proposals are incorporated into landscape plans. This document also refers to the Draft Dublin City Biodiversity Action Plan 2021 – 2025. Please also see Natura Impact Assessment and AA Screening prepared by Altemar in regard to Habitats Directive considerations.

"Landscape Plans and Design Reports

Applications for 1,000+ sq. m. of commercial development or 30+ residential units, or other applications where the planning authority consider it necessary should be accompanied by a landscape design report.

Landscape design reports should address the following:

- *The protection and incorporation of existing tress and landscape features worthy of retention.*
- *The contribution of the proposed development to the landscape character and setting and open space amenity of the area.*
- *The value of ecological corridors and habitats surrounding the proposed development and the potential impact on these areas.*
- *The relationship between existing green corridors, public open spaces or area of high ecological values.*
- *The detail and specifications for materials, finishes and maintenance details.*
- *The integration of sustainable urban drainage systems such that landscaping plans may include associated biodiversity areas or wetlands which can reduce surface water run-off – see Appendix 12 and 13.*
- *The hierarchy of different types of planting throughout the development in order to give visual variety. Green roofs, walls and permeable surfaces will be encouraged and required in certain instances (see Chapter 10 and Appendix 11).*
- *The details of ecosystems services and biodiversity including pollinator friendly approach.*
- *The maintenance and management strategy for the landscaped features."*

Please see Landscape Design Statement has been prepared by AECOM. A detailed response to the above considerations are set out within the Landscape Design Statement and associated drawings prepared by AECOM, in summary the key design drivers of this strategy include the following:

- Open Space Strategy
- Effective Access and Circulation
- Integrated Infrastructure
- Softworks & Biodiversity Strategy
- Spatial Typologies
- Communal Amenity
- Green Infrastructure
- Utility Strategy
- A New Urban Grain

"Public Open Space and Recreation

Public open space should utilise a combination of hard and soft landscaping to cater for a wide range of needs such as children's play, passive recreation and sporting facilities. Where adjacent to canals or rivers, proposals must take into account the functions of a riparian corridor and possible flood plain,

All applications which include areas of open space should refer to the Dublin City Council Parks Strategy 2017-2022 or any further iteration for guidance on the design and aspirations for city parks. Planning applications including any open space area (public or communal) should incorporate green infrastructure strategies including SuDs, flood management, biodiversity, outdoor recreation, connection and carbon absorption in accordance with Policy GI24 of the plan.

In areas with a deficit of public open space in the city centre, SuDS proposals will be supported where it can be demonstrated that they have positive recreational and biodiversity functions. Any SuDS proposal that would negatively impinge on the conservation objectives of a historic park will not be supported.

The planning authority will seek the provision of public open space in all residential schemes (see Section 15.8.6) and commercial developments in excess of 5,000 sq. m. Dublin City Council will seek the following in the delivery of public open space:

- *The design and layout of the open space should complement the layout of the surrounding built environment and complement the site layout.*
- *Open space should be overlooked and designed to ensure passive surveillance is achieved.*
- *The space should be visible from and accessible to the maximum number of users.*
- *Inaccessible or narrow unusable spaces will not be accepted.*
- *The level of daylight and sunlight received within the space shall be in accordance with the BRE Guidelines or any other supplementary guidance document – see Appendix 16.*
- *Any new public open space on the site should be contiguous to existing open space or natural feature (i.e. river corridors and canal bank) to encourage visual continuity and optimise value of ecological networks.*
- *Protect and incorporate existing trees that are worthy of retention into the design of new open spaces*
- *Retain and incorporate other existing natural features into the design to reinforce local identity, landscape character, and amenity.*
- *Landscaping works should be integrated with overall surface water management and SuDS strategy such that landscaping plans may include associated biodiversity areas or wetlands which can reduce / better manage surface water run-off.*
- *Landscaping schemes should provide a hierarchy of different types of planting throughout the development in order to give visual variety. Permeable surfaces will be encouraged (see Appendix 12).*
- *Materials must be appropriate, durable and of a good quality. The texture and colour of materials must be sympathetic to the locality and be an integral part of the design.*

- *Street furniture should be sited such that it does not provide an obstacle for people with disabilities and should be designed so that it is fully accessible where feasible.*
- *Age friendly measures should be incorporated into the design.*
- *Permeability and accessibility for all users, particularly disabled persons should be provided.*
- *Cycle and pedestrian friendly routes should be accommodated."*

The principles of the landscape design seek to provide new accessible routes through the development site, and create a framework of new, key spaces and landscape types for the various user groups. Further details are set out in Section 3 of this Report and the Landscape Design Statement and drawings prepared by AECOM.

A comprehensive Sunlight and Daylight Assessment has been prepared by 3DDB which assesses the level of daylight and sunlight received within the space in accordance with the BRE Guidelines or any other supplementary guidance documents.

The Proposed Developmentaccords with Section 16.3.4 in relation to Public Open Space. A total of 3,408 sqm of public open space is proposed, which equates to c. 16.64% of the 2.05-hectare net development area, thereby meeting and exceeding the 10% requirement specifically for residential schemes.

Please see detail above in regard to proposed SuDS and set out in further detail within the Engineering Services Report. Permeable services are included where possible. The rationale, design and layout of the open space has been set out within AECOM Landscape Design Report, proposed open spaces.

Public Open Spaces

Table 15-4: Public Open Space Requirements for Residential Development

Landuse / Zoning	Requirement (minimum)
Residential development (Z1, Z2, Z3, Z4, Z5, Z6, Z8, Z10, Z14)	10%
Residential development (Z12) (Z15)	25%

The Proposed Developmentwill provide for 3408 sqm of public open space (as detailed in the Architectural Design Statement) which is in excess of the required 10% (16% provided).

Dual Aspect

Specific Planning Policy Requirement 4 requires a minimum of 33% dual aspect units in central and / or accessible urban locations and 50% of units in suburban and / or intermediate locations.

The apartment guidelines state that a minimum of 50% dual aspect apartments should be provided in any development and that a minimum of 33% dual aspect units should be provided

in central and accessible urban locations, where it is necessary to achieve a quality design in response to the subject site characteristics and ensure good street frontage.

The Proposed Developmentprovides for an overall of 45% dual aspect units, well in excess of the 33% requirement of the apartment guidelines for such locations and is an appropriate design response to the subject lands. A Housing Quality Assessment prepared by MW is submitted as part of this application which demonstrates compliance with the applicable standards.

"Separation Distance (Apartments)

Traditionally a minimum distance of 22m is required between opposing first floor windows. In taller blocks, a greater separation distance may be prescribed having regard to the layout, size, and design. In certain instances, depending on orientation and location in built-up areas, reduced separation distances may be acceptable. Separation distances between buildings will be assessed on a case by case basis.

In all instances where the minimum separation distances are not met, each development will be assessed on a case by case basis having regard to the specific site constraints and the ability to comply with other standards set out within this chapter in terms of residential quality and amenity."

"Overlooking and Overbearance

Overlooking may be overcome by a variety of design tools, such as:

- *Building configurations (bulk and massing).*
- *Elevational design / window placement.*
- *Using oblique windows.*
- *Using architectural features.*
- *Landscape and boundary treatments."*

The Proposed Development provides for adequate separation distances on site with the 22m separation distance between proposed apartment buildings achieved at a number of locations. Appropriate separation distances are proposed between the existing residential units to the north.

The design of the scheme ensures that there is no undue overlooking into adjacent properties occurs through its orientation, fenestration and use of architectural features. The block layout, height and massing of the buildings has been carefully assess over the course of a series of design iterations to ensure impact on surrounding uses are avoided as much as possible.

3.4 Planning Permissions and Development Within the Surrounding Area

As part of the assessment of the impact of the Proposed Development, account has been taken of relevant developments that are currently permitted, or under construction and substantial projects for which planning has been submitted within the surrounding areas.

A summary of the most relevant planning permissions and applications pertaining to the Proposed Developmentsite and surrounding area is provided below.

DCC Reg. Ref.: 4049/19 The Coombe Laboratory Building permission

The Development is described as set out in the public notices:

"The development will consist of: a new four storey laboratory building (1340m2) within the existing Coombe site with the provision of rooftop plant and 2 no. rear extensions to the existing adjacent laboratory building to include a new link, office and store (68m2) with all associated site works. This application site is in S.D.R.A. no.12, St Teresa's Gardens and Environs Strategic Development and Regeneration Area."

DCC issued a Final Grant on 11 February 2020, this development is now under construction.

DCC Reg. Ref.: 3537/21 Colposcopy Building Permission

Planning permission for development at The Coombe Women and Infants University Hospital, Dolphin's Barn Street, Dublin 8, D08 XW7X on a 0.15 hectare site to the south-east of the hospital site, such site also including the existing Colposcopy building.

The Development is described as set out in the public notices:

"The development for which planning permission is sought comprises of the development of a new dedicated Colposcopy/Women's Health Unit building of 3 no. storeys plus rooftop plant room which will be attached to the existing Colposcopy building to the west by way of glazed link. The development will include the partial demolition of the eastern meeting room and lobby area wing to the existing Colposcopy building to facilitate the connection to the new building. The proposed building comprises of a 988 sq.m gross floor area building. The building will comprise of: (i) at ground floor level; a waiting area, 2 wc's (1 accessible), 1 plant room, 1 meeting room, 3 gynaecology examination rooms (with associated changing rooms), 1 utility room, a waste room, an early pregnancy assessment unit with dedicated entrance, 2 assessment rooms, reflection room, 1 wc, and an office/reception; (ii) at first floor; a waiting area, a check in room, a supplies store, 2 wc's (1 accessible), 4 colposcopy examination rooms and with associated changing and consultation areas, a utility and a waste room; (iii) at second floor; a meeting room, 2 staff changing rooms (1 accessible with shower and wc), a wc, a staff canteen, a photocopier room and 4 staff office rooms.

The proposed Colposcopy building will involve the loss of 10 existing parking spaces, at the south- eastern corner of the hospital site. 2 number accessible car parking spaces will be provided to the south of the proposed extension.

Planning permission is also sought for site drainage, a glazed link to the existing Colposcopy building, site landscaping works, and all other associated and ancillary works. Access is via the main hospital campus which is accessed from Dolphin's Barn Street."

DCC issued a Final Grant on 25th April 2022.

ABP Reg. Ref. 308917-20 Player Wills Permission

Directly to the south of the Proposed Developmentan application for Demolition of all buildings excluding the original fabric of the former Player Wills Factory, construction of 492 no. Build to Rent apartments, 240 no. Build to Rent shared accommodation along, creche and associated site works located at the Former Player Wills site and undeveloped Land in Ownership of Dublin City Council, South Circular Road, Dublin 8 was granted 15/04/2021. This application is now subject to judicial review.

ABP Reg. Ref.307221-20 Bailey Gibson Permission

Directly to the south of the Proposed Developmentan application for demolition of all structures, construction of 416 no. residential units (4 no. houses, 412 no. apartments) and associated site works located at the Former Bailey Gibson Site, 326-328 South Circular Road, Dublin 8 was granted 14/09/2020. This application is now subject to judicial review.

Reg. Ref.: 314171-22 Bailey Gibson Application

CWTC Multi Family ICAV, acting solely in respect of its sub-fund DBTR SCR1 Fund, submitted a Strategic Housing Development Application in July 2022 for the development of 345 no. residential units that will consist of 292 no. Build to Rent apartments, 49 no. Build to Sell apartments and 4 no. Build to Sell houses. A decision on this application was due to be issued by An Bord Pleanála on the 14th of November 2022.

Part 8 permission for the demolition of the remaining two original flat complex blocks (DCC. Reg. Ref 2475/18)

We note the following permission lodged by DCC Housing Department under Planning and Development Regulations 2001 (as amended) - Part 8 and approved 11 Jun 2018 for:

"Pursuant to the requirements of the above, notice is hereby given of the intention to amend the previously permitted development comprising 50 no. units (16 no. apartments, 24 no. 3 bedroom terraced houses and 10 no. 2 bedroom terraced units - Planning ref 2033/14) to allow for the construction of an additional 4 no. terraced residential units and associated works; amendments to the design of 12 no. previously permitted units; development of a temporary grass multisport pitch in addition to the previously permitted park development (Phase A); demolition of 2 no. existing flat blocks to facilitate the future provision of a landmark park (Phase B) with full size multisport pitch and associated works at St. Teresa's Gardens, Donore Avenue, Dublin 8 as follows:

Additional residential units:

4 no. 3 bedroom terraced units - as an extension of the previously permitted 3 storey terrace. Total proposed residential development of 54 no. units (including the additional 4 no. units) comprising 16 no. apartments, 28 no. 3 bedroom terraced units and 10 no. 2 bedroom terraced units.

Amendments to 12 no. previously permitted residential units:

6 no. 2 bedroom 3 storey terrace units (type E1 and F1) to be amended to 6 no. 2 bedroom 3 storey terraced units (B1 to B6).

4 no. 2 bedroom 2 storey terrace units (type D1) to be amended to 4 no. 2 bedroom two storey terraced units (D1 to D4).

2 no. 3 bedroom 3 storey units (type A) to be amended to 2 no. 3 bedroom 3 storey units (C1 and C2).

Demolition of 2 no. four storey flat blocks comprising:

56 no. residential units (35 no. 1 bedroom units, 14 no. 2 bedroom units, 7 no. 3 bedroom units), a football club premises, boxing club premises/changing facility and a shop premises to facilitate the future development (Phase B) of an enlarged park and multisport playing pitch in accordance with the 2017 Development Framework for the SDRA 12 lands.

Development of a temporary grass multisport pitch and associated works (in addition to the previously approved park - Phase A).”

3.5 Conclusion

The application site, which is currently undeveloped is zoned as a Strategic Development and Regeneration Area (Z14) development purposes within the Dublin City Development Plan. The proposed uses are permitted in principle on the site. Therefore, the Proposed Development is supported in principle by the land use zoning objective of Donore Project.

The Proposed Development is in accordance with the policies and objectives of the National Planning Framework, Regional Spatial and Economic Strategy for the Eastern and Midlands Regional Assembly, and the Dublin City Development Plan.

The development is an appropriate land use for the area and meets the requirements of the Dublin City Council zoning objectives. The development will minimise the potential environmental impacts as described in various chapters of this EIA Report.

4 POPULATION AND HUMAN HEALTH

4.1 Introduction

This chapter of the EIA Report considers the potential effects of the Proposed Development on human beings, living, working and visiting in the vicinity of the application site at the former St. Teresa's Gardens, Donore Avenue, Dublin 8. The chapter details the potential direct and indirect effects of the Proposed Development on population and human health.

Human beings are one of the most significant elements of the environment to be considered, therefore any potential impact on the status of human health by a development proposal must be comprehensively addressed. One of the principle concerns in any Proposed Development is that there are no significant impacts on the local population as a result of the development on either a permanent or temporary basis. This chapter also examines the socio-economic impacts of the development proposal focusing on pertinent issues such as residential amenity, economic activity, tourism and population levels.

The section on Population and Human Health is broad ranging and covers the existence, wellbeing, and activities of people through the format of considering people as 'groups' or 'populations'. The assessment of impacts on human beings involves the identification of relevant key populations that may be affected by the proposal and quantifiable documentary research. Health, as defined by the World Health Organization (WHO), is *"a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity"*.

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

The EPA defines Sensitive Receptors as residential receptors, schools, commercial premises, amenity areas and hospitals (Odour Emissions Guidance Note, September 2019). The Proposed Development includes 543 no. apartments which could be classed as residential receptors and a creche which could fall under the school category. As all elements of the Proposed Development could be classed as sensitive receptors they have been assessed in this Chapter with the same sensitivity.

4.1.1 Quality Assurance and Competence

This Chapter was prepared by Louise Hewitt, Environmental Consultants, Enviroguide Consulting. Louise has a Master of Science (Hons) in Environmental Resource Management from University College Dublin and a Bachelor of Science (Hons) in Biology from Maynooth University. Louise has worked as an Environmental Consultant with Enviroguide since 2021 and has experience preparing Environmental Impact Assessment (EIA) Screening Reports, Introduction, Population and Human Health and Archaeology and Cultural Heritage Chapters of EIARs.

This Chapter was reviewed by Janet O'Shea who has 16 years professional environmental experience. Janet who is Technical Director of EIA holds a BSc in Environmental Health and Diploma in Environmental Impact Assessment. Janet is a Lead Environmental Auditor (IEMA Approved), a Chartered Waste Manager (MCIWM) and Chartered Environmentalist (C. Env).

Janet has authored and project managed the preparation of EIAs for various large-scale developments.

4.2 Study Methodology

A desk-based study was undertaken in July 2022 to assess information regarding population, age structure, economic activity, employment, and unemployment within the vicinity of the Proposed Development. This study was undertaken in accordance with the best scientific guidance and practise from;

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

Technical chapters within the EIAR have also been reviewed when assessing the likely effects on population and human health. These include the relevant chapters relating to air quality, noise and vibration, hydrology, traffic and transport and landscape and visual. A Community Audit with Childcare Facilities Assessment (JSA, 2022) (Appendix D) has also been used to inform this Chapter.

The 2022 Census of Ireland was held on Sunday the 3rd of April 2022. The preliminary results were released on the 23rd of June 2022 however the main results will be published over several months starting in April 2023. The preliminary 2022 census results have been reviewed however they do not contain the required region-specific information for the purpose of this assessment of demographic profile. As such, the more robust and complete 2016 census results have been used in this assessment (Accessed June 2022). The remaining information analysed as part of the desktop study was accessed in June 2022. The scope of the evaluation is based on a review of data available from the Central Statistics Office (CSO), legislation, guidance documents and EIARs. The aim of the study was to assess the current baseline environment.

The scope of the evaluation is based on a review of data available from the Central Statistics Office (CSO), legislation, guidance documents and EIARs. The aim of the study was to assess the current baseline environment.

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

- Population;
- Socio Economic impacts;
- Tourism and Amenity;
- Air quality;
- Water;
- Noise;
- Traffic; and
- Risk

The Proposed Development is located in the Merchants Quay F Electoral Division (ED) which is in the South West Inner City Local Electoral Area (LEA). When assessing the age profile of the area the ED represents too small of a sample and as such the South West Inner City LEA

was chosen as the study area (Figure 4-1). The South West Inner City LEA includes the following ED's: Merchants Quay A, B, C, D, E, F, Ushers A, B, C, D, E, F, Kilmainham B and C and Phoenix Park.

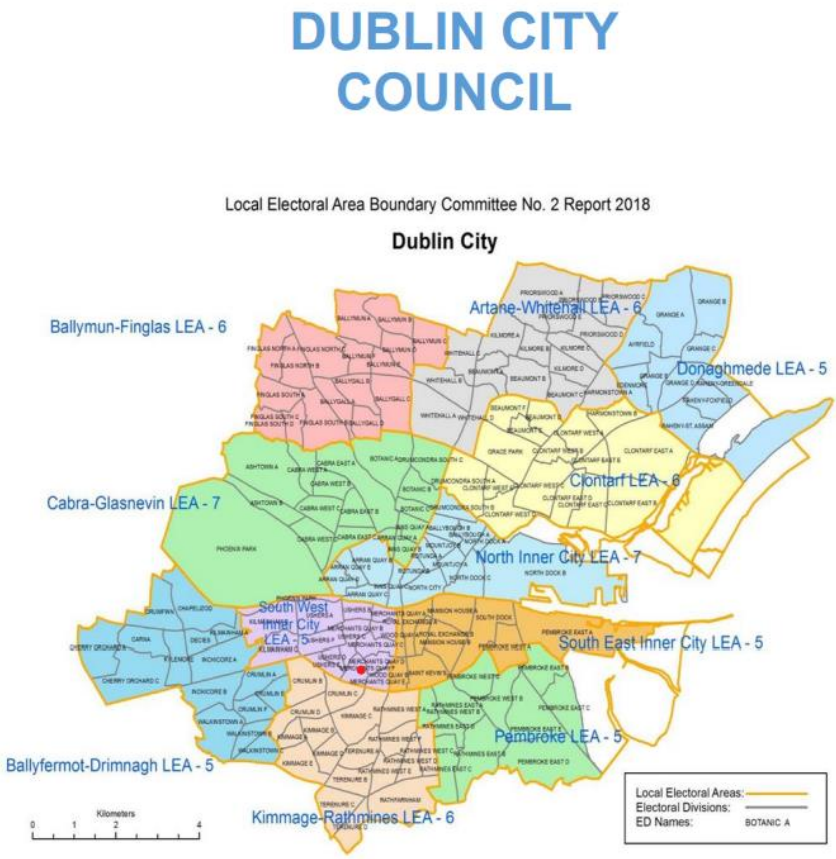


Figure 4-1: Map of Local Electoral Areas in Dublin City Council (Site location marked in red)

4.2.1 Information Sources

The principal sources of information are as follows.

- Census and employment information published by the Central Statistics Office (CSO). Available at https://data.cso.ie/
- Dublin City Development Plan 2022-2028, Available at: https://www.dublincity.ie/sites/default/files/2021-12/volume-1-draft-dublin-city-development-plan-2022-2028-low-res.pdf
- Regional Planning Guidelines of the Greater Dublin Area 2010-2022, and
- Ordinance Survey Ireland (OSI) mapping and aerial photography.

The Institute of Public Health in Ireland has issued a document "*Health Impact Assessment Guidance*" (2021) which details the link between human health and the built environment (Figure 4- 2). This document also details the negative health impacts associated with unemployment. Unemployment affects both physical and mental health and is an important determinant of health inequalities in adults of working age. Unemployed people have a higher risk of lower levels of psychological wellbeing ranging from symptoms of depression and

anxiety to self harm and suicide. Unemployment can also impact other health determinants for example housing and nutrition. Based on this information, employment generated as a result of the Proposed Development has been assessed throughout this Chapter.

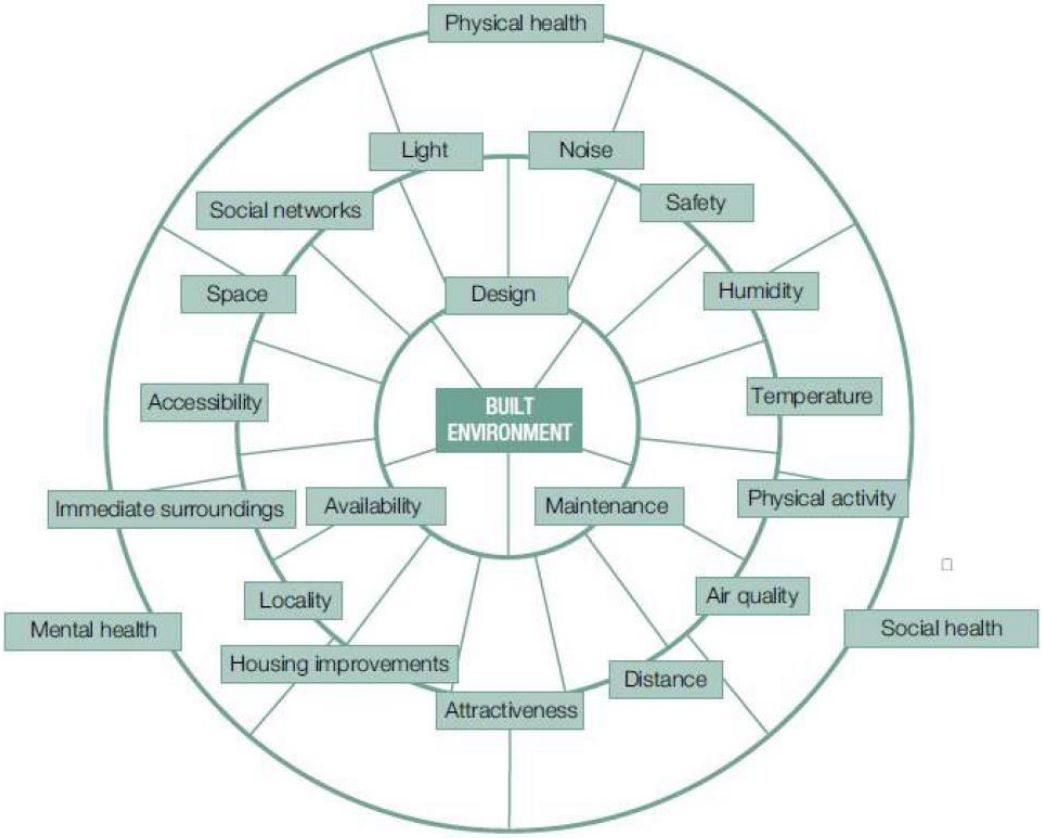


Figure 4-2: Health impact of the built environment

The European Commission (EC) has published the "*Guidance on The Preparation Of The Environmental Impact Assessment Report*" (EC, 2017). This document defines human health as "*a very broad factor that would be highly Project dependent. The notion of human health should be considered in the context of the other factors in Article 3(1) of the EIA Directive and thus environmentally related health issues (such as health effects caused by the release of toxic substances to the environment, health risks arising from major hazards associated with the Project, effects caused by changes in disease vectors caused by the Project, changes in living conditions, effects on vulnerable groups, exposure to traffic noise or air".*

The following reports submitted as part of this planning application have also been consulted:

- Outline Construction Environmental Management Plan (Enviroguide Consulting)
- Hydrological & Hydrogeological Risk Assessment Report (Enviroguide Consulting)
- Social Infrastructure Assessment (John Spain Associates)
- Traffic and Transport Assessment (Aecom)

In line with the Environmental Protection Agency (EPA) Guidelines on the information to be contained in Environmental Impact Assessment Reports (2022) (the EPA Guidelines (EPA, 2022)), the following terms are defined when quantifying the quality of effects. See Table 4-1.

Table 4-1: Definition of Quality of Effects

Quality	Definition
Positive Effects	A change which improves the quality of the environment
Neutral Effects	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error
Negative/adverse Effects	A change which reduces the quality of the environment

In line with the EPA Guidelines (EPA, 2022), the following terms are defined when quantifying the significance of impacts. See Table 4-2.

Table 4-2: Definition of Significance of Effects

Significance of Effects	Definition
Imperceptible	An effect capable of measurement but without significant consequences.
Not significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight Effects	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate Effects	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant Effects	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
Profound Effects	An effect which obliterates sensitive characteristics.

In line with the EPA Guidelines (EPA, 2022), the following terms are defined when quantifying duration and frequency of effects. See Table 4-3.

Table 4-3: Definition of Duration of Effects

Quality	Definition
Momentary Effects	Effects lasting from seconds to minutes.
Brief Effects	Effects lasting less than a day.
Temporary Effects	Effects lasting less than a year.
Short-term Effects	Effects lasting one to seven years.
Medium-term Effects	Effects lasting seven to fifteen years.
Long-term Effects	Effects lasting fifteen to sixty years.
Permanent Effects	Effects lasting over sixty years.
Reversible Effects	Effects that can be undone, for example through remediation or restoration.

4.3 The Existing and Receiving Environment (Baseline Situation)

The Proposed Development is located at a site located on the former St. Teresa's Gardens, Donore Avenue, Dublin 8. The site is bound by Donore Avenue to the north-east, Margaret Kennedy Road to the north-west, The Coombe Women and Infants University Hospital to the west, the former Bailey Gibson factory buildings to the south-west, and the former Player Wills factory to the south-east The development will consist of the construction of a residential scheme of 543 no. apartments on an overall site of 3.25 ha. with a net development area of 2.07 ha.

The site is zoned as "Z-14" under the Dublin City Development Plan 2022-2028 *"To seek the social, economic and physical development and/or rejuvenation of an area with mixed use, of which residential would be the predominant uses."*

The site will be accessed from Donore Avenue to the north. A temporary haul road during the period of construction will be taken directly from Donore Avenue to the northeast of the site at a point next to the Donore Community Centre.

4.3.1 Population and Demographic Analysis

In terms of the County, Region and the State, population structure and change are more strongly influenced by migration and emigration rates than by birth and death rates. The mid to late 1980s in Ireland was a period of heavy population outflow, mainly due to the poor economic and employment situation in the country at that time.

The most recent population estimates (June 2022) published by the Central Statistics Office indicate that the combination of a net inward migration and high birth rates have resulted in the population of Ireland has exceeded 5 million for the first time since 1851. Population projections for Ireland up to 2046 anticipate a population of approximately five million under the most pessimistic scenario and over 6.7 million under the most optimistic scenario.

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

The Greater Dublin Area (GDA) which includes Dublin City and County, showed a significant population growth of 40.8% between 2016 and 2022. According to Census 2022, the total population of Dublin is 1,450,701 which represents a 7.7% increase from the value of 1,347,359 in 2016.

Significant population pressures have been exerted on certain parts of the GDA, particularly those areas which are within close commuting distance of Dublin. The Regional Spatial and Economic Strategy (RSES) has calculated population projections for the Dublin City Council Area for 2026 and 2031. The Draft Dublin City Development Plan 2022-2028 has extrapolated the RSES figures and the adjusted population for Dublin City for the year 2028 is 625,750 (Low) to 640,000 (High) persons.

In the case of the GDA, population levels specified in the Greater Dublin Regional Planning Guidelines 2010 – 2022 are projected to be in excess of 2 million by the year 2022.

Table 4-4: Population Change in Greater Dublin Area, 2016 to 2022 Census (Source: CSO)

County	Population 2016 Census Data	Preliminary 2022 Census Data	Change in Number of Persons	Percentage change in Population
Dublin	1,347,359	1,450,701	103,342	7.7
Kildare	222,504	246,977	24,473	11.0
Meath	195,044	220,296	25,252	12.9
Wicklow	142,425	155,485	13,060	9.2
Total	**1,907,332**	**2,073,459**	**166,127**	**40.8**

4.3.2 Population and Age

The CSO data for the 2022 Census recorded that there were 48,072 people in the South West Inner City LEA. This was calculated by adding the total population for each ED within the LEA, detailed in Table 4-5.

Table 4-5: Population of South West Inner City LEA 2022

Electoral Division	2022 Total	2022 Percent
Kilmainham B, Co.Dublin, 02109	2600	5.41
Kilmainham C, Co.Dublin, 02110	4941	10.28
Merchants Quay A, Co.Dublin, 02119	2308	4.80
Merchants Quay B, Co.Dublin, 02120	3958	8.23
Merchants Quay C, Co.Dublin, 02121	3265	6.79
Merchants Quay D, Co.Dublin, 02122	2604	5.42
Merchants Quay E, Co.Dublin, 02123	5867	12.20
Merchants Quay F, Co.Dublin, 02124	2302	4.79
Phoenix Park, Co.Dublin, 02079	1429	2.97
Ushers A, Co.Dublin, 02152	5090	10.59
Ushers B, Co.Dublin, 02153	1858	3.87
Ushers C, Co.Dublin, 02154	4143	8.62
Ushers D, Co.Dublin, 02155	2403	5.00
Ushers E, Co.Dublin, 02156	1866	3.88
Ushers F, Co.Dublin, 02157	3438	7.15
Grand Total	**48072**	

The 2022 Census data detailing the number of people in each age group for the South West Inner City LEA has not been published at the time of writing this Chapter. As such the more detailed 2016 census results have been used for an in depth demographic analysis.

The CSO data for 2016 records that there were 42,344 people living in the South West Inner City LEA in 2016. There were 554,554 people in living in Dublin City, the council area where the Proposed Development is located. Table 4-6 shows the breakdown of the population of South West Inner City LEA based on their age range group during the 2016 Census against the Dublin City and State average. This table is further broken down into percentages of the population within these age ranges.

Table 4-6: Population Categorisation by Age for South West Inner City LEA, Dublin City and the State

Age Range	South West Inner City LEA		Dublin City		Ireland	
	No. of People	% of People	No. of People	% of People	No. of People	% of People
0-4 years	2421	5.7	30683	5.5	331515	7.0
5-24 years	8685	20.5	125795	22.7	1251489	26.3
25-44	20414	48.2	207338	37.4	1406291	29.5
45-64	7211	17.0	118383	21.3	1135003	23.8
65-69	1127	2.7	20984	3.8	211236	4.4
70+	2486	5.9	51371	9.3	426331	9.0
Total no. of people	**42344**		**554554**		**4761865**	

An analysis of the CSO Census Statistics for 2016 for each Electoral Division in the South West Inner City LEA was completed and is shown in Table 4-7. This table breaks down the age profile of the area and details the percentages of population in each age bracket.

Table 4-7: Breakdown of age categories for each Electoral Division with South West Inner City LEA

Electoral Division	Age 0-4	Age 10-14	Age 15-19	Age 20-24	Age 25-29	Age 30-34	Age 35-39	Age 40-44	Age 45-49	Age 50-54	Age 55-59	Age 5-9	Age 60-64	Age 65-69	Age 70-74	Age 75-79	Age 80-84	Age 85+	Total
Kilmainham B	151	77	56	150	348	395	295	208	137	98	102	103	83	66	77	29	16	23	2414
Kilmainham C	332	224	205	441	682	577	526	386	307	284	206	324	147	139	127	94	94	91	5186
Merchants Quay A	124	84	100	273	381	347	256	159	139	132	117	118	99	82	59	24	8	11	2513
Merchants Quay B	153	92	115	505	824	696	505	225	197	124	119	95	93	87	47	39	27	23	3966
Merchants Quay C	176	104	126	371	631	552	378	250	172	144	130	129	116	107	64	47	40	29	3566
Merchants Quay D	130	68	51	180	246	276	207	171	156	104	104	107	90	89	53	59	53	41	2185
Merchants Quay E	101	34	187	590	325	315	249	133	119	87	72	83	62	40	35	25	15	17	2489
Merchants Quay F	208	70	56	214	302	302	262	187	115	87	77	90	59	52	20	30	17	10	2158
Phoenix Park	59	17	23	100	245	262	199	112	60	60	40	31	36	37	40	44	54	115	1534
Ushers A	174	60	58	347	916	836	534	274	161	95	110	90	69	57	51	46	24	28	3930
Ushers B	75	50	34	98	229	221	188	114	70	51	52	50	37	15	6	10	10	2	1312
Ushers C	324	192	167	304	524	541	438	305	245	203	151	227	119	88	57	42	29	27	3983
Ushers D	155	78	92	184	262	284	224	175	147	115	109	116	83	64	47	21	16	16	2188
Ushers E	116	101	85	139	184	179	163	119	100	93	115	121	96	65	43	22	25	24	1790
Ushers F	147	89	101	222	352	346	354	276	220	197	176	106	167	160	137	147	137	150	3484
Total	**2425**	**1340**	**1456**	**4118**	**6451**	**6129**	**4778**	**3094**	**2345**	**1874**	**1680**	**1790**	**1356**	**1148**	**863**	**679**	**565**	**607**	**42698**
Percent	**5.7**	**3.1**	**3.4**	**9.6**	**15.1**	**14.4**	**11.2**	**7.2**	**5.5**	**4.4**	**3.9**	**4.2**	**3.2**	**2.7**	**2.0**	**1.6**	**1.3**	**1.4**	**100.0**

Tables 4-6 and 4-7 shows that people aged 25-44 make up the majority of the LEA representing 48.2% of the population. This exceeds both the average for Dublin City (37.4%) and for the State (29.5%). Children aged 0-4 years make up 5.7% of the population of the LEA which is comparable to the value for Dublin City (5.5%) but is lower than the State average of 7.0%. Young people aged 5-24 years make up 20.5% of the LEA which is lower than both the Dublin City and State averages of 22.7% and 26.3% respectively. People aged 45-64 make up 17% of the LEA which lower than the average for Dublin City (21.3%) and the State (23.8%). Older people aged 65 years and over make up 8.6% of the LEA which is below the average for Dublin City (13.1%) and the State (13.4%).

4.3.3 Economic Activity & Employment

The labour force is defined as the number of people above the legal working age that are available to work. The labour force participation rate is the number of people who are employed and unemployed but looking for a job, divided by the total working-age population.

In 2016, there were 2,304,037 persons in the labour force in Ireland. This represented an increase of 71,834 (3.2%) on 2011 statistics. The substantial increase in retired persons (up 19.2% to 545,407) has impacted on the labour force participation rate, which fell to 61.4%.

Table 4-8 shows the percentage of the total population aged 15+ who were in the labour force during the 2016 Census. This figure is further broken down into the percentages that were at work or unemployed. It also shows the percentage of the total population aged 15+ who were not in the labour force, i.e., those who were students, retired, unable to work or performing home duties.

Table 4-8: Economic Status of the Population Aged 15+ in 2016 (Source: CSO)

	Status	South West inner City LEA		Dublin City Council		Ireland	
% of population aged 15+ who are in the labour force		**No. of People**	**% of People**	**No. of People**	**% of People**	**No. of People**	**% of People**
% of which are:	Persons at work	22258	60.5	265,293	56	2,006,641	53
	Unemployed looking for first regular job	515	1.4	4,686	1	31,434	1
	Unemployed having lost or given up previous job	3023	8.2	34,514	7	265,962	7
Total number of people in the labour force		25,796	70.1	304,493	64	2,304,037	61
% of population aged 15+ who are not in the labour force		**No. of People**	**% of People**	**No. of People**	**% of People**	**No. of People**	**% of People**
% of which are:	Student or pupil	4498	12.2	53,067	11	427,128	11
	Looking after home/family	1602	4.4	29,111	6	305,556	8
	Retired	3290	8.9	63,637	14	545,407	15
	Unable to work due to permanent sickness or disability	1498	4.1	18,665	4	158,348	4
	Others not in labour force	114	0.3	2368	1	14,837	0
Total number of people not in the workforce		11,002	29.9	166,848	36	1,451,276	39
All persons aged 15 years and over		**36,798**		**471,341**		**3,755,313**	

When assessing the percentage of people in the labour force it is noted that 70.1% of people in the South West inner City LEA are in the workforce. This reflects a high number of people working in the area and is higher than the average for Dublin City (64%) and the State (61%) averages. This higher than Dublin City Council and State averages is reflective of the age profile of the area as there is a high percentage of people in the working age group category; people aged 25-44 make up the majority of the LEA representing 48.2% of the population.

The percentage of people in the Electoral Division who are at work (60.5%) is higher than the Dublin City Council average (56%) and the State average (53%).

The percentage of people who are unemployed having lost or given up a previous job is 8.2% in the LEA which is slightly higher than in Dublin City Council (7%) and the State (7%).

The percentage of people who are unemployed and looking for first regular job is 1.4% in the LEA which is similar to those in Dublin City Council and the State (1%).

The percentage of people who are retired in the Electoral Division area is 8.9% which is lower than the averages for Dublin City Council (14%) and the State (15%).

The closest social welfare office to the Proposed Development which has figures available for the number of people on the Live Register / unemployed is the Bishop's Square Intreo Centre. The monthly unemployment release contains a series of monthly unemployment rates and volumes. These series are based primarily on the Labour Force Survey and are compiled in accordance with agreed international practice. These statistics are the definitive measure of monthly unemployment. The Live Register is used to provide a monthly series of the numbers of people (with some exceptions) registering for Jobseekers Benefit or Jobseekers Allowance or for various other statutory entitlements at local offices of the Department of Social Protection. Table 4-9 details the most recent information available from the CSO from February 2022 to August 2022 on the number of persons on the Live Register.

Table 4-9: Number of people on the live register

Month	February 2022	March 2022	April 2022	May 2022	June 2022	July 2022	August 2022
Number of Persons on Live Register, Bishop Square	3172	3662	3756	3674	3788	3788	3803

Tables 4-10 and 4-11 show the level of education and the field of study of the South West Inner City LEA population at the time of the 2016 Census. The majority of people in the area have an upper secondary level of education or higher (67.8%) (Table 4-9).

Table 4-10: Level of Education South West Inner City LEA (Source CSO)

Level of Education in South West Inner City LEA	Total No. of People	Total Percentage
Postgraduate diploma or degree	4804	17.0
Honours bachelor degree, professional qualification or both	4504	15.9
Not stated	3630	12.8
Upper secondary	3378	11.9
Primary education	2755	9.7
Ordinary bachelor degree or national diploma	2395	8.5
Lower secondary	2354	8.3
Technical or vocational qualification	1651	5.8
Higher certificate	1108	3.9
Advanced certificate/Completed apprenticeship	885	3.1
Doctorate (Ph.D) or higher	478	1.7
No formal education	356	1.3
Total	**28298**	

The main fields of study in the area is social sciences, business and law although the majority of people have “not stated” their field of study (43.9%) (Table 4-11).

Table 4-11: Field of Study in South West Inner City LEA

Field of Study in South West Inner City LEA	Total No. of People	Total Percentage
Not stated	12411	43.9
Social sciences, business and law	5561	19.7
Science, mathematics and computing	2082	7.4
Health and welfare	1926	6.8
Engineering, manufacturing and construction	1834	6.5
Arts	1444	5.1
Humanities	1081	3.8
Services	1067	3.8
Education and teacher training	738	2.6
Agriculture and veterinary	116	0.4
Other subjects	38	0.1
Total	**28298**	

4.3.4 Households

An assessment of the type of accommodation (Table 4-12) and the number of people/families in households (Table 4-13) in the South West Inner City LEA was assessed using CSO data. The most common type of accommodation in the LEA is Flat/Apartment which comprises 60.6% of accommodation. This followed by House/Bungalow comprising 37.3% of the accommodation in the LEA. In relation to the number of people in households in the LEA, 2 person households are the most common (44.37%) followed by 3 person households (24.35%). In relation to the size of family units; households with 2 persons comprise 59.36% of the LEA and households with 3 persons comprise 21.71%.

Table 4-12: Type of Accommodation in South West Inner City LEA

Type of Accommodation	Total Number	Percent
House/Bungalow	15038	37.73
Flat/Apartment	24155	60.60
Bed-Sit	177	0.44
Caravan/Mobile home	2	0.01
Not stated	486	1.22
Total	**39858**	

Table 4-13: Number of people/families in households

Type of Individuals	Number of People	Total	Percent
Number of persons in private households	2 Persons	10318	44.37
	3 persons	5661	24.35
	4 persons	4500	19.35
	5 persons	2010	8.64
	6 or more persons	763	3.28
	Total	**23252**	
Number of families in private households	2 Persons	5159	59.36
	3 persons	1887	21.71
	4 persons	1125	12.94
	5 persons	402	4.63
	6 or more persons	118	1.36
	Total	**8691**	

Conclusion of Demographic Analysis

- There is a higher working age profile in the LEA than the county and state averages. While the information presented in Table 4-8 indicates there is a high percent of people in the labour force this is more reflective of the age profile in the area rather than employment levels.
- 32.9% of people in the LEA have received an education level of *Postgraduate diploma or degree* and *Honours bachelor degree, professional qualification or both* indicating a high level of formal education in the LEA however 43.9% of people have Not Stated their field of study so no conclusion can be made in terms of the areas of study.
- The number of people on the live register in August 2022 in the LEA is 8.9%.
- The most common type of accommodation in the LEA is Flat/Apartment and the most common number of people and families within households are 2 and 3 person households. The Proposed Development will include 225 no. 1 bed apartments, 274 no. 2 bedroom apartments which would support the trend in the area surrounding the development based on the most common household type and size.

4.3.5 Tourism and Amenities

The site located on the former St. Teresa's Gardens is located in Dublin 8. Dublin City Centre is a well-developed and concentrated area of residential, community and leisure facilities. Dublin City has a range of community facilities including parks, open spaces, sports grounds, playgrounds, youth centres and libraries.

Dublin is a vibrant and cosmopolitan city with an abundance of tourist attractions which offer tourists an opportunity to experience historical attractions, sporting events, cultural life, parks and walks of the coastline. Some popular tourist attractions include The Guinness Storehouse, The Book of Kells and Trinity College, Dublin Castle, St Patrick's and Christ Church Cathedrals, Dublin Zoo as well as various galleries displaying works of art and culture. The nearby coastline of Dublin Bay offers cruises and walks. Some popular city parks include St Stephen's Green, Phoenix Park, St. Annes Park, Iveagh Gardens, The Gardens at the Royal Hospital Kilmainham, Dubh Linn Gardens and the Garden of Remembrance. The numerous cultural and man-made attractions are easy to access via national roads, airports, and ports.

There are a number of sports and recreational facilities in the area: Leinster Cricket Club, Swan Leisure, Mount Pleasant T.L.C, Herberton Leisure, Energie Fitness and Sundrive Velodrome.

Tourism and recreation make a positive contribution to the economic and social wellbeing of Dublin City and County. Dublin welcomed 7.7 million tourists in 2018 and received €2.395 million in tourist spending during the same period. Fáilte Ireland, the national tourism development authority, aims to guide and promote tourism as a leading indigenous component of the Irish economy.

4.3.6 Travel and Commuting

Based on CSO Census information, an assessment of commuter times, duration and means of travel are summarised for the LEA in Tables 4-14 to 4-16.

The most popular time to leave home is between 08:01 and 08:30 with 20.4% of people beginning their commute at this time. The second most popular time is between 08:31 and

09:00 with 17.6% of people beginning their commute. The majority of people leave home before 08:00 (35.3%) and a further 5.9% of people leave home after 09:00 (Table 4-14).

Table 4-14: Time Leaving Home South West Inner City LEA

Time of Travel	No. of People in South West Inner City (Total)	Percentage of People
Before 06:30	1453	5.1
06:30 - 07:00	1925	6.7
07:01 - 07:30	2749	9.6
07:31 - 08:00	3976	13.9
08:01 - 08:30	5869	20.4
08:31 - 09:00	5045	17.6
09:01 - 09:30	1694	5.9
After 09:30	3351	11.7
Not stated	2642	9.2
Total	**28704**	

A total of 4,396 people (15.3%) of people commute to work or school for less than 15 minutes. In total, just under half of the people in the LEA spend less than 30 minutes commuting each day (49.4%). A further 25% of people commute for between 30-45 minutes and the remaining 14.6% of people commute for 45 minutes or more (Table 4-15).

Table 4-15: Duration of Commute in South West Inner City LEA

Duration of Journey	No. of People in South West Inner City (Total)	Percentage of People
Under 15 mins	4396	15.3
1/4 hour - under 1/2 hour	9791	34.1
1/2 hour - under 3/4 hour	7181	25.0
3/4 hour - under 1 hour	2239	7.8
1 hour - under 1 1/2 hours	1604	5.6
1 1/2 hours and over	340	1.2
Not stated	3153	11.0
Total	**28704**	

Table 4-16 shows that the most popular means of travel in the LEA are as a “Motor Car: Driver (32.3%) followed by On Foot (19.9%), Bus, Minibus or Coach (15.5%) and Bicycle (10.2%).

Table 4-16: Means of Travel in South West Inner City LEA

Means of Travel	No. of People in South West Inner City LEA (Total)	Percentage
On foot	50904	19.9
Bicycle	26116	10.2
Bus, minibus or coach	39587	15.5
Train, DART or LUAS	17160	6.7
Motorcycle or scooter	1642	0.6
Motor car: Driver	82585	32.3
Motor car: Passenger	5683	2.2
Van	5533	2.2
Other, incl. lorry	349	0.1
Work mainly at or from home	5060	2.0
Not stated	21094	8.2
Total	**255713**	

4.3.7 Landscape and Visual

The Proposed Development is currently a brownfield site that is predominately rough ground and overgrown and is located in the central urban area of Dublin, less than 3 km from O'Connell Street. The site is currently disused land following the demolition of St. Teresa's Gardens and a portion is being used as a construction compound associated with the neighbouring sites development. The demolished St. Teresa's flats complex (previously a defining element of the local townscape character) is now in brownfield condition and awaiting development. The permitted compact redevelopment of the neighbouring sites, Bailey Gibson Ref. ABP-307221-20 (up to sixteen storeys), and Player Wills ABP-308917-20 (up to nineteen storeys) have been granted planning permission from An Bord Pleanála but are both currently under judicial review.

The wider landscape character is mixed, the land uses immediately adjacent to the site comprise of residential, health and brownfield land parcels awaiting development. Within the immediate wider area there is a considerable area low-density residential developments with pockets of retail and institutional lands with community centres.

There are a number of designated protected views and prospects identified in the Draft Dublin City Development Plan 2022-2028, however, there will be no adverse impacts on these valued vistas resulting from the Proposed Development of the site (Chapter 12 Townscape and Visual).

4.3.8 Human Health

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

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

Table 4-17 shows that 81.6% of people have self-identified themselves as having "very good" or "good" health.

Table 4-17: Health Status of South West Inner City LEA

Health Status	No. of People in South West Inner City LEA	Percent of People	No. of People in Dublin City	Percent of People
General health - Very good	23014	54.4	308076	55.55
General health - Good	11528	27.2	151007	27.23
General health - Fair	3390	8.0	47005	8.48
General health - Bad	766	1.8	9152	1.65
General health - Very Bad	162	0.4	2054	0.37
Not stated	3484	8.2	37260	6.72
Total	**42344**		**554,554**	

4.3.9 Social Health

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

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

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

Figure 4-3 presents the social determinants of health adapted from Dalghren and Whitehead (1991) and Grant and Barton (2006) as presented in Healthy Ireland.

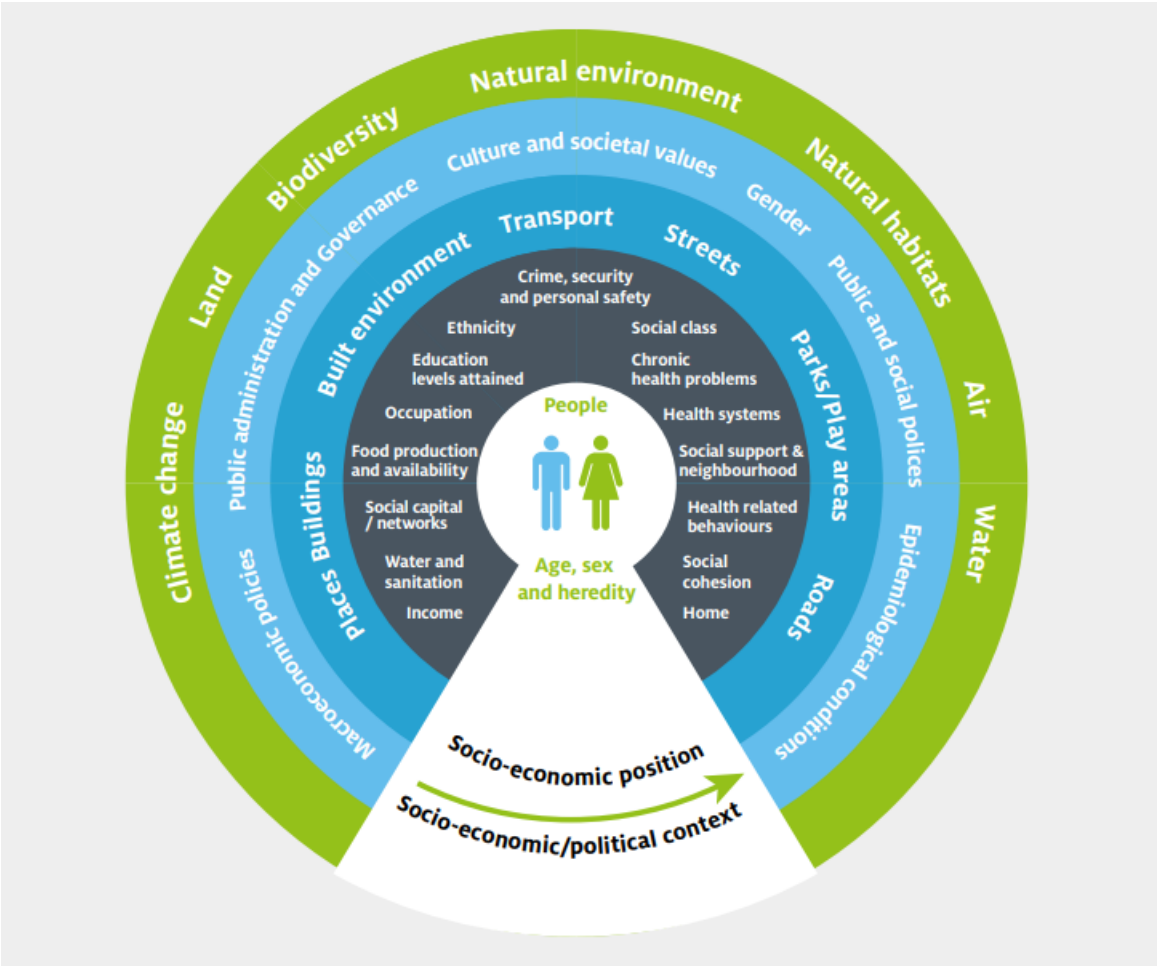


Figure 4-3: Social Determinants of Health (Healthy Ireland, DOH 2013)

Section 4.3.3 of this Chapter states that 70.1% of people in the South West inner City LEA are in the labour force. This reflects the high number of people of a working profile living within the area which is expected due to the percent of people of a working age living in the area as identified in Table 4-6.

The Proposed Development will allow for the creation of new employment. It is proposed an approximately 200 no. jobs will be created during the peak Construction Phase and 50 no. jobs will be created during the Operational Phase of this development having both a direct and indirect positive impact on the local economy and employment.

As detailed in Table 4-17, the majority of people in the LEA have self-identified themselves in the 2016 Census as having ‘very good health’ or ‘good health’. The high employment levels, coupled with the self-identification of health status indicate that positive social health conditions exist.

4.4 Characteristics of the Proposed Development

The Proposed Development will consist of the construction of a residential scheme of 543 no. apartments on an overall site of 3.26 ha (GFA of c. 53,227 sqm) containing the following mix of apartments:

- 225 No. 1 bedroom apartments (36 no. 1-person & 189 no. 2-person)

- 274 No. 2 bedroom apartments (including 52 No. 2 bed 3 person apartments and 222 No. 2 bed 4 person apartments)
- 44 No. 3 bedroom 5-person apartments
- A retail/café unit (168 sq.m.), mobility hub (52 sq.m.) and 952 sq.m. of community, artist workspace, arts and cultural space, including a creche, set out in 4 No. blocks.

The breakdown of each block will contain the following apartments:

- Block DCC1 comprises 111 No. apartments in a block of 6-7 storeys;
- Block DCC 3 comprises 247 No. apartments in a block of 6-15 storeys;
- Block DCC5 comprises 132 No. apartments in a block of 2-7 storeys;
- Block DCC6 comprises 53 No. apartments in a block of 7 storeys;

The Proposed Development will also provide for public open space of 3,408 sqm, communal amenity space of 4,417 sqm and an outdoor play space associated with the creche. Provision of private open space in the form of balconies or terraces is provided to all individual apartments.

The Proposed Development will provide 906 no. residential bicycle parking spaces which are located within secure bicycle stores. 5% of these are over-sized spaces which are for large bicycles, cargo bicycles and other non-standard bicycles. In addition, 138 spaces for visitors are distributed throughout the site.

A total of 79 no. car parking spaces are provided at undercroft level. Six of these are mobility impaired spaces (2 in each of DCC1, DCC3 & DCC5). 50% of standard spaces will be EV fitted. Up to 30 of the spaces will be reserved for car sharing (resident use only). A further 15 no. on-street spaces are proposed consisting of:

- 1 no. accessible bay (between DCC5 & DCC6)
- 1 no. short stay bay (between DCC5 & DCC6)
- 1 no. crèche set-down / loading bay (between DCC5 & DCC6)
- 1 no. set-down / loading bay (northern side of DCC5)
- 1 no. set-down/loading bay (northern side of DCC 3)
- 10 no. short stay spaces (north-east of DCC1)

In addition, 4 no. motorcycle spaces are also to be provided.

Vehicular, pedestrian and cyclist access routes are provided from a new entrance to the north-west from Margaret Kennedy Road. Provision for further vehicular, pedestrian and cyclist access points have been made to facilitate connections to the planned residential schemes on the Bailey Gibson & Player Wills sites for which there are extant permissions (Ref. No.'s ABP-307221-20 & ABP-308917-20).

The development will also provide for all associated ancillary site development infrastructure including site clearance & demolition of boundary wall along Margaret Kennedy Road and playing pitch on eastern side of site and associated fencing/lighting, the construction of foundations, ESB substations, switch room, water tank rooms, storage room, meter room, sprinkler tank room, comms room, bin storage, bicycle stores, green roofs, hard and soft landscaping, play equipment, boundary walls, attenuation area and all associated works and infrastructure to facilitate the development including connection to foul and surface water drainage and water supply.

4.5 Potential Impact of the Proposed Development

4.5.1 Construction Phase

The Proposed Development has the potential to cause additional traffic, noise, air quality, socio-economic, hydrology and visual impacts during the Construction Phase. Each of these impacts have been assessed in full in the respective chapters of this EIAR and in the following subsections. The Construction Phase for the Proposed Development will take place over a 35-month period, which will include site clearance and construction activities.

4.5.1.1 *Human Health*

The appointed contractor will adhere to the relevant HSE guidelines and any Government protocols that may be in place, if any, during the construction phase in relation to Covid-19. If all COVID-19 safety protocols and hygiene measures are adhered to it is considered that the Proposed Development poses no additional COVID-19 risk.

Chapter 6 of this EIAR, Land and Soil has identified the levels of radon in the area. This chapter concludes not located within a High Radon Area. Therefore, no further assessment of radon is required in relation to human health.

The likely effect of the construction phase on human health will be slight, neutral and short term. There will be no likely significant negative effects on human health.

4.5.1.2 *Socio-economic*

The Proposed Development has the potential to provide health improvements due to the creation of additional employment. Employment and income are among the most significant determinants of long-term social health. This will be a positive impact due to the creation of direct and indirect employment during the construction phase. It is anticipated that up to 200 construction personnel will be employed during the Construction Phase which is anticipated to extend over a period of 35 months.

The Proposed Development will also create additional indirect employment for suppliers, drivers delivering supplies to and from the Site and workers on the Site utilising local shops and other businesses in the surrounding areas which will benefit the local economy. Therefore, the Proposed Development will have a slight positive impact in terms of additional direct and indirect employment and on the local socio-economic environment which will be short-term for the duration of the Construction Phase. There will be no likely significant effects on human health as a result of socio-economic impacts.

4.5.1.3 *Air Quality and Climate*

Nuisance dust emissions from construction activities, including traffic, are a common and well recognised problem which can negatively impact air quality. Fine particles from these sources are recognised as a potential significant cause of pollution and can be damaging to the health of the surrounding population during the Construction Phase.

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

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

The primary sources of dust identified include soil excavation works, demolition, bulk material transportation, loading and unloading, stockpiling materials, cutting and filling, and vehicular movements (HGVs and on-site machinery).

Chapter 8 of this EIAR has concluded that there will be no significant impacts on air quality as a result of the Proposed Development and as such the likely effects on human health will be slight, negative and short term. There will be no likely significant negative effects on human health as a result of air quality.

4.5.1.4 *Noise and Vibration*

Noise generating activities associated with the Construction Phase have been identified in Chapter 9 Noise and Vibrations of this EIAR. During the Construction Phase all operations will comply with the BS5228:2009 "*Noise and Vibration Control on Construction and Open Sites*".

The noise-generating activities associated with the Site are as follows:

- Site clearance;
- Building construction works (use of mobile and non-mobile heavy machinery and equipment);
- Trucks entering and exiting the Site.

Noise exposure can cause a variety of human health effects including annoyance, sleep disturbance, raised stress levels, work impacts for commercial receptors or individuals who work from home. The applicable noise level thresholds detailed in Chapter 9 Noise and Vibration have been informed by BS5228:2009 + A1:2014: *Code of Practice for Noise and Vibration Control on Construction and Open Sites – Noise*. This British Standard refers to the "*need for the protection against noise and vibration of persons living and working in the vicinity of, and those working on, construction and open sites*" and as such human health in relation to noise has been incorporated into the relevant thresholds. Noise impacts determined in Chapter 9 of this EIAR will also directly apply to the assessment of population and human health. Chapter 9 of this EIAR Noise and Vibration concludes that mitigation measures will be implemented as part of good practice to minimise construction noise to below the threshold value and as such there will be no significant, negative long-term impacts on human health.

4.5.1.4.1 Phase 1 Construction Noise

The 4 nearest Noise Sensitive Locations (NSL) to the Proposed Development have been identified. NSL1 (Coombe Women and Infants University Hospital labs) and NSL3 (2-storey houses set back off South Circular Road) represent receptors that are more likely to be potentially affected by Phase 1 works. The noise level at NSL1 will exceed the threshold value for non-residential property by 1 decibel. Therefore, this constitutes a "*moderate and major negative impact"* magnitude rating. Chapter 9 has stated;

> "*Phase 1 piling will take place over an 18-week period in total for three of the proposed blocks and therefore will not be as close to the site boundary with each NSL for the full duration. It is estimated that works will move away from the site boundary after 4 weeks. When duration of piling only is considered, the effect is not likely to be significant.*
>
> *However, as there will be overlap of sub-phases such as piling with building construction, it is considered that a potentially likely significant short-term negative effect can occur at times at existing and future NSLs bordering the site. Therefore, mitigation measures will be implemented as part of good practice to minimise construction noise and to ensure that the threshold values are not reached through the selection of low noise equipment, careful timing of works and screening where possible. Further detail is outlined in Section 9.6.1*."

Based on the implementation of the mitigation measures outlined in Section 9.6.1, threshold values will not be reached and as such there will be no likely significant noise effects. Therefore, there will be no significant noise effects in relation to population and human health.

4.5.1.4.2 Phase 2 Construction Noise

Chapter 9 states that NSL1 (Coombe Women and Infants University Hospital lab) and NSL2 (Margaret Kennedy Road apartments) are the closest receptors more likely to be potentially affected by Phase 2 works. The noise level at NSL2 will exceed the relevant threshold by 4 decibels which constitutes a "*moderate negative impact magnitude rating".*

> "*Phase 2 piling will take place over a 6-week period and will not always be at the site boundary during this period. However, the site is small with little scope for distance attenuation. Therefore, while the total predicted level will reduce away from the site boundary, the total impact magnitude rating is not likely to change. When duration of piling only is considered, the effect is not likely to be significant. However, as there will be overlap of sub-phases such as piling with building construction, it is considered that a significant short-term negative effect is likely to occur at times at NSL2*."
>
> "*Therefore, mitigation measures will be implemented as part of good practice to minimise construction noise to below the threshold value for residential receptors*"

Based on the implementation of the mitigation measures outlined in Section 9.6.1, threshold values will not be reached and as such there will be no likely significant noise effects. Therefore, there will be no significant noise effects in relation to population and human health.

4.5.1.4.3 Construction Traffic Noise

The main NSLs potentially affected by construction traffic movements are NSL4 and NSLs on Donore Avenue. Based on the number of HGV movements per hour, an increase of 1 - 2 decibels above baseline is expected at Donore Avenue and up to 5 decibels at NSL4. Therefore, the impact magnitude rating in relation to noise is minor to major. Based on duration, the effect is deemed to be likely significant at NSL4. Therefore, further mitigation measures will apply at NSL4 as detailed in Chapter 9 of this EIAR . Section 9.6.1 of this EIAR detailed the noise and vibration management measures that will apply to the Proposed Development to ensure the daytime threshold values are complied with.

Based on the implementation of the mitigation measures outlined in Section 9.6.1, threshold values will not be reached and as such there will be no likely significant noise effects. Therefore, there will be no significant noise effects in relation to population and human health.

4.5.1.4.4 Construction Phase Vibration

Vibration impacts can typically potentially occur during site development and construction phases of development through the use of equipment such as rock breakers (not proposed), piling, vibrating rollers (potential) or ground improvement methods (not proposed). Chapter 9 of this EIAR has stated:

> "*taking account of the distances to vibration sensitive locations (VSLs) from piling, notwithstanding ground conditions present, it is not anticipated that the vibration criteria in Tables 9-17 and 9.18 will not be exceeded…"Nevertheless, precautionary vibration monitoring at VSL1 – VSL3 (Coombe Women and Infants University Hospital existing and proposed laboratories), Bailey Gibson site development (if built out) and at receptors along the construction haul routes (NSL4) is proposed to ensure compliance with the limits or threshold values outlined earlier in Section 9.5.2 and will be included in the CEMP as a preventative measure."*

Based on the above, vibration levels will not exceed the specified threshold values therefore there will be no significant negative impact on human health.

4.5.1.5 *Hydrology*

During the Construction Phase there is potential for construction works to impact water quality which could subsequently impact the health of the surrounding population. Potential sources of contamination that could impact on water quality are:

- Potential for leaching of contaminants to groundwater or surface water
- Storage and use of fuel, oils and chemicals
- Use of concrete and cementitious materials
- Accidental release of wash-water or foul water from facilities at the Site
- Accidental release of hazardous or deleterious material including fuels, chemicals and materials required for construction
- Release of foul water from existing foul water drainage at the Proposed Development Site during decommissioning or connection to live sewers

Chapter 7 of this EIAR has concluded there will be no significant impact on the receiving groundwater and surface water environment. As there will be no impact on ground water there will be no subsequent impact on drinking water and therefore no significant impact on water consumption and human health. This will ensure there will not be a significant impact on population and human health as a result of the Construction Phase of the Proposed Development.

4.5.1.6 *Traffic and Transport*

During the Construction Phase there will be an increase in the number of vehicles transporting materials and construction works to and from the site which has the potential to cause congestion on the local road network causing annoyance to the road users.

To limit the impact of construction traffic on the local network, staff will be instructed to arrive to site by public transport, walking or cycling where possible. There will be no parking permitted on the surrounding road network or estate roads by the contractor or site operatives. This will ensure there is no overspill to parking facilities utilised by the local community.

The construction phase will generate traffic in the from of HGVs and staff vehicles. Construction trip generation has been calculated in Chapter 12.1 of this EIAR and "*Based on the traffic volume outlined in Table 12.13, the construction traffic will have a neutral imperceptible temporary effect on the study area in relation to the baseline flows observed."*

Based on the above conclusion, construction traffic will not have a significant effect on the immediate local road network thus no significant impact on the population and human health of the road users.

4.5.1.7 *Landscape and Visual*

The landscape and visual amenity of an area can affect the emotional and physiological health of those within it. During the Construction Phase, the Site landscape will undergo a change which will have a potential landscape and visual impact. Townscape and visual effects and their significance during construction works will be temporary. They will be highest within the immediate vicinity of the site, primarily amongst the residents along Margaret Kennedy Road, Donore Avenue and The Coombe Women and Infants University Hospital Campus.

The impacts will be temporary and last for the duration of the construction period. The magnitude of visual effects is considered medium to high in close-distance views. Their significance is considered moderate-significant adverse. The visibility of construction works between 300m to 500m will be limited to the upper sections of the building construction including cranes. It is likely these will be visible from the Grand Canal, as well as from the local residential road network which could impact the residential amenity of the surrounding houses. The significance on human health is considered temporary, slight-moderate and negative. There will be no likely significant negative effects on human health.

4.5.2 Operational Phase

4.5.2.1 *Human Health*

It is expected that all workers employed during the operational phase of the Proposed Development will comply with the relevant HSE guidelines and any Government protocols that will be in place at that point in time in relation to Covid-19. If all COVID-19 safety protocols and hygiene measures are adhered to it is considered that the Proposed Development poses no additional COVID-19 risk.

The Proposed Development will provide a range of high-quality housing in the form of 1-, 2-, and 3-bedroom apartments to promote a diverse and balanced community for the future residents. This will have an overall positive impact on human health by providing housing during a national housing crisis.

Radon is a radioactive gas that causes lung cancer. It is formed in the ground by the radioactive decay of uranium which is present in all rocks and soil. Radon can cause lung cancer when exposed to high levels over a long period of time. The Proposed Development

Site is not considered to be within a High Radon Area and where required radon barriers will be installed in accordance with current building regulations.

A Daylight Sunlight Assessment along with overshadowing study was prepared for the proposed Development by 3D Design Bureau (November 2022). The report concludes:

> *"It is the opinion of 3D Design Bureau that in the context of the SDRA 11 Guiding Principles and wider planning objectives, the impact results should be considered favourable…*
>
> *Compensatory measures have been incorporated into the design of the proposed development where rooms do not achieve the daylight provision targets in accordance with the standards they were assessed against within the primary study (BRE 209)"*

The BRE guidelines do not have a pass or fail rate stipulated in terms of assessing an impact in the context on an EIAR. Therefore, on examination of the above, it is concluded that the Proposed Development is not likely to have any significant adverse impact on population and human health.

4.5.2.2 *Socio-economic*

The Proposed Development has the potential to provide health improvements due to the creation of additional employment. Employment and income are among the most significant determinants of long-term health. The Proposed Development will allow for the creation of new employment. It is proposed that approximately 50 people will be employed during the operational phase having a positive impact to the local economy and employment. Jobs will also be created in the creche, retail / café unit and management block. The provision of a creche will provide the opportunity of childcare to the future residents if required. This will allow parents and families to take up part time or full-time employment which may not be possible if there was a lack of childcare provision. The development will have positive economic benefits in terms of generating spin-off economic activity or local retail and service providers.

There will be no likely significant negative effects on human health.

4.5.2.3 *Air Quality and Climate*

The greatest potential effect on air quality, and subsequent effect on human health, during the Operational Phase of the Proposed Development is from traffic-related air emissions. Air quality impacts have been determined by modelling traffic-related air emissions. The overall impact of the Proposed Development is insignificant in terms of ambient air quality standards. As there will be no significant impact on air quality in terms of pollutants or potential air borne irritants, there will be no significant negative impact on human health.

4.5.2.4 *Noise and Vibration*

Noise exposure can cause a variety of human health effects including annoyance, sleep disturbance, raised stress levels, work impacts for commercial receptors or individuals who work from home. The applicable noise level thresholds detailed in Chapter 9 Noise and Vibration have been informed by BS5228:2009 + A1:2014: *Code of Practice for Noise and*

Vibration Control on Construction and Open Sites – Noise. This British Standard refers to the "*need for the protection against noise and vibration of persons living and working in the vicinity of, and those working on, construction and open sites*" and as such human health in relation to noise has been incorporated into the relevant thresholds. Noise impacts determined in Chapter 9 of this EIAR will also directly apply to the assessment of population and human health. Chapter 9 of this EIAR Noise and Vibration concludes that mitigation measures will be implemented as part of good practice to minimise construction noise to below the threshold value and as such there will be no significant, negative long-term impacts on human health.

Traffic related noise

There will be an increase in the population of the surrounding area as a result of the Proposed Development which has the potential to increase traffic volumes, and subsequently traffic related noise, on the local road network.

Chapter 9 of this EIAR has assessed the potential noise impact as a result of Operational Phase traffic and concluded:

> *"traffic flow will significantly increase during peak hours on the access route past the existing apartments at Margaret Kennedy Road. The impact on Donore Avenue will be <1 decibel and therefore constitutes a negligible long-term impact magnitude rating which corresponds to a likely non-significant effect.*
>
> *Using an SEL value of 72 dB(A) at 5m for cars, the predicted $L_{Aeq,1h}$ in the AM peak at Margaret Kennedy Road will increase from 44 to 58 dB(A) with the development in place. This magnitude rating constitutes a major impact magnitude. However, the following should be noted in terms of the context of the impact:*
>
> - *The location is city-centre and the surrounding areas were previously developed. The current baseline is therefore a temporary scenario.*
> - *Outside of peak hours, traffic flows are likely to be much lower.*
> - *The area directly to the south-east will be developed as amenity and sporting facilities.*
>
> *Therefore, taking context into account, the effect is not likely to be significant."*

Based on the above there will be no significant impact on human health as result of traffic related noise.

Plant related noise

The Proposed Development incorporates enclosed plant equipment at ground floor level of each block. Food preparation areas associated with the creche in Block DCC5 and the retail/café in DCC3 may also have associated air handling/refrigeration units. Based on the location of this equipment and distance to the nearest existing NSLs no potential negative impacts are anticipated and as such there will be no significant noise impact on human health.

Hospital plant related noise

Hospital external fixed plant, including a number of small vents and a boiler associated with an existing laboratory, (Refer to Figure 9.7) was found to be elevating ambient noise levels locally in the vicinity of the footprint of DCC6. Based on the site measurements, the estimated noise level from the plant at the proposed ground floor windows of Block DCC 6 is 50 dB(A) (freefield).

Based on the noise level alone, the recommended "good" internal night-time sleeping conditions with an open or partially opened window will not be achieved. Furthermore, there can also be tonal elements associated with these types of sources which can potentially cause annoyance. Additionally, the World Health Organisation Community Guidelines for Noise, 1999 specification for an external noise level of L_{Aeq} 45 dB, 1 meter from the façade of a dwelling at night-time will be exceeded.

In order to mitigate this effect, The Coombe Women's and Infant Hospital have confirmed the laboratory will be refurbished and the existing associated external plant will be decommissioned in 2023. The external plant will be removed prior to the Operational Phase of the Proposed Development and as such there will be no significant negative effect on human health.

4.5.2.5 *Traffic and Transport*

Insufficient physical activity has been identified by the World Health Organisation as risk factor for global mortality. The Proposed Development is well served by pedestrian and cycling facilities nearby. Donore Avenue, South Circular Road, the R110 and Cameron Street have been assessed in Chapter 12.1 of this EIAR as having footways and junctions suitable for pedestrian access. Currently, cycle lanes are provided on the R110 to the west of the Proposed Development. The frequency and Bus, Luas and Rail services and availability of Car Share / GoCar / YUKO facilities have also been assessed as part of the baseline conditions. Chapter 12.1 states: "*From the results of the public transport capacity assessment report, it is evident that there is adequate capacity on the public transport system stops within walking distance of the proposed development site*."

The availability of sustainable transport options for the future residents of the Proposed Development, particularly pedestrian and cycling facilities, will help promote increased activity levels and reduce reliance on private vehicles. This will have a slight positive impact on human health.

A Mobility Management Plan has been prepared by AECOM which aims to increase and facilitate the number of people choosing to walk, cycle or travel by public transport to the development. Exercise in the form of walking or cycling to work will have a slight positive impact on the human health of those choosing such modes of transport over the use of a car.

Increased population as a result of the Proposed Development has the potential to increase traffic congestion on the surrounding road network thus negatively impacting the human health of road users in both private vehicles and public transport. A full assessment of the traffic and transport impacts are presented in Chapter 12.1 of this EIA Report which has been informed by the Traffic and Transport Assessment (TTA) (Appendix E), both prepared by AECOM. The TTA has concluded that "*the proposals will not result in a material deterioration of existing*

road conditions and will encourage travel by more sustainable means and as a result there are no significant traffic or transportation related reasons that should prevent the granting of planning permission for the proposed development". There will be no significant impact on human health as a result of operational traffic.

4.5.2.6 *Townscape and Visual*

The potential landscape and visual effects of the Proposed Development are fully assessed in Chapter 10 of this EIAR. The Proposed Development has the potential to cause townscape and visual impacts during the Operational Phase. The Site is currently an unused brownfield site and the Proposed Development will constitute a direct and permanent change locally. According to Chapter 10 of this EIAR the Proposed Development "*will make a significant positive contribution to the envisaged local built environment*". The Proposed Development will reinforce an emerging high density townscape character, along with the neighbouring permitted developments will not change the fabric of the overall existing and emerging townscape character within the study area.

Townscape impacts will vary from slight to very significant and neutral to positive (Further detail in Chapter 10, Table 10-12 of this EIAR). Visual effects vary from low to significant and slight to positive (Further details in Chapter 10, Table 10-13 of this EIAR).

The changes in Townscape and Visual Impacts of the Operational phase of the Proposed Development will not cause a significant negative impact on population and human health.

4.5.2.7 *Community Amenities*

The future residents of the Proposed Development will increase the population of the surrounding area and create additional demand on local community services. An assessment of the surrounding community related facilities was carried out in the form of a Community Audit (John Spain Associates, August 2022). The findings of this report assessed the following provisions within the South West Inner City LEA:

- Community and social infrastructure;
- Open space, sport and recreation;
- Educational facilities;
- Healthcare facilities;
- Religious facilities;
- Arts and cultural facilities; and
- Retail provision.

The area is *"accessible to a range open space and recreational facilities including a large number of education facilities, including a third level university, and a large quantum of community and retail facilities located throughout the area. As such the facilities that South Dublin City currently offers are considered to be excellent and will be able to support the future residents of the Proposed Development."* The proposed creche facility of 851 sq.m. will provide approximately 80 childcare spaces along with the office units offering workspace provisions representing a positive impact on the provision of services in the area.

The Proposed Development will also provide for public open space of 3,408 sqm (16.44% of the total site area) and communal amenity space of 4,417 sqm. Provision of private open space in the form of balconies or terraces is provided to all individual apartments. The Proposed Development is located within a well-established urban community and *"the*

development vision is to enhance this connectivity and permeability with a network of new activated streets and public spaces to and from this community." Residents will have access to landscaped communal spaces with integrated children's play areas as well as public open spaces, Donore Project Park and Player's Park.

The Proposed Development will also include a smaller provision of support facilities, which will serve residents of the Donore Project and the wider community. These include a Mobility Hub and Arts / Cultural Space at ground level in DCC3 and a Community Crèche and Artist's Workshop at ground and first floor level in DCC5. These facilities are located with easy access to Donore Project Park which may be used for further public uses.

Figure 4-4 shows the amenity spaces proposed at Ground Level; 1st Floor Podium; Roof Terrace and Roof Top locations in addition to the publicly accessible streetscape, public realm and public open space amenity delivered at ground level.

Figure 4-4: Communal Amenity Spaces (Landscape Architecture & Public Realm Design Report, AECOM)

A playing pitch is currently located within the site boundary which is proposed for demolition. The Community Audit prepared by John Spain Associates has assessed the surrounding area for capacity in the community amenities including open space, sport and recreation facilities. The report concluded that "*the scheme includes good provision of sports and recreational facilities which will enhance the provision in the area*". As such there will be no negative, significant long term impact on human health.

Access to local community services, open space and play areas as detailed above will have a long-term positive impact on population and human health. There will be no significant negative impact on population and human health as a result of community amenities.

4.5.3 Potential Cumulative Impacts

Cumulative Impacts can be defined as "*impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project*". Effects which are caused by the interaction of effects, or by associated or off-site projects, are classed as indirect effects. Cumulative effects are often indirect, arising from the accumulation of different effects that are individually minor.

A review of other off-site developments and permitted developments was completed as part of this assessment. The following projects and plans were reviewed and considered for possible cumulative effects with the Proposed Development. As predicted impacts on human health can extend beyond the site boundary, the developments below have been selected as it's thought the most relevant impacts on population and human health are relating to noise, air quality, traffic and landscape and visual. Developments in the immediate vicinity of the Proposed Development are detailed in Table 4-18.

Table 4-18 details the existing, proposed and granted planning permissions on record in the area:

Table 4-18: Potential Cumulative Impacts

Planning Ref No.	Applicant Name	Summary of Development
3537/21	Coombe Lying-in Hospital	Planning permission for development at the Coombe Women and Infants University Hospital, Dolphin's Barn Street, Dublin 8, D08 XW7X on a 0.15 hectare site to the south-east of the hospital site, such site also including the existing Colposcopy building. The development for which planning permission is sought comprises of the development of a new dedicated Colposcopy/Women's Health Unit building of 3 no. storeys plus rooftop plant room which will be attached to the existing Colposcopy building to the west by way of glazed link. The development will include the partial demolition of the eastern meeting room and lobby area wing to the existing Colposcopy building to facilitate the connection to the new building. The proposed building comprises of a 988 sq.m gross floor area building. The building will comprise of: (i) at ground floor level; a waiting area, 2 wc's (1 accessible), 1 plant room, 1 meeting room, 3 gynaecology examination rooms (with associated changing rooms), 1 utility room, a waste room, an early pregnancy assessment unit with dedicated entrance, 2 assessment rooms, reflection room, 1 wc, and an office/reception; (ii) at first floor; a waiting area, a check in room, a supplies store, 2 wc's (1 accessible), 4 colposcopy examination rooms and with associated changing and consultation areas, a utility and a waste room; (iii) at second floor; a meeting room, 2 staff changing rooms (1 accessible with shower and wc), a wc, a staff canteen, a photocopier room and 4 staff office rooms. The proposed Colposcopy building will involve the loss of 10 existing parking spaces, at the south- eastern corner of the

Planning Ref No.	Applicant Name	Summary of Development
		hospital site. 2 number accessible car parking spaces will be provided to the south of the proposed extension. Planning permission is also sought for site drainage, a glazed link to the existing Colposcopy building, site landscaping works, and all other associated and ancillary works. Access is via the main hospital campus which is accessed from Dolphin's Barn Street. Grant Permission 25 Apr 2022
SHD0031/20 ABP 308917-20	DBTR-SCR1 Fund, a Sub-Fund of the CWTC Multi Family ICAV,	Demolition of all buildings excluding the original fabric of the former Player Wills Factory, construction of 492 no. Build to Rent apartments, 240 no. Build to Rent shared accommodation along, creche and associated site works. Grant Permission 15 Apr 2021
ABP-307221-20 (BG1)	DBTR-SCR1 Fund aSub-Fund of the CWTC Multi Family ICAV	Demolition of all structures, construction of 416 no. residential units (4 no. houses, 412 no. apartments) and associated site works. Planning Permission Granted with Conditions 14/09/2020
4049/19	The Coombe Women & Infant's University Hospital	The development will consist of a new four storey laboratory building (1340m^2) within the existing Coombe site with the provision of rooftop plant and 2 no. rear extensions to the existing adjacent laboratory building to include a new link, office and store (68m2) with all associated site works. This application site is in S.D.R.A. no.12, St Teresa's Gardens and Environs Strategic Development and Regeneration Area. Grant Permission 11 Feb 2020
2475/18	D.C.C. Housing Development	Pursuant to the requirements of the above, notice is hereby given of the intention to amend the previously permitted development comprising 50 no. units (16 no. apartments, 24 no. 3 bedroom terraced houses and 10 no. 2 bedroom terraced units - Planning ref 2033/14) to allow for the construction of an additional 4 no. terraced residential units and associated works; amendments to the design of 12 no. previously permitted units; development of a temporary grass multisport pitch in addition to the previously permitted park development (Phase A); demolition of 2 no. existing flat blocks to facilitate the future provision of a landmark park (Phase B) with full size multisport pitch and associated works at St. Teresa's Gardens, Donore Avenue, Dublin 8.
ABP-314171-22 (BG2)	CWTC Multi Family ICAV acting solely in respect of its sub fund DBTR SCR1 Fund	Demolition of buildings, construction of 345 no. residential units (292 no. Build to Rent apartments, 49 no. Build to Sell apartments, 4 no. Build to Sell Houses) creche and associated site works. Case is due to be decided by 14/11/2022 www.bgscr1shd2.ie

The main cumulative impacts associated with Population and Human Health are potential pollution and nuisance associated with the construction phase (i.e., dust, air quality, construction traffic and noise). During the operational phase, there will be an increase in the population of the surrounding area. This could cumulatively impact the existing local road network in terms of congestion and add pressure to the existing community infrastructure.

The cumulative impacts associated with air, noise and traffic are dealt with in the individual assessments contained in the EIAR.

- Chapter 8 has concluded there will be no significant cumulative impacts as a result of air quality. As such there will be no significant cumulative impact on human health.
- Chapter 9 has concluded there will be a *"potentially likely significant short-term negative effect occurring at times*" on NSL1 during the construction phase. This impact will be short term and last for the duration of the Construction Phase. As such there will be no significant, negative, long-term impacts associated with noise. No other significant cumulative noise effects have been identified provided the relevant mitigation measures are implemented (Section 9.6).
- Chapter 12.1 has concluded there will be no significant cumulative impacts as a result of traffic. As such there will be no significant cumulative impact on human health.

1. ABP-307221-20 Hines Bailey Gibson site (BG1)

An Environmental Impact Assessment Report has been prepared for this development which has fully assessed the potential environmental impacts. Mitigation measures have been detailed which will reduce the occurrence of any likely significant impacts.

A Social Infrastructure Report (SIR) and Childcare Demand Report were also carried out as part of this application (McCutcheon Halley, May 2020). The SIR has highlighted any areas of the surrounding social infrastructure that are lacking in capacity and recommends measures in the development to address these. Notable there is an existing under provision of childcare (creche) within the 1-kilometre zone of influence. The development includes a childcare facility which has sufficient capacity to cater for the demand created and also augment the identified supply deficit in the area.

2. ABP 308917- 20 Hines Player Wills

An Environmental Impact Assessment Report has been prepared for this development which has fully assessed the potential environmental impacts. Mitigation measures have been detailed which will reduce the occurrence of any likely significant impacts.

A Social Infrastructure Report and Childcare Demand Report were also carried out as part of this application (McCutcheon Halley, December 2020). The development includes a childcare facility which has sufficient capacity to cater for the demand created and also augment the identified supply deficit in the area. The Traffic and Transport Assessment prepared for the development included a cumulative impact assessment of the operational phase impacts of

ABP 308917- 20, ABP-307221-20 and the Proposed Development. It was found that the impact of the combination of these 3 developments on the local road network would be less than 10%. In conclusion, the development at the former Player Wills site *"will not result in a material deterioration of the existing road conditions."* (Systra, December 2020).

The Proposed Development at St. Teresa's Gardens includes a Community Audit with a Childcare Facilities Assessment appended (Appendix D)(John Spain Associates, 2022). The *"facilities that South Dublin City currently offers are considered to be excellent and will be able to support the future residents of the Proposed Development*" and the *"Proposed Development includes a childcare facility which has sufficient capacity to cater for the demand created"*.

3. Ref. 3537/21 and 4. Ref. 4049/19 Coombe Women and Infants University Hospital

Due to the size and nature of the applications above in the Coombe Women and Infants University Hospital, there was no requirement for an environmental impact assessment. As such there is no likelihood of significant effects on the environment as a result of the permitted development.

5. Ref. 2475/18 St. Teresa's Gardens, Dublin 8

Ref. 2475/18 at St. Teresa's Gardens is an amendment to permitted development Ref. 2033/14. An Environmental Impact Assessment (EIA) Screening was carried out for the original development (2033/14) which concluded "*it is considered unlikely that the proposal which result in a net gain of 44 no. dwellings would not have significant effects on the environment. As such it is considered that EIA is not required*" (Dublin City Council, 2014). Due to the size and nature of the applications above in St. Teresa's Gardens, there was no requirement for an environmental impact assessment. As such there is no likelihood of significant effects on the environment as a result of the permitted development.

6. ABP-314171-22 Former Bailey Gibson Site (BG2)

An Environmental Impact Assessment Report has been prepared for this development which has fully assessed the potential environmental impacts. Mitigation measures have been detailed which will reduce the occurrence of any likely significant impacts. A Social Infrastructure Report (SIR) and Childcare Demand Report were also carried out as part of this application (McCutcheon Halley). The SIR has highlighted any areas of the surrounding social infrastructure that are lacking in capacity and recommends measures in the development to address these. Notable there is an existing under provision of childcare (creche) in the surrounding study area. The development includes a childcare facility which has sufficient capacity to cater for the demand created and also augment the identified supply deficit in the area. The SIR also reported a deficit in local health care service providers e.g. dental services and pharmacies. The proposed commercial floor area as part of the development may be suitable for such uses.

Cumulative Impact Conclusion

The developments listed above (1-6) have been assessed both individually and collectively and it has been determined there will be no significant impact provided the mitigation measures set out in the associated planning documents are implemented. This Chapter has concluded there will be no negative significant impact on population and human health as a

result of the Proposed Development. Given that it has been determined there will be no significant impacts from this Proposed Development (Donore Avenue, Dublin 8), it can be concluded that the cumulative impact will also not be significant on the environment.

4.5.4 "Do Nothing" Impact

The Do-Nothing scenario would result in the site remaining as a brownfield site. Excluding the existing playing pitch in the east of the site, the lands are currently unused, overgrown and not of beneficial use to the public. If the lands were not developed there would be no beneficial or adverse impacts to population and human health. The brownfield site would represent a missed opportunity to provide high quality housing in Dublin city close to centres of employment and high frequency public transport.

4.6 Avoidance, Remedial & Mitigation Measures

4.6.1 Construction Phase

During the Construction Phase of this Proposed Development, all HSE guidelines in place at the time of the Construction Phase will be adhered to in relation to social distancing, cough and sneeze etiquette, face masks and hand washing. Appropriate welfare facilities will be provided at the facility.

No specific mitigation measures are required during the Construction Phase of the Proposed Development in relation to population and human health, given the lack of direct effects resulting from the Proposed Development. However, where required, mitigation measures in relation to air quality, noise, traffic, waste etc. are identified in their respective chapters in this EIAR.

4.6.2 Operational Phase

All workers employed during the Operational Phase of the Proposed Development will comply with the relevant HSE guidelines and any Government protocols that may be in place at that point in time in relation to Covid-19.

No specific mitigation measures are required in relation to population and settlements, given the lack of direct effects resulting from the Proposed Development. However, where required, mitigation measures in relation to air emissions, noise, traffic etc. are identified in their respective chapters in this EIA Report.

4.6.3 "Worst Case" Scenario

No specific mitigation measures have been proposed in relation to Population and Human Health as such a worst-case scenario is not applicable.

4.7 Residual Impacts

Residual Impacts are defined *as 'effects that are predicted to remain after all assessments and mitigation measures'*. They are the remaining 'environmental costs' of a project and are the final or intended effects of a development after mitigation measures have been applied to

avoid or reduce adverse impacts. Potential residual impacts from the Proposed Development were considered as part of this environmental assessment.

The Proposed Development will bring a new population into the area. This new population will support existing schools, shops, public transport, and the local community. Additional facilities will be provided in the area including the retail/café unit, mobility hub, and community, artist workspace, arts and cultural space including a creche. It is considered that there will be a slight, long-term, positive impact on the population and human health. No specific mitigation measures have been proposed for population and human health so residual impacts will be slight positive.

4.8 Monitoring

4.8.1 Construction Phase

No specific monitoring measures are proposed or required in relation to Population and Human Health for the Construction Phase of the Proposed Development.

Monitoring activities will be implemented for the for the Construction Phase in accordance with the CEMP submitted as part of this planning application.

4.8.2 Operational Phase

No specific monitoring measures are required in relation to population and settlements, given the lack of direct effects resulting from the Proposed Development. However, where required, monitoring in relation to air emissions, water, noise and traffic are identified in their respective Chapters in this EIAR.

4.9 Interactions

4.9.1 Air Quality and Climate

Interactions with air quality during the construction and operational phase has the potential to cause dust nuisance issues impacting on human health. Fine particles from these sources can be damaging to the health of the surrounding population. Chapter 8 has concluded that there will be no significant air quality impacts. All ambient air quality legislative limits will be complied with and therefore the predicted impact is not significant with a neutral effect on human health.

4.9.2 Hydrology

Pollution events can impact the water quality and thus impact the human health of the surrounding population. Appropriate surface water and foul water control measures will be implemented as part of the Proposed Development. No public health issues associated with the water conditions at the Site have been identified for the Construction Phase or Operational Phase of the Proposed Development. There are no likely significant adverse impacts as a result of Hydrology and as such there will be no significant impacts on population and human health.

4.9.3 Noise

Construction activities such as site clearance, building construction works, and trucks and vehicles entering and exiting the Site have the potential to interact with the surrounding population and human health and cause noise disturbance. The impact assessment of noise and vibration has concluded that based on the implementation of the proposed mitigation measures there will be no significant long term noise impacts. As such, there will be no significant long-term impact on population and human health.

4.9.4 Landscape and Visual

The Proposed Development will alter the visual appearance of the Site which is predominantly a brownfield Site. It is not considered that the Proposed Development by virtue of its visual appearance and in the context of the proposed zoning of the Site of the Proposed Development and the urban nature of the surrounding landscape, will not cause any significant impacts and as such there will be no significant impact on population and human health.

4.9.5 Material Assets – Waste and Utilities

The improper removal, handling and storage of hazardous waste has the potential to negatively impact on the health of construction workers. The Construction and Demolition Waste Management Plan (CDWMP) (AECOM, 2022) and CEMP (Enviroguide Consulting, 2022) details mitigation measures to ensure the safety of the workers. Extended power or telecommunications outages, or disruption to water supply or sewerage systems for existing properties in the area could negatively impact on the surrounding human population and their overall health. Chapter 12 of this EIAR has concluded there will be no significant impacts on the Material Assets (Waste and Utilities) as a result of the Proposed Development subsequently there will be no significant impact on population and human health.

4.9.6 Material Assets - Traffic

Construction activities will result in an increased number of HGV movements during the Construction Phase. The Proposed Development will also result in an increase in the population of the surrounding area and subsequently an increase in the number of vehicles. There is potential for significant impacts on population and human health in relation to the capacity and operation of the surrounding road network. Two junctions were shown to have percentage impacts exceeding the TII thresholds: the site access junction and the Donore Avenue/Margaret Kennedy Road/ Brown Street South junction. The overall impact of the Proposed Development on the transportation infrastructure in the local area will not be significant and subsequently there will be no significant impact on population and human health.

4.10 Difficulties Encountered When Compiling

No difficulties were encountered in the preparation of this Chapter of the EIAR.

4.11 References

The Central Statistics Office (CSO)

Draft Dublin City Development Plan 2022-2028, Available at: https://www.dublincity.ie/sites/default/files/2021-12/volume-1-draft-dublin-city-development-plan-2022-2028-low-res.pdf

The Regional Planning Guidelines of the Greater Dublin Area 2010-2022

Ordinance Survey Ireland (OSI)

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

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

Healthy Ireland Framework 2013-2025

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

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

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

General guide on management of COVID-19 outbreaks in nonhealthcare workplace setting (HSE, April 2022).

Scheme Of Polling Districts and Polling Places 2019, Dublin City Council

National Planning Framework 2018

Regional Spatial and Economic Strategy for the EMRA, 2019

2021 Labour Force Survey Q4 – www.cso.ie

CSO statistical release: New Dwelling Completions

ESRI Quarterly Economic Commentary

5 BIODIVERSITY

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

5.1 Introduction

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

A separate Natura Impact Statement, in accordance with the requirements of Article 6(3) of the EU Habitats Directive, has been produced to identify potential impacts of the development on Natura 2000 sites, Annex species or Annex habitats. It concludes that *'Following the implementation of the mitigation measures outlined, the construction and operation of the Proposed Development will not adversely affect the integrity of the site or result in direct, indirect or in-combination effects which would have the potential to adversely affect the qualifying interests/special conservation interests of the European sites screened in for NIS with regard to the range, population densities or conservation status of the habitats and species for which these sites are designated (i.e. conservation objectives).*'

5.1.1 Quality Assurance and Competence

Altemar Ltd. is an established environmental consultancy that is based in Greystones, Co. Wicklow that has been in operating in Ireland since 2001. Bryan Deegan MCIEEM is the Managing Director of Altemar Ltd. and holds a M.Sc. Environmental Science, BSc (Hons.) in Applied Marine Biology and a National Diploma in Applied Aquatic Science. He has over 27 years' experience as an environmental consultant in Ireland and was the ecologist for all aspects of this project. Previous projects where Altemar were the lead project ecologists include the Lidl Ireland GmbH regional distribution centres in Newbridge and Mullingar, 18 airside projects for DAA at Dublin Airport and 7 fibre optic cable landfalls in Ireland including the New York to Killala cable project in 2015. Hugh Delaney, a freelance ecologist (Birds primarily) with an experienced background in bird surveying on numerous sites with ecological consultancies over 10+ years. Hugh Delaney, is a lifelong ornithologist, is local to the Dublin area and is especially familiar with the bird life and its ecology in the environs going back over 30 years.

5.2 Study Methodology

A pre-survey biodiversity data search was carried out in March 2021 and updated in August 2022. This included examining records and data from the National Parks and Wildlife Service (NPWS), National Biological Data Centre (NBDC) and the Environmental Protection Agency (EPA), in addition to aerial, 6-inch maps and satellite imagery. Two habitat surveys of the site were undertaken within the appropriate seasonal timeframe for terrestrial fieldwork. Field surveys were carried out as outlined in Table 5-1. All surveys were carried out in the appropriate seasons.

Table 5-1: Field Surveys

Area	Surveyors	Survey Dates
Terrestrial Ecology/	Bryan Deegan (MCIEEM)	14th April 2021, 27th August 2021, 7th July 2022
Mammal Survey	Bryan Deegan (MCIEEM)	14th April 2021, 7th July 2022
Wintering Bird/Flightline Assessment	Hugh Delaney	29th March 2022
Bat Fauna	Bryan Deegan (MCIEEM)	27th August 2021, 7th July 2022

Desk studies were carried out to obtain relevant existing biodiversity information within the ZOI. The assessment also extends beyond the immediate development area to include those species and habitats that are likely to be impacted upon by the Proposed Development. The ZOI of the Proposed Development has the potential to extend beyond the red line via the proposed foul and surface water drainage strategy. It is proposed to divert the existing combined sewer from the west to a 225mm foul sewer located at Margaret Kennedy Road. Foul wastewater will be connected to this foul sewer at Margaret Kennedy Road. This network ultimately discharges to Ringsend Wastewater Treatment Plant (WwTP) for treatment. Surface water drainage (during operation) will be directed to a 1.2 m diameter surface water sewer in Donore Avenue. Surface water drainage from the site will ultimately be discharged at an outfall point at the Poddle Stream, located 0.65km north-east of the Proposed Development. As a result, there is an indirect hydrological pathway to designated conservation sites located within Dublin Bay via the proposed foul and surface water drainage strategy. The proposed layout, drainage strategy and landscape design were reviewed to inform this assessment. Further, Chapter 2 Project Description & Alternatives, Chapter 6 Land & Soils, Chapter 7 Hydrology, Chapter 8 Air Quality & Climate, and Chapter 9 Noise & Vibration of this submission were reviewed.

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

The designated conservation sites within 15km of the site were examined for potential impact. Sites beyond 15km had no direct or indirect pathways. This assessment included sites of international importance; Natura 2000 sites (Special Areas of Conservation (SAC), Special Protection Areas (SPA)) and Ramsar sites and sites of National importance ((Natural Heritage Areas (NHA), proposed Natural Heritage Areas (pNHA). Up to date GIS data (2022 NPWS data shapefiles) were acquired and plotted against 1, 5, 10 and 15km buffers from the Proposed Development site. A data search of rare and threatened species within 10km of the

proposed site (GIS shapefile) was provided by NPWS. Additional information on rare and threatened species was researched through the National Biodiversity Data Centre maps.

5.2.2 Terrestrial and Avian Ecology

A pre-survey data search was carried out. This included a literature review to identify and collate relevant published information and ecological studies previously conducted and comprised of information from the following sources: the National Parks and Wildlife Service, NPWS Rare and Protected Species Database, National Biodiversity Data Centre, EPA WMS watercourses data, in addition to aerial, 6-inch, satellite imagery. Following the desktop study, walk-over assessments of the site were carried out on the 14th of April 2021, 27th August 2021 and 7th July 2022. Surveys were carried out by means of a thorough search within the potential ZOI. The presence of mammals is indicated principally by their signs, such as resting areas, feeding signs or droppings - though direct observations are also occasionally made. Habitat mapping was carried out according to Fossitt (2000) using AcrGIS 10.5 and displayed on Bing satellite imagery or street mapping. Any rare or protected species or habitats were noted. As part of the fieldwork an invasive species assessment was carried out. Birds noted on site were classed based on the Birds of Conservation Concern in Ireland classification of red, amber and green, which is based on an assessment of the conservation status of all regularly occurring birds on the island of Ireland. A wintering bird survey/Flightline Assessment was carried out by Hugh Delaney on the 29th of March 2022.

5.2.3 Bat Fauna

Onsite trees and walls were inspected for bats and/or their signs using a powerful torch (141 Lumens) – Petzl MYO RXP. The site survey was supplemented by a review of Bat Conservation Ireland's (BCIreland) National Bat Records Database. A bat detector and emergent survey was carried out by Bryan Deegan on the 27th of August 2021 and 7th of July 2022.

5.2.4 Rating of Effects

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

5.2.5 Consultation

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

5.3 The Existing and Receiving Environment (Baseline Situation)

5.3.1 Zone of Influence

The potential ZOI of the Proposed Development was deemed to be the site within the site outline with potential for downstream impacts to the marine environment via the proposed foul and surface water drainage strategy. This site outline is shown in Figure 5-1. The site outline overlaid on the most recent available satellite imagery on Google Earth Pro (dated 03/2022) is demonstrated in Figure 5-2.

5.3.2 Designated sites

As can be seen from Figures 5-3 (SAC's within 15km), 5-4 (SPA's within 15km), 5-5 (NHA and pNHA within 15km), 5-7 (Watercourses proximate to the site.), there are two Natura 2000 sites (South Dublin Bay SAC and South Dublin Bay and River Tolka Estuary SPA) within 5km and five National conservation sites (Grand Canal pNHA, Royal Canal pNHA, North Dublin Bay pNHA, South Dublin Bay pNHA, and Liffey Valley pNHA) within five kilometres of the Proposed Development site. The distance and details of the conservation sites within 15km of the Proposed Development are seen in Table 5-2 and Table 5-3. There is an indirect hydrological pathway to designated conservation sites located within Dublin Bay via the proposed foul and surface water drainage strategy. Foul wastewater drainage will be directed to a network that ultimately discharges to Ringsend Wastewater Treatment Plant (WwTP). Foul wastewater will be treated along this network. Surface water drainage will be directed to a surface water network that ultimately outfalls to the Poddle Stream, which in turn outfalls to the River Liffey, which in turn outfalls to the marine environment at Dublin Bay. In the absence of mitigation, there is the potential for downstream impacts on designated conservation sites located within Dublin Bay during the construction and operational phases of development via contaminated surface water runoff. Waterbodies and designated conservation sites located proximate to the Proposed Development site are demonstrated in Figures 5-7 to 5-12.

Table 5-2: Natura 2000 sites within 15km of the Proposed Development

NATURA 2000 Site	Distance	Direct Hydrological / Biodiversity Connection
Special Areas of Conservation		
South Dublin Bay SAC	4.6 km	**No**
North Dublin Bay SAC	7.3 km	**No**
Glenasmole Valley SAC	9.8 km	**No**
Wicklow Mountains SAC	10.4 km	**No**
Baldoyle Bay SAC	12.2 km	**No**
Rockabill to Dalkey Island SAC	12.8 km	**No**
Howth Head SAC	13 km	**No**
Rye Water Valley/Carton SAC	13.7 km	**No**
Knocksink Wood SAC	14.2 km	**No**
Malahide Estuary SAC	14.9 km	**No**
Special Protection Area		
South Dublin Bay and River Tolka Estuary SPA	4.4 km	**No**
North Bull Island SPA	7.3 km	**No**
Wicklow Mountains SPA	10.5 km	**No**
Baldoyle Bay SPA	12.5 km	**No**
Dalkey Islands SPA	14 km	**No**
Malahide Estuary SPA	14.9 km	**No**

Table 5-3: Nationally designated and Ramsar sites within 15km of the Proposed Development.

Designation	Conservation Sites	Distance	Direct Hydrological / Biodiversity Connection
pNHA	Grand Canal	175 m	**No**
pNHA	Royal Canal	3.1 km	**No**
pNHA	North Dublin Bay	4.1 km	**No**
pNHA	South Dublin Bay	4.6 km	**No**
pNHA	Liffey Valley	4.7 km	**No**
pNHA	Dodder Valley	5.7 km	**No**
pNHA	Dolphins, Dublin Docks	5.8 km	**No**
pNHA	Booterstown Marsh	6 km	**No**
pNHA	Santry Demesne	7.3 km	**No**
pNHA	Fitzsimon's Wood	7.8 km	**No**
pNHA	Glenasmole Valley	9.8 km	**No**
pNHA	Lugmore Glen	10.5 km	**No**
pNHA	Dalkey Coastal Zone and Killiney Hill	11.2 km	**No**
pNHA	Baldoyle Bay	12.3 km	**No**
pNHA	Dingle Glen	12.3 km	**No**
pNHA	Feltrim Hill	12.4 km	**No**
pNHA	Howth Head	12.8 km	**No**
pNHA	Slade Of Saggart And Crooksling Glen	12.9 km	**No**
pNHA	Sluice River Marsh	13 km	**No**
pNHA	Ballybetagh Bog	13.1 km	**No**
pNHA	Rye Water Valley/Carton	13.7 km	**No**

Designation	Conservation Sites	Distance	Direct Hydrological / Biodiversity Connection
pNHA	Loughlinstown Wood	13.9 km	**No**
pNHA	Knocksink Wood	14.2 km	**No**
pNHA	Malahide Estuary	14.9 km	**No**
Ramsar	Sandymount Strand/Tolka Estuary	4.6 km	**No**
Ramsar	North Bull Island	7.5 km	**No**
Ramsar	Baldoyle Bay	12.5 km	**No**

Figure 5-1: Proposed Development Site

Figure 5-2: Proposed site outline and location – Google Earth Pro (Image dated 03-2022)

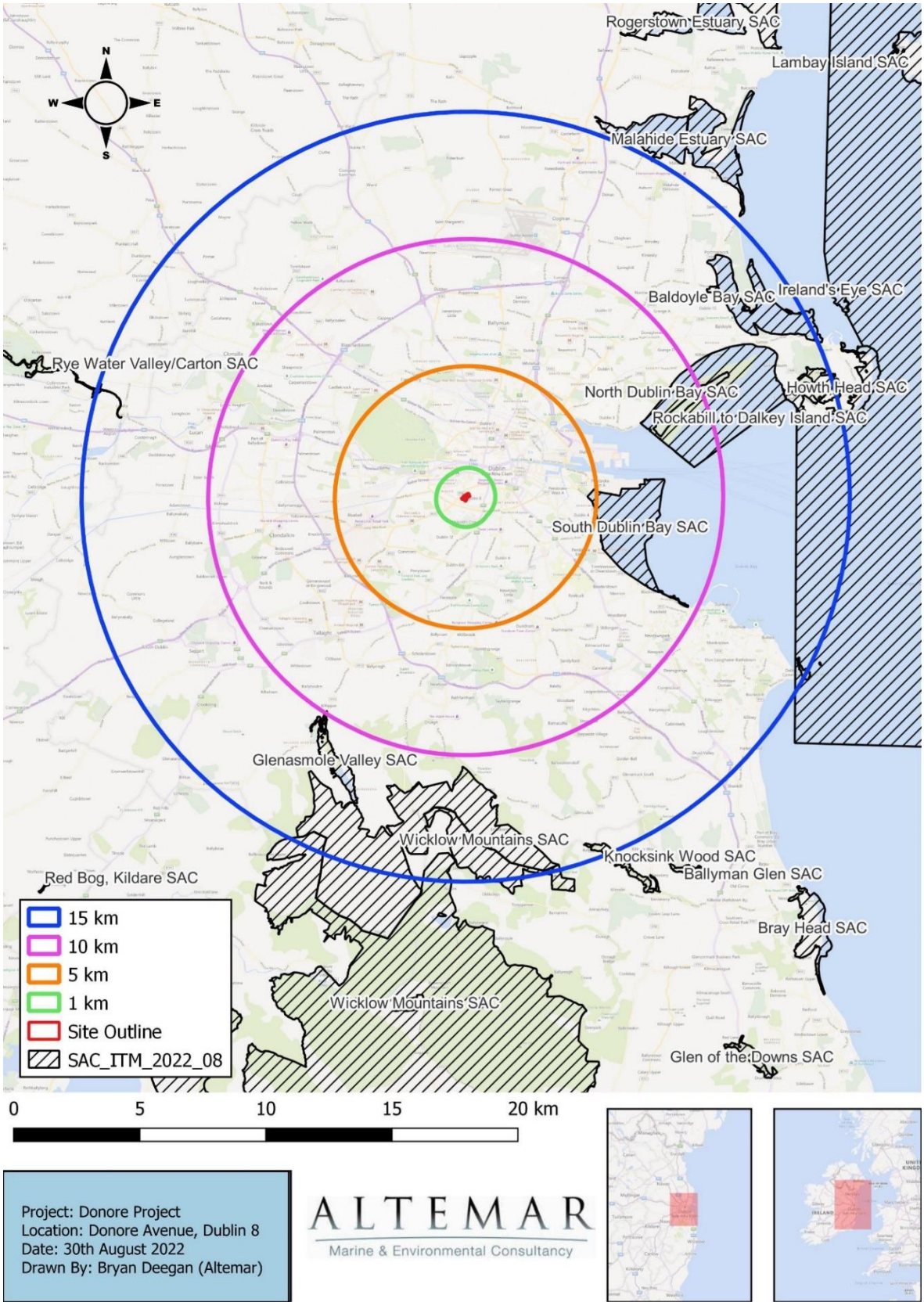


Figure 5-3: Special Areas of Conservation within 15km.

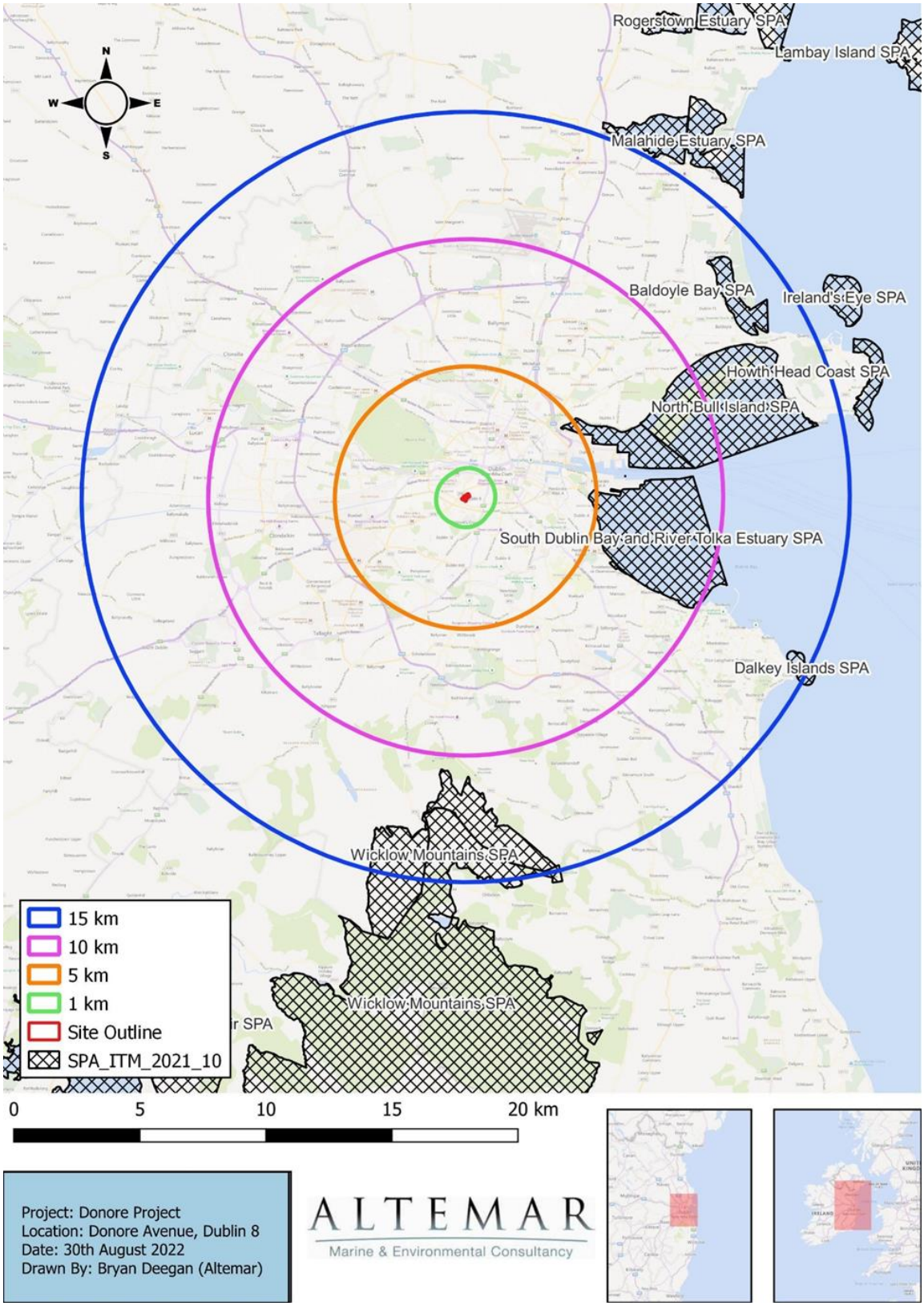


Figure 5-4: Special Protection Areas within 15km.

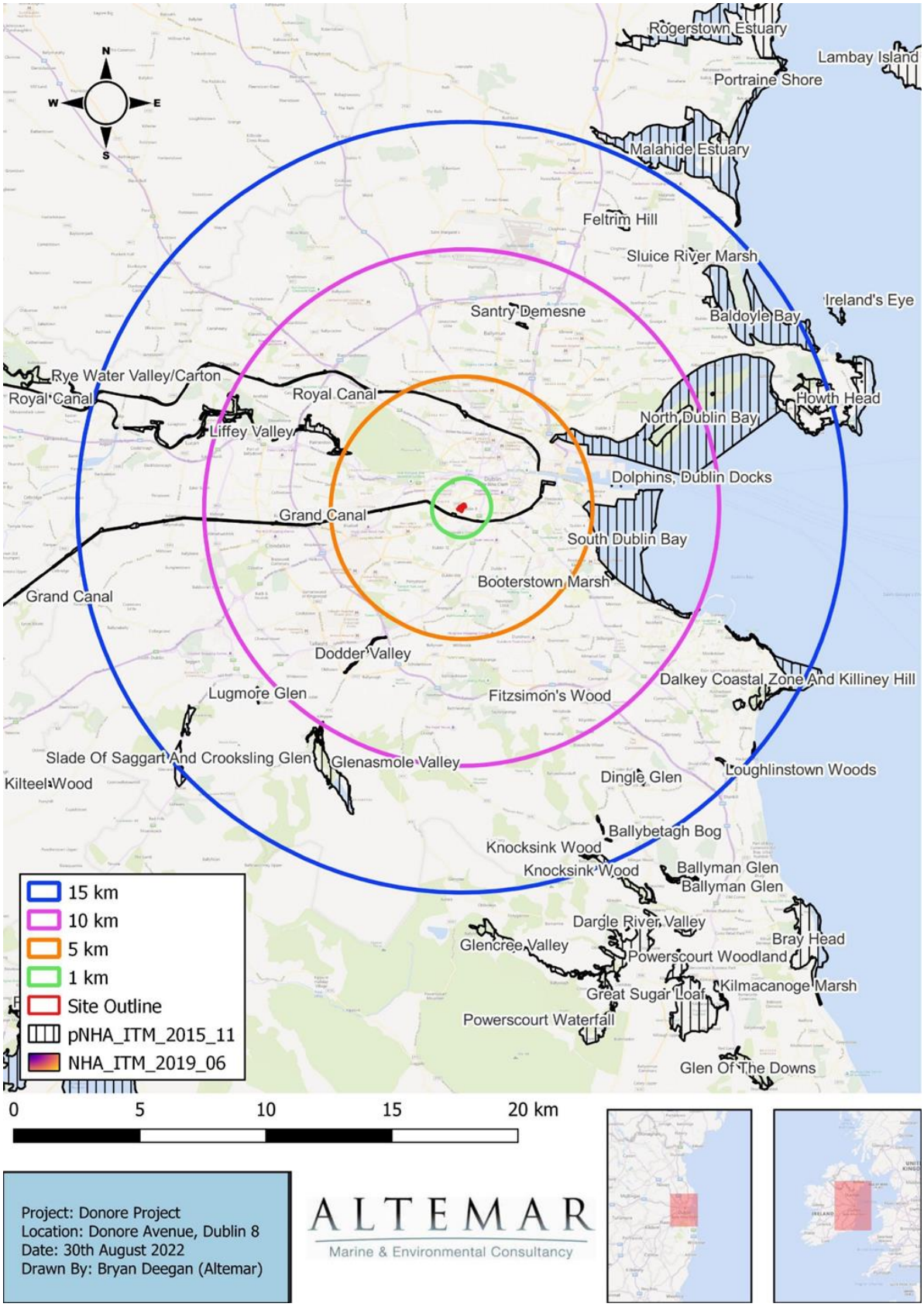


Figure 5-5: Natural Heritage Areas and proposed Natural Heritage Areas within 15km.

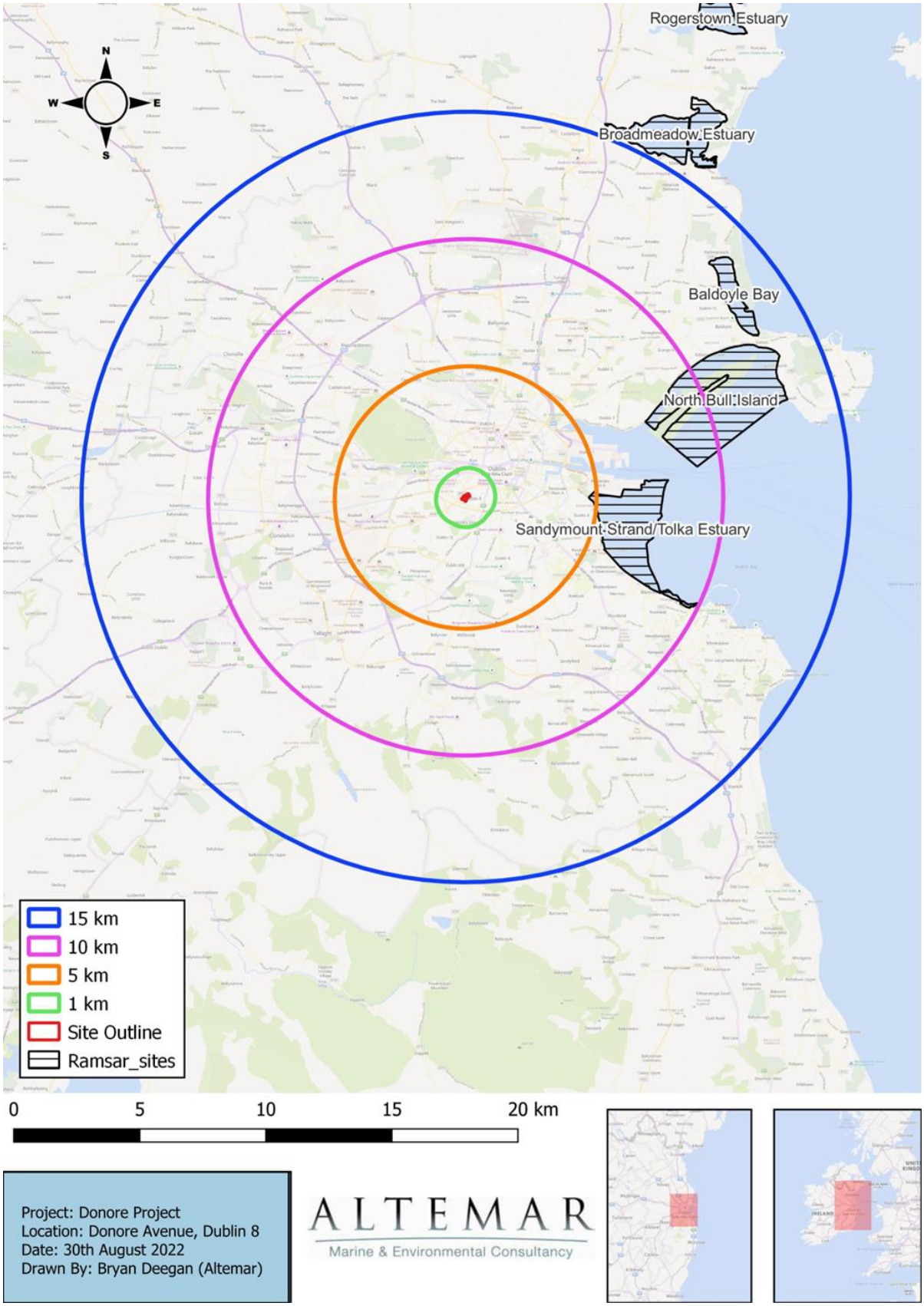


Figure 5-6: Ramsar Sites within 15km

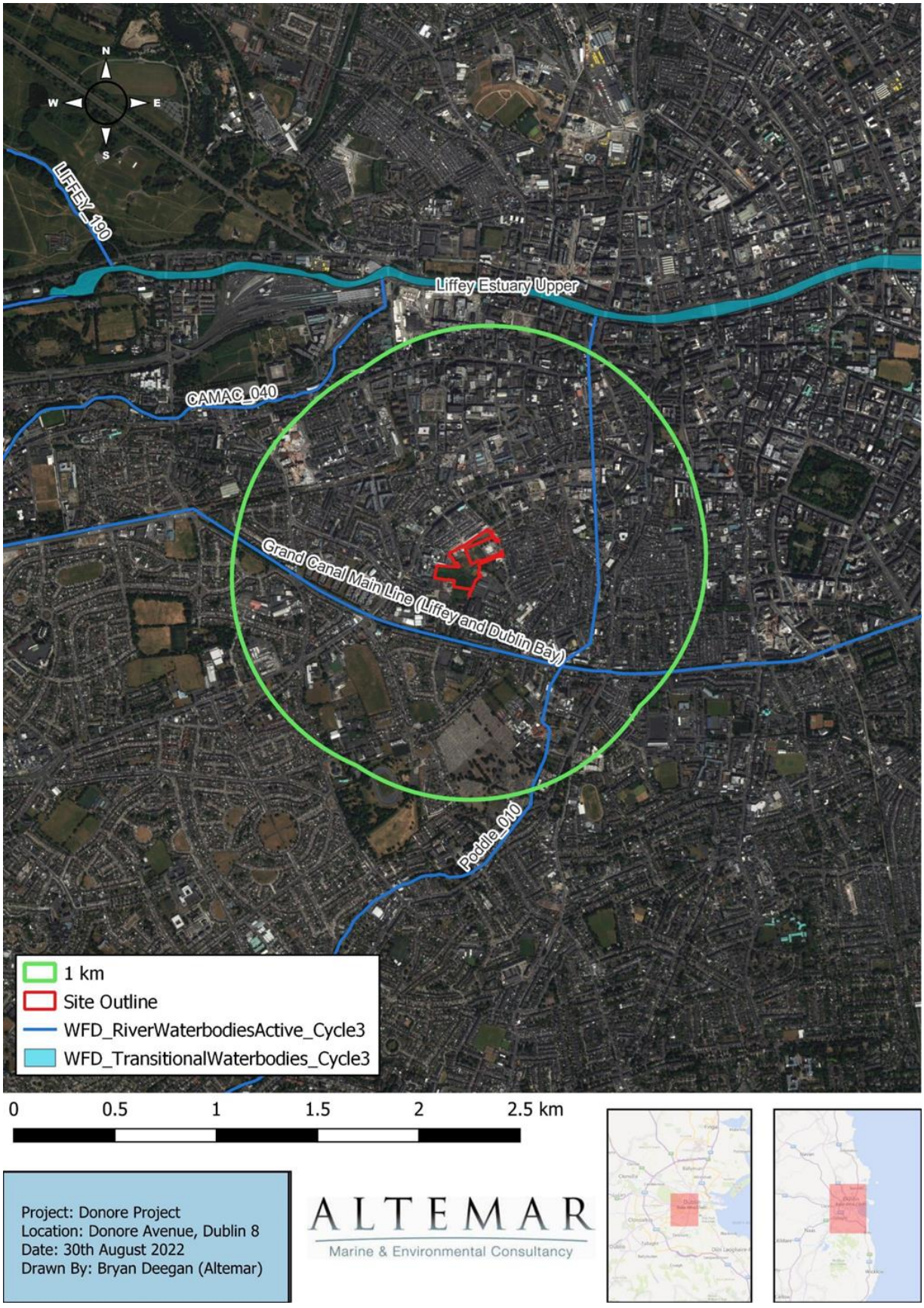


Figure 5-7: Waterbodies proximate to the Proposed Development site

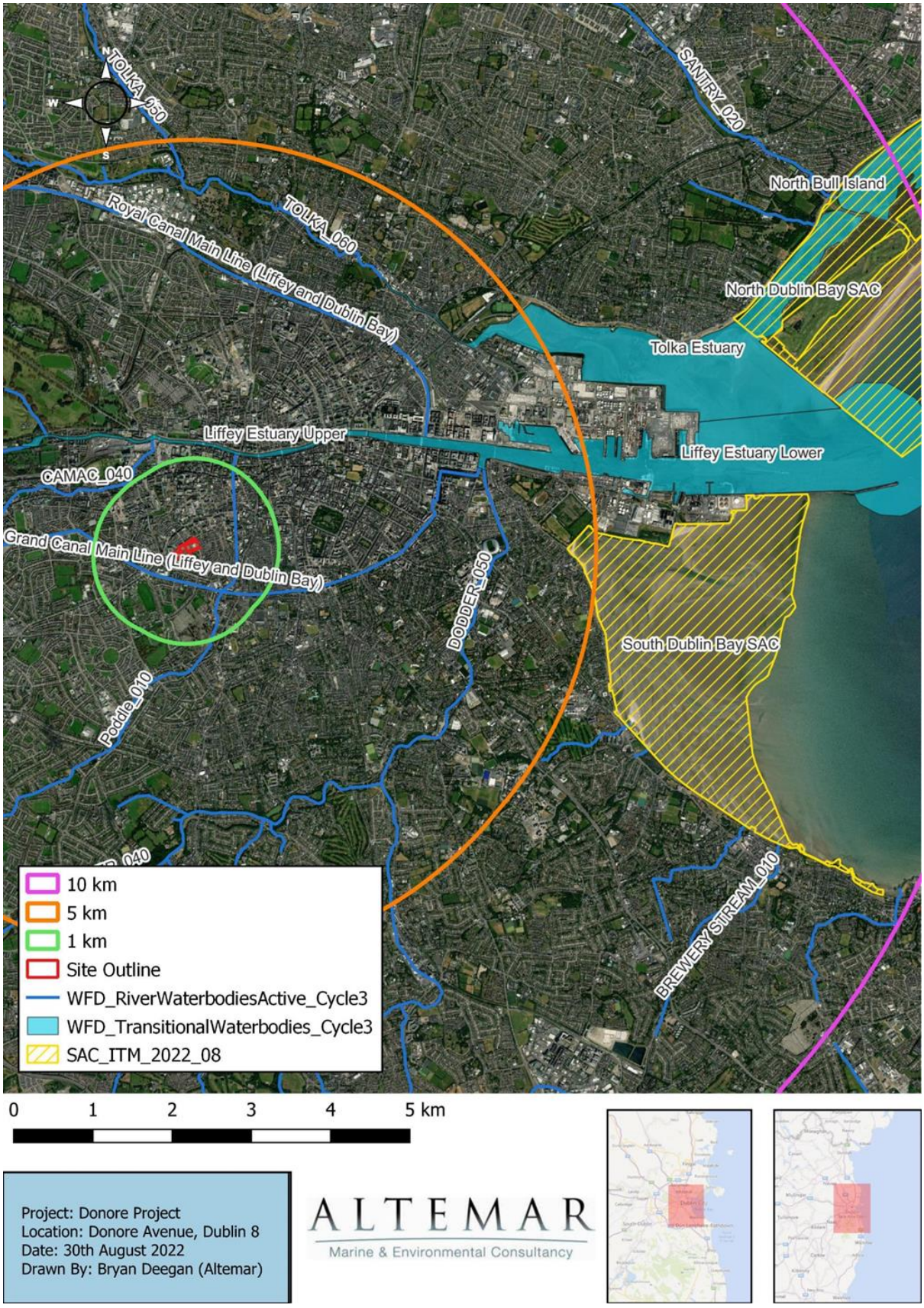


Figure 5-8: Watercourses and SACs within 10km of the Proposed Development site

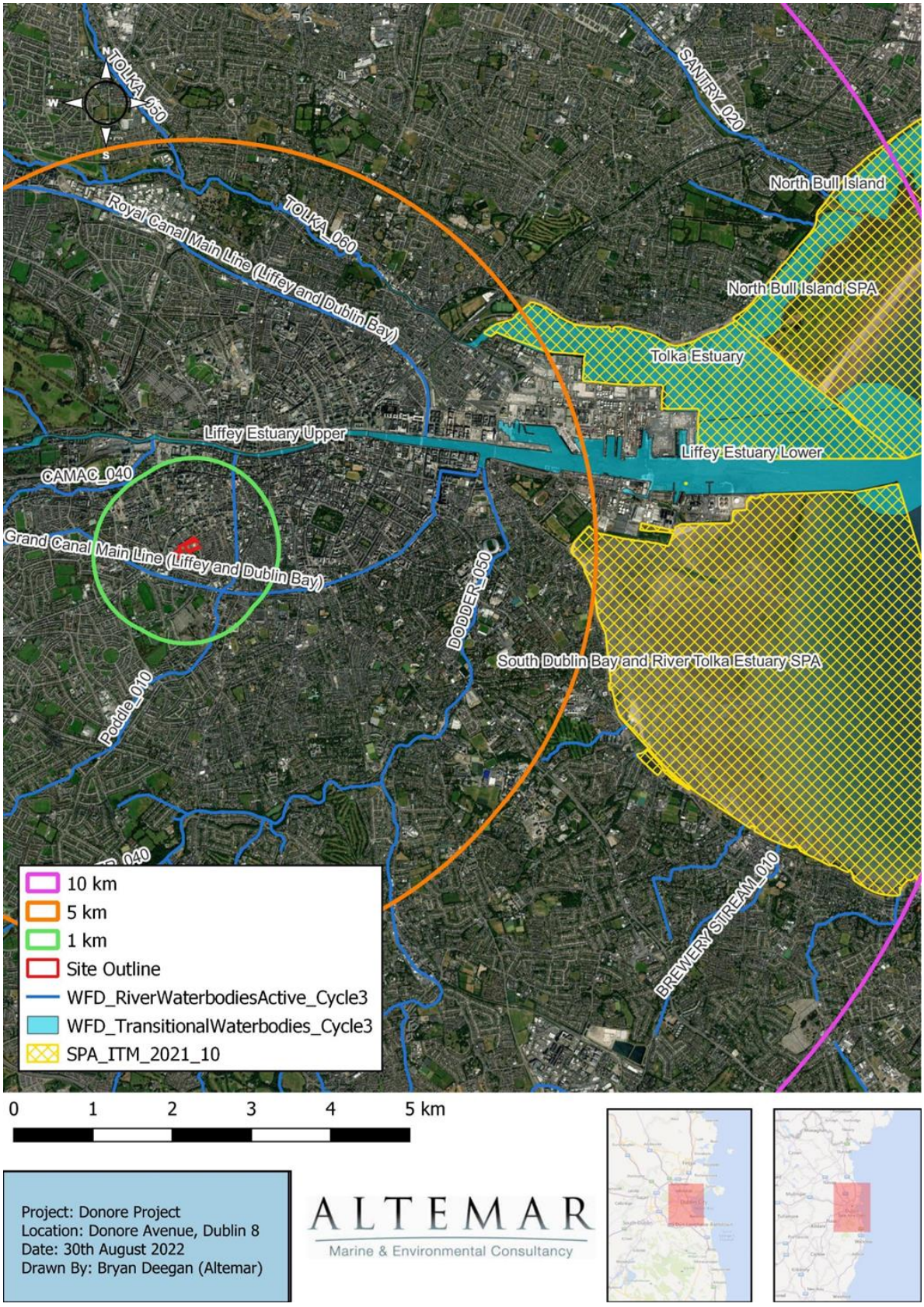


Figure 5-9: Watercourses and SPAs within 10km of the Proposed Development site

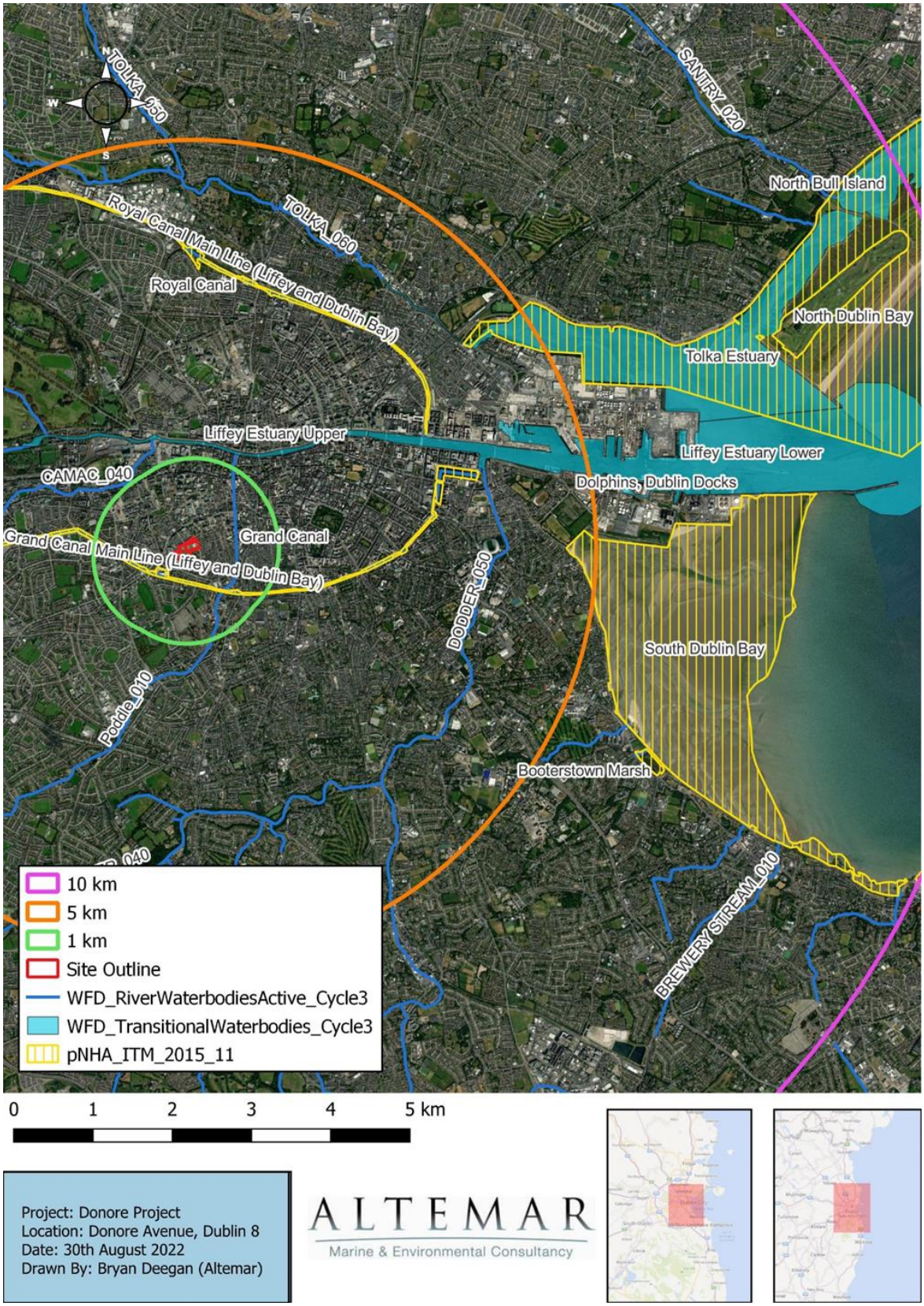


Figure 5-10: Watercourses and pNHAs within 10km of the Proposed Development site

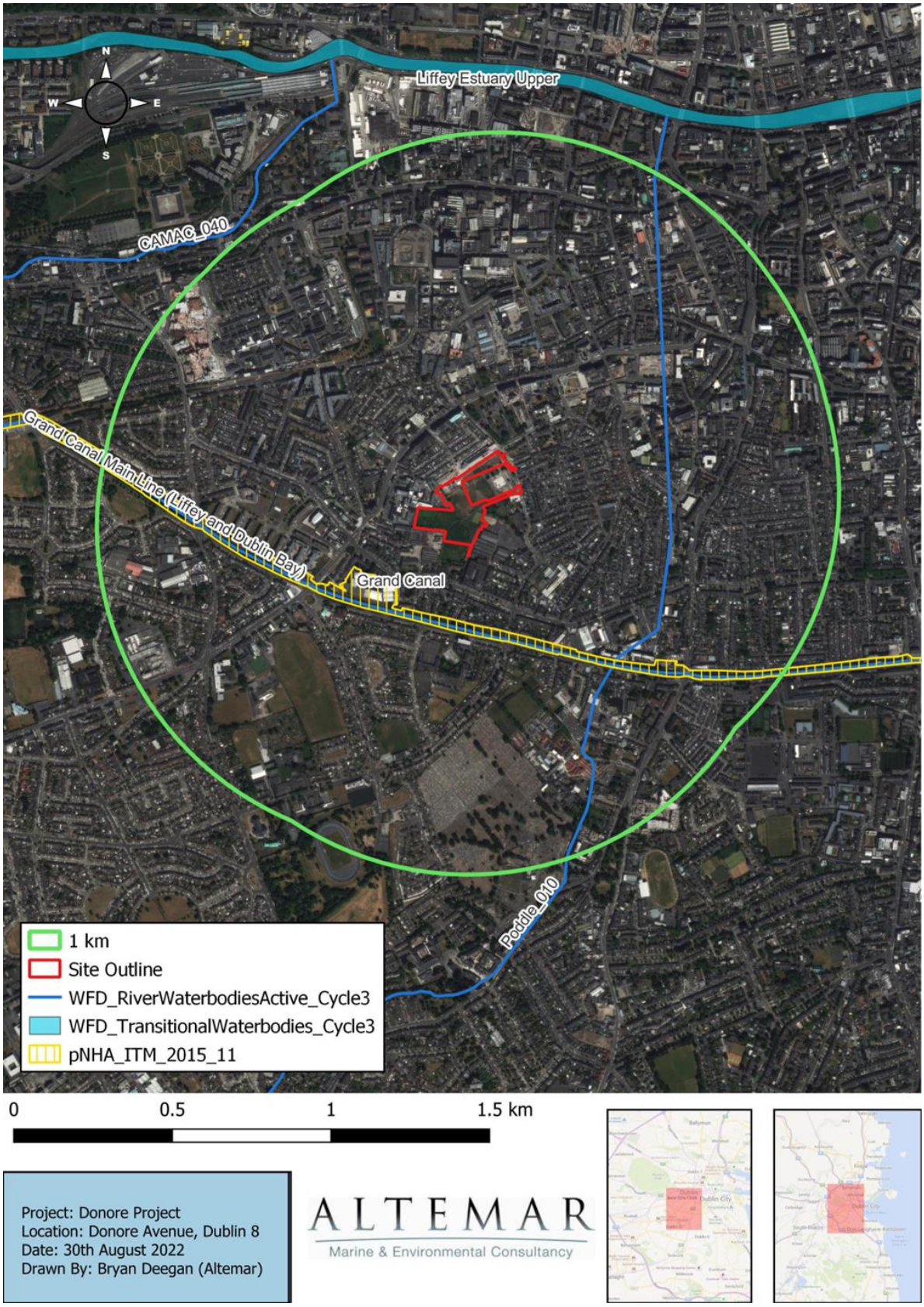


Figure 5-11: Watercourses and pNHAs within 1km of the Proposed Development site

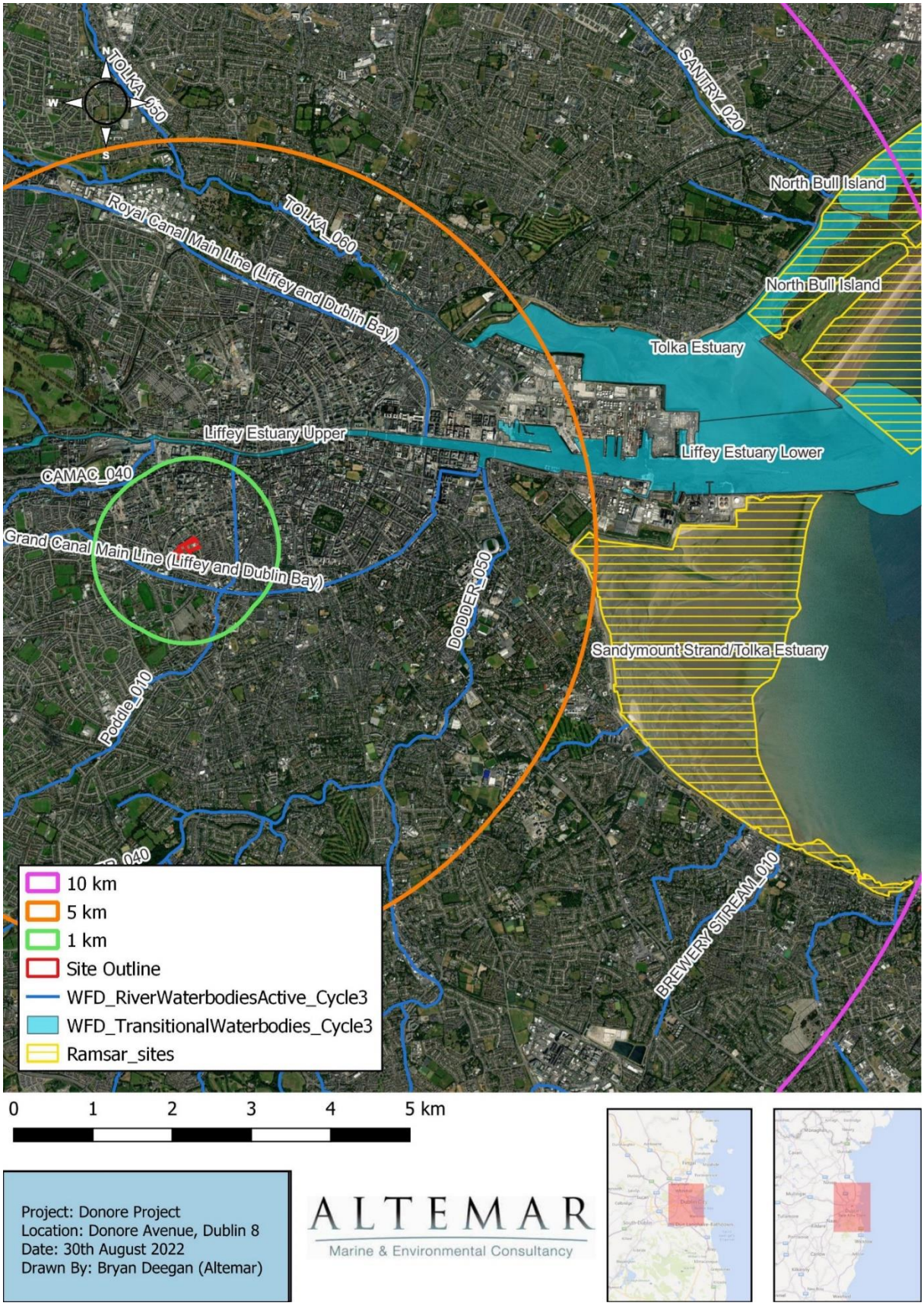


Figure 5-12: Watercourses and Ramsar sites within 10km of the Proposed Development site

5.3.3 Species data

It should be noted that no species of conservation importance were noted on site, based on NPWS and NBDC records as fine resolution. Species recorded within the 2km^2 grid are seen in Table 5-4.

Table 5-4: National Biodiversity Data Centre Records within the 2km^2 grid (O13L).

Barn Swallow (Hirundo rustica); Black-billed Magpie (Pica pica); Blackcap (Sylvia atricapilla); Black-headed Gull (Larus ridibundus); Blue Tit (Cyanistes caeruleus); Bohemian Waxwing (Bombycilla garrulus); Branta bernicla subsp. hrota; Brent Goose (Branta bernicla); Chaffinch (Fringilla coelebs); Coal Tit (Periparus ater); Common Blackbird (Turdus merula); Common Bullfinch (Pyrrhula pyrrhula); Common Buzzard (Buteo buteo); Common Chiffchaff (Phylloscopus collybita); Common Coot (Fulica atra); Common Kestrel (Falco tinnunculus); Common Kingfisher (Alcedo atthis); Common Linnet (Carduelis cannabina); Common Moorhen (Gallinula chloropus); Common Pheasant (Phasianus colchicus); Common Raven (Corvus corax); Common Starling (Sturnus vulgaris); Common Swift (Apus apus); Common Wood Pigeon (Columba palumbus); Eurasian Collared Dove (Streptopelia decaocto); Eurasian Jackdaw (Corvus monedula); Eurasian Sparrowhawk (Accipiter nisus); Eurasian Treecreeper (Certhia familiaris); European Goldfinch (Carduelis carduelis); European Greenfinch (Carduelis chloris); European Robin (Erithacus rubecula); Fieldfare (Turdus pilaris); Goldcrest (Regulus regulus); Great Cormorant (Phalacrocorax carbo); Great Tit (Parus major); Greater Scaup (Aythya marila); Grey Heron (Ardea cinerea); Grey Wagtail (Motacilla cinerea); Hedge Accentor (Prunella modularis); Herring Gull (Larus argentatus); Hooded Crow (Corvus cornix); House Martin (Delichon urbicum); House Sparrow (Passer domesticus); Lesser Black-backed Gull (Larus fuscus); Lesser Redpoll (Carduelis cabaret); Little Grebe (Tachybaptus ruficollis); Long-eared Owl (Asio otus); Long-tailed Tit (Aegithalos caudatus); Mallard (Anas platyrhynchos); Meadow Pipit (Anthus pratensis); Mew Gull (Larus canus); Mistle Thrush (Turdus viscivorus); Mute Swan (Cygnus olor); Peregrine Falcon (Falco peregrinus); Pied Wagtail (Motacilla alba subsp. yarrellii); Redwing (Turdus iliacus); Rock Pigeon (Columba livia); Rook (Corvus frugilegus); Song Thrush (Turdus philomelos); Tufted Duck (Aythya fuligula); White Wagtail (Motacilla alba); White-throated Dipper (Cinclus cinclus); Winter Wren (Troglodytes troglodytes); Green Shore Crab (Carcinus maenas); Hart's-tongue (Phyllitis scolopendrium); Wall-rue (Asplenium ruta-muraria); Amphibious Bistort (Persicaria amphibia); Annual Meadow-grass (Poa annua); Arrowhead (Sagittaria sagittifolia); Blunt-fruited Water-starwort (Callitriche obtusangula); Broad Bean (Vicia faba); Broad-leaved Dock (Rumex obtusifolius); Bulrush (Typha latifolia); Butterfly-bush (Buddleja davidii); Callitriche aggregate; Callitriche hamulata sens.lat.; Callitriche stagnalis sensu lato; Canadian Waterweed (Elodea canadensis); Cleavers (Galium aparine); Common Chickweed (Stellaria media); Common Nettle (Urtica dioica); Common Orache (Atriplex patula); Common Reed (Phragmites australis); Common Sorrel (Rumex acetosa); Creeping Buttercup (Ranunculus repens); Creeping Cinquefoil (Potentilla reptans); Cuckooflower (Cardamine pratensis); Curled Pondweed (Potamogeton crispus); Eastern Rocket (Sisymbrium orientale); Fan-leaved Water-crowfoot (Ranunculus circinatus); Fennel (Foeniculum vulgare); Fennel Pondweed (Potamogeton pectinatus); Great Willowherb (Epilobium hirsutum); Groundsel (Senecio vulgaris); Hedge Mustard (Sisymbrium officinale); Henbit Dead-nettle (Lamium amplexicaule); Herb-Robert (Geranium robertianum); Horned

Pondweed (Zannichellia palustris); Ivy-leaved Duckweed (Lemna trisulca); Japanese Knotweed (Fallopia japonica); London-rocket (Sisymbrium irio); Mare's-tail (Hippuris vulgaris);

Meadow Buttercup (Ranunculus acris); Nuttall's Waterweed (Elodea nuttallii); Opposite-leaved Pondweed (Groenlandia densa); Pear (Pyrus communis); Pellitory-of-the-wall (Parietaria judaica); Petty Spurge (Euphorbia peplus); Pink-sorrel (Oxalis articulata); Procumbent Yellow-sorrel (Oxalis corniculata); Pyramidal Orchid (Anacamptis pyramidalis); Red Clover (Trifolium pratense); Red Valerian (Centranthus ruber); Reed Canary-grass (Phalaris arundinacea); Reed Sweet-grass (Glyceria maxima); Rigid Hornwort (Ceratophyllum demersum); Rorippa nasturtium-aquaticum agg.; Rue-leaved Saxifrage (Saxifraga tridactylites); Shining Crane's-bill (Geranium lucidum); Smooth Sow-thistle (Sonchus oleraceus); Spiked Water-milfoil (Myriophyllum spicatum); Three-cornered Garlic (Allium triquetrum); Unbranched Bur-reed (Sparganium emersum); Wall Barley (Hordeum murinum); Water Mint (Mentha aquatica); Weeping Willow (Salix alba x babylonica = S. x sepulcralis); White Clover (Trifolium repens); Whorled Water-milfoil (Myriophyllum verticillatum); Winter Heliotrope (Petasites fragrans); Yarrow (Achillea millefolium); Yellow Iris (Iris pseudacorus); Yellow Water-lily (Nuphar lutea); Arthopyrenia punctiformis; Puccinia antirrhinin; 10-spot Ladybird (Adalia decempunctata); 22-spot Ladybird (Psyllobora vigintiduopunctata); 2-spot Ladybird (Adalia bipunctata); 7-spot Ladybird (Coccinella septempunctata); Harlequin Ladybird (Harmonia axyridis); Comma (Polygonia c-album); Common Blue (Polyommatus icarus); Holly Blue (Celastrina argiolus); Large White (Pieris brassicae); Red Admiral (Vanessa atalanta); Small Tortoiseshell (Aglais urticae); Small White (Pieris rapae); Speckled Wood (Pararge aegeria); Azure Damselfly (Coenagrion puella); Blue-tailed Damselfly (Ischnura elegans); Brown Hawker (Aeshna grandis); Common Blue Damselfly (Enallagma cyathigerum); Emperor Dragonfly (Anax imperator); Hairy Dragonfly (Brachytron pratense); Andrena (Hoplandrena) scotica; Andrena (Taeniandrena) wilkella; Barbut's Cuckoo Bee (Bombus (Psithyrus) barbutellus); Bombus (Bombus) lucorum; Bombus (Bombus) terrestris; Bombus lucorum agg.; Chrysididae; Common Carder Bee (Bombus (Thoracombus) pascuorum); Common Yellow Face Bee (Hylaeus (Hylaeus) communis); Early Bumble Bee (Bombus (Pyrobombus) pratorum); Early Mining Bee (Andrena (Trachandrena) haemorrhoa); Gwynne's Mining Bee (Andrena (Euandrena) bicolor); Hill Cuckoo Bee (Bombus (Psithyrus) rupestris); Honey Bee (Apis mellifera); Large Red Tailed Bumble Bee (Bombus (Melanobombus) lapidarius); Lasioglossum (Dialictus) cupromicans; Lasioglossum (Dialictus) leucopus; Marsham's Nomad Bee (Nomada marshamella); Megachile (Delomegachile) willughbiella; Megachile (Megachile) centuncularis; Moss Carder-bee (Bombus (Thoracombus) muscorum); Slender Mining Bee (Lasioglossum (Evylaeus) calceatum); Small Garden Bumble Bee (Bombus (Megabombus) hortorum); Sphecodes geoffrellus; Vestal Cuckoo Bee (Bombus (Psithyrus) vestalis); Wesmaelius (Kimminsia) subnebulosus; Anthophila fabriciana; Apple Leaf Miner (Lyonetia clerkella); Bright-line Brown-eye (Lacanobia oleracea); Cameraria ohridella; Convolvulus Hawk-moth (Agrius convolvuli); Diplopseustis perieresalis; Eudonia angustea; Humming-bird Hawk-moth (Macroglossum stellatarum); Indian Meal Moth (Plodia interpunctella); Large Yellow Underwing (Noctua pronuba); Lesser Broad-bordered Yellow Underwing (Noctua janthe); Light Brown Apple Moth (Epiphyas postvittana); Lime Hawk-moth (Mimas tiliae); Magpie (Abraxas grossulariata); Monopis crocicapitella; Poplar Hawk-moth (Laothoe populi); Scalloped Hazel (Odontopera bidentata); Scalloped Oak (Crocallis elinguaria); Silver Y (Autographa gamma); Stigmella ulmivora; Wakely's Dowd (Blastobasis

lacticolella); Oak Bush-cricket (Meconema thalassinum); Drymus (Sylvadrymus) sylvaticus; Hawthorn Shieldbug (Acanthosoma haemorrhoidale); Southern Green Shieldbug (Nezara viridula); Epistrophe eligans; Eristalis tenax; Euphylidorea meigenii; Meliscaeva auricollis; Tipula fascipennis; Tipula lunata; Acarospora fuscata; Arthonia radiata; Candelaria concolor; Candelariella reflexa; Common Orange Lichen (Xanthoria parietina); Diploicia canescens; Hyperphyscia adglutinata; Lecanora expallens; Lecanora polytropa; Lecidella elaeochroma forma elaeochroma; Lepraria incana sensu lato; Parmotrema perlatum; Phaeophyscia orbicularis; Physcia adscendens; Physcia tenella subsp. tenella; Physconia grisea; Polysporina simplex; Xanthoria polycarpa; Common Bithynia (Bithynia (Bithynia) tentaculata); Common Bladder Snail (Physa fontinalis); Flat Ramshorn (Hippeutis complanatus); Flat Valve Snail (Valvata (Valvata) cristata); Globular Pea Mussel (Pisidium hibernicum); Glutinous Snail (Myxas glutinosa); Great Pond Snail (Lymnaea (Lymnaea) stagnalis); Horny Orb Mussel (Sphaerium corneum); Keeled Ramshorn (Planorbis carinatus); Lake Limpet (Acroloxus lacustris); Leach's Bithynia (Bithynia (Codiella) leachii); Lymnaea (Stagnicola); Pisidium pseudosphaerium; Porous Pea Mussel (Pisidium obtusale); Shining Pea Mussel (Pisidium nitidum); Short-ended Pea Mussel (Pisidium subtruncatum); Twisted Ramshorn (Bathyomphalus contortus); Valve Snail (Valvata (Cincinna) piscinalis); Wandering Snail (Radix balthica); Brown Rat (Rattus norvegicus); Eastern Grey Squirrel (Sciurus carolinensis); European Otter (Lutra lutra); European Rabbit (Oryctolagus cuniculus); Greater White-toothed Shrew (Crocidura russula); House Mouse (Mus musculus); Lesser Noctule (Nyctalus leisleri); Pipistrelle (Pipistrellus pipistrellus sensu lato); Red Fox (Vulpes vulpes); Soprano Pipistrelle (Pipistrellus pygmaeus)

Table 5-5: Species found by NPWS proximate to the Proposed Development site

Opposite-leaved Pondweed (*Groenlandia densa*); Common Frog (*Rana temporaria*); Autumn Lady's-tresses (*Spiranthes spiralis*); River Lamprey (*Lampetra fluviatilis*); Barn Owl (*Tyto alba*); Smooth Newt (*Triturus vulgaris*); Otter (*Lutra lutra*); Hairy Violet (*Viola hirta*)

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

5.3.4 Site Survey

Site assessments were carried out on the 14th of April 2021, 27th of August 2021 and 7th July of 2022. Habitats within the Proposed Development site were classified according to Fossitt (2000) (Figure 5-13) and the species noted within each habitat are described.

Figure 5-13: Fossitt Habitats on site (See habitat descriptions for the explanation to the Fossitt codes).

BL3-Buildings and artificial surfaces

Figure 5-14: Buildings and artificial surfaces

A section of the site of the Proposed Development site (approx.15%) consists of Built Land (Fossitt 2000). This consists primarily of hard standing and abandoned amenity areas that have become overgrown. Opportunistic flora species had begun to grow in cracks and joints and in areas where debris had accumulated. Species included butterfly-bush (*Buddleja davidii*), bramble (Rubus fruticosus agg.), dandelion (*Taraxacum spp*.), rosebay willowherb (*Epilobium angustifolium*), plantains (*Plantago spp*.), red valerian (*Centranthus ruber*), ivy (*Hedera helix*), cleavers (*Galium aparine*), common ragwort (*Senecio jacobaea*), thistles (*Cirsium arvense & C. vulgare*), docks (*Rumex spp*rape (*Brassica napus*), great willowherb (*Epilobium hirsutum*), hoary willowherb (*Epilobium parviflorum*), elder (Sambucus nigra) and hedge bindweed (Calystegia sepium).

ED3-Recolonising Bare Ground

Figure 5-15: Recolonising Bare Ground.

The dominant habitat on site is Recolonising Bare Ground (ED3) (Approx 45% of the site). This area is primarily the area of the former St. Teresa's Gardens development. Based upon an examination of satellite imagery (Google Earth Pro) the buildings were still on site in May 2017 and were removed by May 2018. This area is being recolonised by opportunistic species such as nettle (*Urtica dioica*), rape (Brassica *napus*), dandelion (*Taraxacum spp*.), oxeye daisy (Leucanthemum vulgare), bramble (*Rubus fruticosus agg*.), colt's foot (*Tussilago farfara*), creeping buttercup (*Ranunculus repens*), clover (*Trifolium spp*.), daisy (*Bellis perennis*), plantains (*Plantago spp*.), thistles (*Cirsium arvense & C. vulgare*), docks (*Rumex spp*.), butterfly-bush (*Buddleja spp.`),* ivy (*Hedera helix*), common birds-foot-trefoil (*Lotus corniculatus*), ragwort (*Senecio sp*.), rosebay willowherb (*Chamaenerion angustifolium*), hoary willowherb (Epilobium *parviflorum*), great willowherb (Epilobium hirsutum) (Figure 5-15), common mallow (*Malva sylvestris*), wild mignonette (*Reseda lutea*), common poppy (*Papaver rhoeas*), pineappleweed (*Matricaria discoidea*), gorse (*Ulex europaeus*), silverweed (Potentilla anserina), wild teasel (*Dipsacus fullonum*), common figwort (*Scrophularia nodosa*), purple-loosestrife (*Lythrum salicaria*) and saplings of alder (*Alnus glutinosa*) and sycamore (*Acer pseudoplatanus*).

WS1-Scrub

Figure 5-16: Scrub (including burtout cars).

Several areas of scrub were noted in the southern area of the site. Based on a review of satllite (Google Earth Pro) and aeriel imagery (OSI) imagery this area has not undergone site clearance in the recent past (Since 1995). These were as a result of a natural sucession from grassland, to primarily bramble *Rubus fruticosus* agg.) to sycamore (*Acer pseudoplatanus*). Other species included gorse (Ulex sp), docks (*Rumex spp*.), nettle (*Urtica dioica*), rosebay willowherb (*Chamaenerion angustifolium*), thistles (*Cirsium arvense & C. vulgare*), butterfly-bush (*Buddleja spp.`),* great willowherb (*Epilobium hirsutum*).

GS2-Dry meadows and grassy verges

Figure 5-17: Dry meadows and grassy verges.

Within the scrub habitat is an area of Dry meadows and grassy verges. This habitat is currently undergoing a transition to scrub with thistles (*Cirsium arvense & C. vulgare*) and great willowherb (*Epilobium hirsutum*) beginning to become dense in parts of the habitat. It would be expected that this habitat will succumb to scrub enchment in the short to medium term. Species included nettle (Urtica dioica), bramble (*Rubus fruticosus agg*.), creeping buttercup (*Ranunculus repens*), clover (*Trifolium spp*.), docks (*Rumex spp.),* ragwort (*Senecio sp.),* butterbur (*Petasites hybridus*) common mallow (*Malva sylvestris*), silverweed (*Potentilla anserina*), gorse (*Ulex europaeus*) and saplings of sycamore (*Acer pseudoplatanus*).

Bats

Foraging activity of two bat species (soprano pipistrelle (*Pipistrellus pygmaeus*) and common pipistrelle (*Pipistrellus pipistrellus*) were noted along the southern side of the site (Appendix F bat Fauna Assessment). No foraging was noted in other areas of the site. No buildings are on site. No trees of bat roosting potential are noted on site. No roosting bats were noted on site. However, to the south of the site (outside the Proposed Development site), a single (soprano pipistrelle (*Pipistrellus pygmaeus*) was noted emerging from ivy in 2021. No bats were noted emerging from the ivy in 2022.

Figure 5-18: Ivy covered wall, south of the site.

Mammals

No terrestrial mammals of conservation importance, their resting or breeding places were noted on site.

Birds

A wintering bird/flightline assessment was carried out by Hugh Delaney (Appendix G). The report concludes that '*21 bird species were recorded from observations made at the St. Teresa's site. Results from the surveys suggest that the site is not an ex-situ foraging or roosting site for species of qualifying interest from nearby Special protection areas (SPA's). The open ground habitat on-site was judged to be sub-optimal for Gulls, Geese or Wader species. Results also suggest that the site is not a regular flightline path for such species like Brent Geese or other species of significant interest, checks on data bases (Irishbirding.com for example) suggest this part of the city has no history of foraging Geese or other significant species with the closest known sites being Crumlin farther to the south.'*

Evaluation of Habitats

The Proposed Development site consists of build land, recolonising bare ground, bare ground, scrub and grassland habitat that is succumbing to scrub encroachment. No habitats of conservation importance were noted on site.

Plant Species

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

Fauna

Amphibians/Reptiles

The common frog (*Rana temporaria*) was not observed on site. There are no features within the site boundary that could be important to frogs. The common lizard (*Zootoca vivipara*) or smooth newt (*Lissotriton vulgaris*) were not recorded on site.

Terrestrial Mammals

No badgers or badger activity was noted on site. No protected terrestrial mammals were noted on site or in the immediate vicinity of the site. Foxes (*Vulpes vulpes*) (not protected) were noted on site.

Birds

The following bird species were noted on site: Herring Gull, Lesser black-backed Gull, Starling, Linnet, Goldfinch, Greenfinch, Dunnock, Wren, Feral Pigeon, Woodpigeon, Blue Tit, Great Tit, Goldcrest, Blackbird, Song Thrush, House Sparrow, Grey Wagtail, Meadow Pipit, Hooded Crow, Magpie, Jackdaw. As outlined in Appendix G of this EIAR, "Herring Gulls were noted regularly flying over and around the site, but were not noted foraging on-site, with the birds landing onto the old flats occasionally only. Maximum counts of 22 noted at 10.10hrs moving around the site and 16 at 11.30hrs. Occasional Lesser black-backed Gull also noted in smaller numbers, with maximum count of 4 at 09.40hrs, also not foraging on-site but occasionally landing onto roof of old flats. No additional bird species were noted during the Altemar surveys.

5.4 Characteristics of the Proposed Development

The Proposed Development will consist of the construction of a residential scheme of 543 no. apartments on an overall site of 3.26 ha (GFA of c. 53,227 sqm) containing the following mix of apartments:

- 225 No. 1 bedroom apartments (36 no. 1-person & 189 no. 2-person)
- 274 No. 2 bedroom apartments (including 52 No. 2 bed 3 person apartments and 222 No. 2 bed 4 person apartments)
- 44 No. 3 bedroom 5-person apartments
- A retail/café unit (168 sq.m.), mobility hub (52 sq.m.) and 952 sq.m. of community, artist workspace, arts and cultural space, including a creche, set out in 4 No. blocks.

The breakdown of each block will contain the following apartments:

- Block DCC1 comprises 111 No. apartments in a block of 6-7 storeys;
- Block DCC 3 comprises 247 No. apartments in a block of 6-15 storeys;
- Block DCC5 comprises 132 No. apartments in a block of 2-7 storeys;
- Block DCC6 comprises 53 No. apartments in a block of 7 storeys;

The Proposed Development will also provide for public open space of 3,408 sqm, communal amenity space of 4,417 sqm and an outdoor play space associated with the creche. Provision

of private open space in the form of balconies or terraces is provided to all individual apartments.

The Proposed Development will provide 906 no. residential bicycle parking spaces which are located within secure bicycle stores. 5% of these are over-sized spaces which are for large bicycles, cargo bicycles and other non-standard bicycles. In addition, 138 spaces for visitors are distributed throughout the site.

A total of 79 no. car parking spaces are provided at undercroft level. Six of these are mobility impaired spaces (2 in each of DCC1, DCC3 & DCC5). 50% of standard spaces will be EV fitted. Up to 30 of the spaces will be reserved for car sharing (resident use only). A further 15 no. on-street spaces are proposed consisting of:

- 1 no. accessible bay (between DCC5 & DCC6)
- 1 no. short stay bay (between DCC5 & DCC6)
- 1 no. crèche set-down / loading bay (between DCC5 & DCC6)
- 1 no. set-down / loading bay (northern side of DCC5)
- 1 no. set-down/loading bay (northern side of DCC 3)
- 10 no. short stay spaces (north-east of DCC1)

In addition, 4 no. motorcycle spaces are also to be provided.

Vehicular, pedestrian and cyclist access routes are provided from a new entrance to the north-west from Margaret Kennedy Road. Provision for further vehicular, pedestrian and cyclist access points have been made to facilitate connections to the planned residential schemes on the Bailey Gibson & Player Wills sites for which there are extant permissions (Ref. No.'s ABP-307221-20 & ABP-308917-20).

The development will also provide for all associated ancillary site development infrastructure including site clearance & demolition of boundary wall along Margaret Kennedy Road and playing pitch on eastern side of site and associated fencing/lighting, the construction of foundations, ESB substations, switch room, water tank rooms, storage room, meter room, sprinkler tank room, comms room, bin storage, bicycle stores, green roofs, hard and soft landscaping, play equipment, boundary walls, attenuation area and all associated works and infrastructure to facilitate the development including connection to foul and surface water drainage and water supply.

5.5 Potential Impact of the Proposed Development

The Proposed Development will involve the removal of the existing terrestrial habitats on site, demolition, re-profiling, excavations and the construction of residential units.

5.5.1 Construction Phase (in the absence of mitigation)

The construction of the Proposed Development would 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, demolition, re-profiling of the site and the building phases of the Proposed Development.

Construction phase mitigation measures are required on site particularly as significant reprofiling of the site is proposed which will remove all existing terrestrial habitats and can lead to silt laden and contaminated runoff to proximate surface water drainage networks. In the absence of mitigation measures, there is the potential for contaminated surface water runoff to enter proximate surface water drainage networks with the potential for downstream impacts on the Poddle Stream and designated conservation sites located within Dublin Bay.

Designated Conservation sites within 15km

The Proposed Development is not within a designated conservation site. The nearest designated conservation site is North Dublin Bay pNHA (4.1 km). The nearest Natura 2000 site is South Dublin Bay and River Tolka Estuary SPA (4.4 km). Runoff during site re-profiling and construction of Proposed Development elements could impact on the surface water network with water quality impacts into the marine environment from the Proposed Development site. Impacts on the marine environment would be seen as the primary vector for impacts on conservation sites. However, given that the nearest conservation site along this potential hydrological pathway (North Dublin Bay pNHA) is a minimum of 4.1 km from the Proposed Development site, significant mixing, dilution and settlement will take place within the surface water drainage network, watercourse network, and the marine environment over the 4.1 km. Given the significant distance to the conservation sites across the hydrological environment no significant impacts are foreseen in the absence of measures on site. The Proposed Development must comply with Water Pollution Acts and prevent silt laden runoff leaving the site. There is an indirect hydrological pathway to designated conservation sites located within Dublin Bay via foul wastewater drainage. Foul wastewater from the Proposed Development site will ultimately discharge to Ringsend Wastewater Treatment Plant (WwTP) for treatment. Any silt or pollutants will settle, be dispersed or diluted prior to receiving treatment at Ringsend WwTP. In the absence of mitigation, it is considered that significant impacts on designated conservation sites via this indirect hydrological pathway would be unlikely.

Impacts: Low adverse / International/ Negative Impact / Not significant / short term. Mitigation is needed to prevent impacts on the surface water network and downstream designated sites.

Biodiversity

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

Terrestrial mammalian species

No protected terrestrial mammals were noted on site. Loss of habitat and habitat fragmentation may affect some common mammalian species.

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

Flora

No protected flora was noted on site. Site clearance will remove the flora species on site.

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

Bat Fauna

Two bat species were noted foraging on site. No bats were noted roosting on site. No bats were noted emerging from buildings adjacent to the site. No significant impacts are foreseen. Lighting during construction could impact on foraging activity adjacent to the site.

Impacts: Low adverse / site / Negative Impact / Not significant / short term. Mitigation is needed in the form of a pre-construction inspection and the control of light spill during construction. A post construction assessment of lighting will be required.

Aquatic Biodiversity

Given that the surface water drainage network servicing the Proposed Development site outfalls to the Poddle Stream, there is the potential for downstream impacts on aquatic biodiversity from silt or petrochemicals via contaminated surface water runoff.

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

Bird Fauna

No bird species of conservation importance have been noted on site. However, site clearance could impact on bird nesting.

Impacts: Low adverse / Local / Negative Impact / Not significant / short term. Mitigation is needed in the form of site clearance outside bird nesting season.

5.5.2 Operational Phase (in the absence of mitigation)

Once constructed all onsite drainage will be connected to separate foul and surface water systems. Surface water runoff will comply with SUDS. The biodiversity value of the site would be expected to improve as the landscaping matures. It would be expected that the ecological impacts in the long term would be positive once landscaping has established due to the implementation of a landscape strategy with a strong biodiversity element.

Designated Conservation sites within 15km

Given that it is proposed to discharge surface water drainage to a surface water network that ultimately outfalls to the Poddle Stream, in the absence of mitigation, there is the potential for downstream impacts on designated sites via contaminated surface water runoff during operation.

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

Biodiversity

Biodiversity value of the site will improve as landscaping matures.

Terrestrial mammalian species

No protected terrestrial mammals were noted on site. Additional habitat will be created on site.

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

Flora

No protected flora was noted on site. Landscaping will increase flora diversity on site.

Impacts: Negligible beneficial / site / Negative Impact / Not significant / long-term

Bat Fauna

The Proposed Development will change the local environment as new structures are to be erected and some of the existing vegetation will be removed. No bat roosts or potential bat roosts will be lost due to this development. A minor loss in foraging by common species of bats will be noted as a result of the Proposed Development. The Proposed Development would not be seen to have a significant collision risk for bat strikes.

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

Aquatic Biodiversity

Given that it is proposed to discharge surface water drainage to a surface water network that ultimately outfalls to the Poddle Stream, in the absence of mitigation, there is the potential for downstream impacts on aquatic biodiversity via contaminated surface water runoff during operation.

Impacts: Low adverse / local / Negative Impact / Not significant / long term

Bird Fauna

The Proposed Development will change the local environment as new structures are to be erected. The buildings are comprised of solid materials consisting of a solid material on the exterior which includes sections of concrete and glass. These buildings would be clearly visible to bird species and would not pose a significant collision risk. However, the presence of buildings on site and landscaping may provide additional nesting and foraging potential for garden bird species. As outlined in Appendix G of this EIAR "*Results also suggest that the site is not a regular flightline path for such species like Brent Geese or other species of significant interest, checks on data bases (Irishbirding.com for example) suggest this part of the city has no history of foraging Geese or other significant species with the closest known sites being Crumlin farther to the south*." The Proposed Development would not be seen to have a significant collision risk for bird strikes.

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

5.5.3 Potential Cumulative Impacts

Cumulative Impacts can be defined as "*impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project*". Effects

which are caused by the interaction of effects, or by associated or off-site projects, are classed as indirect effects. Cumulative effects are often indirect, arising from the accumulation of different effects that are individually minor. Such effects are not caused or controlled by the project developer.

A review of other off-site developments and Proposed Developments was completed as part of this assessment. The following projects and plans were reviewed and considered for possible cumulative effects with the Proposed Development.

Table 5-6 details the existing, proposed and granted planning permissions on record in the area:

Table 5-6: Potential Cumulative Impacts

Planning Ref No.	Applicant Name	Summary of Development
3537/21	Coombe Lying-in Hospital	Planning permission for development at the Coombe Women and Infants University Hospital, Dolphin's Barn Street, Dublin 8, D08 XW7X on a 0.15 hectare site to the south-east of the hospital site, such site also including the existing Colposcopy building. The development for which planning permission is sought comprises of the development of a new dedicated Colposcopy/Women's Health Unit building of 3 no. storeys plus rooftop plant room which will be attached to the existing Colposcopy building to the west by way of glazed link. The development will include the partial demolition of the eastern meeting room and lobby area wing to the existing Colposcopy building to facilitate the connection to the new building. The proposed building comprises of a 988 sq.m gross floor area building. The building will comprise of: (i) at ground floor level; a waiting area, 2 wc's (1 accessible), 1 plant room, 1 meeting room, 3 gynaecology examination rooms (with associated changing rooms), 1 utility room, a waste room, an early pregnancy assessment unit with dedicated entrance, 2 assessment rooms, reflection room, 1 wc, and an office/reception; (ii) at first floor; a waiting area, a check in room, a supplies store, 2 wc's (1 accessible), 4 colposcopy examination rooms and with associated changing and consultation areas, a utility and a waste room; (iii) at second floor; a meeting room, 2 staff changing rooms (1 accessible with shower and wc), a wc, a staff canteen, a photocopier room and 4 staff office rooms. The proposed Colposcopy building will involve the loss of 10 existing parking spaces, at the south- eastern corner of the hospital site. 2 number accessible car parking spaces will be provided to the south of the proposed extension. Planning permission is also sought for site drainage, a glazed link to the existing Colposcopy building, site landscaping works, and all other associated and ancillary works. Access is via the main hospital campus which is accessed from Dolphin's Barn Street. Grant Permission 25 Apr 2022
SHD0031/20 ABP 308917-20	DBTR-SCR1 Fund, a Sub-Fund of the CWTC Multi Family ICAV,	Demolition of all buildings excluding the original fabric of the former Player Wills Factory, construction of 492 no. Build to Rent apartments, 240 no. Build to Rent shared accommodation along, creche and associated site works. Grant Permission 15 Apr 2021
ABP-307221-20	DBTR-SCR1 Fund a Sub-Fund of the CWTC	Demolition of all structures, construction of 416 no. residential units (4 no. houses, 412 no. apartments) and associated site works. Planning Permission Granted with Conditions 14/09/2020

Planning Ref No.	Applicant Name	Summary of Development
	Multi Family ICAV	
4049/19	The Coombe Women & Infant's University Hospital	The development will consist of a new four storey laboratory building (1340m^2) within the existing Coombe site with the provision of rooftop plant and 2 no. rear extensions to the existing adjacent laboratory building to include a new link, office and store (68m2) with all associated site works. This application site is in S.D.R.A. no.12, St. Teresa's Gardens and Environs Strategic Development and Regeneration Area. Grant Permission 11 Feb 2020
Ref 2475/18	D.C.C Housing Development	Pursuant to the requirements of the above, notice is hereby given of the intention to amend the previously permitted development comprising 50 no. units (16 no. apartments, 24 no. 3 bedroom terraced houses and 10 no. 2 bedroom terraced units - Planning ref 2033/14) to allow for the construction of an additional 4 no. terraced residential units and associated works; amendments to the design of 12 no. previously permitted units; development of a temporary grass multisport pitch in addition to the previously permitted park development (Phase A); demolition of 2 no. existing flat blocks to facilitate the future provision of a landmark park (Phase B) with full size multisport pitch and associated works at St. Teresa's Gardens, Donore Avenue, Dublin 8.
ABP-314171-22 (BG2)	CWTC Multi Family ICAV acting solely in respect of its sub fund DBTR SCR 1 Fund	Demolition of buildings, construction of 345 no. residential units (292 no. Build to Rent apartments, 49 no. Build to Sell apartments, 4 no. Build to Sell Houses) creche and associated site works. Case is due to be decided by 14/11/2022 www.bgscr1shd2.ie

As part of the assessment of the impact of the Proposed Development, account has also been taken of cumulative projects, i.e. developments that are currently permitted or under construction within the surrounding area, but whose environmental impact are not yet fully realised within the existing environmental baseline. Following a review of projects located in proximity to the Proposed Development it was determined that no significant projects are proposed or currently under construction that could potentially cause in combination effects on designated conservation sites. The projects outlined will be carried out in accordance with regulatory requirements to ensure that they have no significant effects. In addition, there is no direct pathway for pollutants from the proposed development site to designated sites and the proposed development site is of low biodiversity value.

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

5.6 Mitigation Measures & Monitoring

5.6.1 Construction Phase

Standard construction and operational controls will be incorporated into the Proposed Development to minimise the potential negative impacts on the ecology within the Zone of Influence (ZoI).

Designated Conservation sites within 15km

Mitigation measures are required to ensure that there are no contaminated discharges from the site including surface runoff leading to the existing surface water drainage network and the Poddle Stream and downstream designated sites.

Development Construction

Contamination of watercourses. As the surface water drainage network leading to the Poddle Stream is located proximate to the Proposed Development site and substantial works are proposed, a project ecologist will be appointed prior to works or site clearance commencing on site. All mitigation design must be carried out in consultation with and to the satisfaction of the project ecologist, following the best practice guidelines for construction in the vicinity of watercourses.

All works on site will have sufficient mitigation measures to prevent silt from runoff during works. This will include measures outlined by the project ecologist including silt fences, phasing of the Proposed Development and landscaping at early stage of the Proposed Development to limit surface runoff.

5.6.1.1 Drainage on site.

a) Channels will be prepared on site, in the vicinity of future access roads. Within these channels silt fences/barriers will be placed and will consist of woven/terram style material of suitable density to remove the majority of silt from runoff. These will be maintained throughout the construction phase to ensure efficiency, prior to the installation of the permanent drainage network.
b) Silt fences will be placed along the edge of the riparian corridor (outside of future construction areas) to capture runoff from the site. These will also prevent machinery from entering the riparian corridor.
c) Mitigation measures including silt fences will be in place (in consultation with the project ecologist) to capture silt from runoff and prevent it from entering the drainage ditch during the culvert works.
d) Appropriate storage and settlement facilities will be provided on site. This could include the provision of silt and petrochemical interception for water pumped on site (if required).
e) Fuel, oils and Chemicals will be stored on an impervious base with a bund. Under LEED there will be a strategy put in place to prevent pollution of the watercourse. In most cases this will involve collecting the run-off and routing it to treatment by filtration, settlement or specialist techniques.
f) A project ecologist will be appointed to oversee works.

g) The project ecologist will inspect the interceptors on site post construction.

5.6.1.2 Birds

a) Relevant guidelines and legislation (Section 40 of the Wildlife Acts, 1976 to 2012) in relation to bird nesting will be complied with. Should this not be possible, a pre-works check by a qualified ecologist should be undertaken to ensure nesting birds are absent.

5.6.1.3 Bats

a) Lighting at all construction stages will be done sensitively on site with no direct lighting of site boundaries and lands to the south of the Proposed Development.
b) Lighting during operation will be controlled and spill in to the site to the south of the site.

5.6.2 Operational Phase

5.6.2.1 Drainage on site.

a) The project ecologist will inspect the interceptors on site post construction.

5.6.3 Adverse Effects likely to occur from the Proposed Development (post mitigation)

Standard construction and operational mitigation measures are proposed. These would ensure that surface water entering the existing public surface water drainage network and the Poddle Stream is clean and uncontaminated. However, it should be noted that the early implementation of ecological supervision on site at initial mobilisation and enabling works is seen as an important element to the Proposed Development, particularly in relation to the implementation of surface water runoff mitigation.

With the successful implementation of standard mitigation measures to limit surface water impacts and biodiversity mitigation/supervision, no significant impacts are foreseen from the construction or operation of the Proposed Development. Residual impacts of the Proposed Development will be localised to the immediate vicinity of the proposed works. Positive impacts would be seen through the implementation of a landscape strategy with greater potential for biodiversity than currently exists on site.

The construction and operational mitigation proposed for the development satisfactorily addresses the mitigation of potential impacts on biodiversity and designated conservation sites through the application the standard construction and operational phase controls as outlined above. In particular, mitigation measures to ensure compliance with Water Pollution Acts and prevent silt and pollution entering the existing public surface water drainage network will satisfactorily address the potential impacts on downstream biodiversity. Following the implementation of mitigation, no adverse effects on the conservation objectives of Natura 2000 sites are likely.

It is essential that these measures outlined are complied with, to ensure that the Proposed Development does not have “downstream” environmental impacts. These measures are to

protect the groundwater/surface water, which are potentially the primary vectors of impacts from the site.

5.7 Residual Impacts Conclusion

The construction and operational mitigation proposed for the development satisfactorily addresses the mitigation of potential impacts on the sensitive receptors through the application the standard construction and operational phase controls. The overall impact on the ecology of the Proposed Development will result in a long term slight adverse, negative but not significant residual impact on the ecology of the area and locality overall. This is primarily as a result of the loss of terrestrial habitats on site, supported by the creation of additional landscape features and habitat complexity, standard construction and operational controls and a sensitive native landscaping strategy.

5.8 Monitoring

5.8.1 Construction Phase

During the construction phase a project ecologist will be appointed to oversee the construction works.

5.8.2 Operational Phase

There are no monitoring requirements specifically in relation to biodiversity during the Operational Phase of the Proposed Development.

5.9 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 and landscape elements of the Proposed Development. There are numerous inter-related environmental topics described in detail throughout this EIAR document which are of relevance to the biodiversity chapter.

5.9.1 Material Assets - Water

Any discharges to the public foul sewer and abstractions from water supply from the Proposed Development will be under consent from Irish Water. An assessment of the potential impact of the Proposed Development on the Material Assets including built services, infrastructure, traffic, and waste management has been set out in Chapter 12 of this EIAR.

5.9.2 Land, Soil, Geology and Hydrogeology

An assessment of the potential impact of the Proposed Development on the existing land, soils and geological environment during the Construction and Operational Phases of the Proposed Development is set out in Chapter 6 Land, Soil and Geology.

5.9.3 Hydrology

An assessment of the potential impact of the Proposed Development on the Hydrology during the Construction and Operational Phases of the Proposed Development is set out in Chapter 7 Land, Soil and Geology.

5.10 Difficulties Encountered When Compiling

No difficulties were encountered in relation to the preparation of the Biodiversity Chapter. The bat surveys was undertaken within the active bat period (April to September) and a detector survey was possible. Insects were observed in flight during the bat survey. Flora, habitat and mammal assessments were carried out within the optimal survey period.

5.11 References

1. Environmental Protection Agency (Guidelines on the Information to be Contained in Environmental Impact Assessment Reports 2022. EPA, Wexford
2. Environmental Protection Agency (September 2015): Draft - Advice Notes on Current
3. Practice (in the preparation on Environmental Impact Statements). EPA, Wexford
4. Environmental Protection Agency 1995 Draft guidelines on the information to be contained in Environmental Impact Statements. EPA, Wexford, Ireland.
5. CIEEM (2019) Guidelines for Ecological Impact Assessment in the UK and Ireland, Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management.
6. DoEHLG (2018) Guidelines for Planning Authorities and An Bord Pleanála on Carrying out Environmental Impact Assessment. Department of Housing, Local Government and Heritage
7. Environmental Protection Agency 2002 Guidelines on the information to be contained in Environmental Impact Statements. EPA, Wexford, Ireland.
8. Hayden, T. & Harrington, R. 2000 Exploring Irish mammals. Duchas. Town House, Dublin.
9. Institute of Environmental Assessment. 1995 Guidelines for Baseline Ecological Assessment. E&FN Spon, London.
10. Lawrence, M.J. & Brown, R.W. 1973 Mammals of Britain: their tracks, trails and signs. Blandford Press, Dorset, UK.
11. Lysaght, L. & Marnell, F (eds.) 2016 Atlas of Mammals in Ireland 2010-2015. National Biodiversity Centre, Waterford.
12. NPWS 2019 The status of protected EU habitats and species in Ireland. DoEHLG, Dublin, Ireland.
13. 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
14. 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
15. 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
16. The Status of EU Protected Habitats and Species in Ireland. http://www.npws.ie/publications/euconservationstatus/NPWS_2007_Conservation_Status_Report.pdf
17. Fossitt. (2000) A Guide to Habitats in Ireland. The Heritage Council
18. IFI (2016) Guidelines on the Protection of Fisheries During Construction Works in and Adjacent to Waters. Inland Fisheries Ireland
19. Jackson, M. W., et al. (2016) Ireland Red Lists No. 10 Vascular Plants. The IUCN Red List of Vascular Plants.
20. King, J.L., Marnell, F., Kingston, N., Rosell, R., Boylan, P., Caffrey, J.M., FitzPatrick, Ú., Gargan, P.G., Kelly, F.L., O'Grady, M.F., Poole, R., Roche, W.K. & Cassidy, D. (2011) Ireland Red List No. 5: Amphibians, Reptiles & Freshwater Fish. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.
21. NPWS (2013) Conservation Objectives: South Dublin Bay SAC 000210. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
22. NPWS (2013) Conservation Objectives: North Dublin Bay SAC 000206. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
23. NPWS (2012) Conservation Objectives: Baldoyle Bay SAC 000199. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
24. NPWS (2013) Conservation Objectives: Malahide Estuary SAC 000205. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
25. NPWS (2016) Conservation Objectives: Howth Head SAC 000202. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.
26. NPWS (2013) Conservation Objectives: Rockabill to Dalkey Island SAC 003000. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
27. NPWS (2021) Conservation Objectives: Glenasmole Valley SAC 001209. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.
28. NPWS (2017) Conservation Objectives: Wicklow Mountains SAC 002122. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs
29. NPWS (2021) Conservation Objectives: Rye Water Valley/Carton SAC 001398. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage

30. NPWS (2021) Conservation Objectives: Knocksink Wood SAC 000725. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage

31. 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.

32. NPWS (2015) Conservation Objectives: North Bull Island SPA 004006. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

33. NPWS (2013) Conservation Objectives: Baldoyle Bay SPA 004016. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

34. NPWS (2013) Conservation Objectives: Malahide Estuary SPA 004025. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

35. NPWS (2022) Conservation objectives for Wicklow Mountains SPA [004040]. Generic Version 9.0. Department of Housing, Local Government and Heritage

36. NPWS (2022) Conservation objectives for Dalkey Islands SPA [004172]. Generic Version 9.0. Department of Housing, Local Government and Heritage

6 LAND AND SOIL

6.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) provides a description of the land, soils and geology within and immediately surrounding the Site of the Proposed Development and an assessment of the potential impacts of the Proposed Development on land, soils and geology and sets out any required mitigation measures where appropriate.

The principal objectives of this chapter are to identify:

- Land, soils and geological characteristics of the Site;
- Potential impacts that the Proposed Development may have on land, soils and geology including geological heritage assessments including "worst case" scenario assessment;
- Potential constraints that these features may place on the Proposed Development;
- Required mitigation measures which may be necessary to prevent or minimise any adverse impacts related to the Proposed Development; and
- Evaluate the significance of any residual impacts.

6.1.1 Quality Assurance and Competence

This chapter of the EIAR was written by Fionnuala Joyce, BSc., MSc., Hydrogeologist who has five years experience of land soils and geological impact assessments. This chapter was reviewed by Claire Clifford BSc., MSc., PGeo., EurGeol who is Technical Director with Enviroguide Consulting and a Professional Geologist with the Institute of Geologists of Ireland. Claire has over 19 years experience in preparing environmental assessments for a range of project types including Strategic Housing Developments in varying and geological site settings.

6.1.2 Description of the Proposed Development

The Proposed Development will consist of the construction of a residential scheme of 543 no. apartments on an overall site of 3.26 ha (GFA of c. 53,227 sqm) containing the following mix of apartments:

- 225 No. 1 bedroom apartments (36 no. 1-person & 189 no. 2-person)
- 274 No. 2 bedroom apartments (including 52 No. 2 bed 3 person apartments and 222 No. 2 bed 4 person apartments)
- 44 No. 3 bedroom 5-person apartments
- A retail/café unit (168 sq.m.), mobility hub (52 sq.m.) and 952 sq.m. of community, artist workspace, arts and cultural space, including a creche, set out in 4 No. blocks.

The breakdown of each block will contain the following apartments:

- Block DCC1 comprises 111 No. apartments in a block of 6-7 storeys;
- Block DCC 3 comprises 247 No. apartments in a block of 6-15 storeys;
- Block DCC5 comprises 132 No. apartments in a block of 2-7 storeys;
- Block DCC6 comprises 53 No. apartments in a block of 7 storeys;

The Proposed Development will also provide for public open space of 3,408 sqm, communal amenity space of 4,417 sqm and an outdoor play space associated with the creche. Provision of private open space in the form of balconies or terraces is provided to all individual apartments.

The Proposed Development will provide 906 no. residential bicycle parking spaces which are located within secure bicycle stores. 5% of these are over-sized spaces which are for large bicycles, cargo bicycles and other non-standard bicycles. In addition, 138 spaces for visitors are distributed throughout the site.

A total of 79 no. car parking spaces are provided at undercroft level. Six of these are mobility impaired spaces (2 in each of DCC1, DCC3 & DCC5). 50% of standard spaces will be EV fitted. Up to 30 of the spaces will be reserved for car sharing (resident use only). A further 15 no. on-street spaces are proposed consisting of:

- 1 no. accessible bay (between DCC5 & DCC6)
- 1 no. short stay bay (between DCC5 & DCC6)
- 1 no. crèche set-down / loading bay (between DCC5 & DCC6)
- 1 no. set-down / loading bay (northern side of DCC5)
- 1 no. set-down/loading bay (northern side of DCC 3)
- 10 no. short stay spaces (north-east of DCC1)

In addition, 4 no. motorcycle spaces are also to be provided.

Vehicular, pedestrian and cyclist access routes are provided from a new entrance to the north-west from Margaret Kennedy Road. Provision for further vehicular, pedestrian and cyclist access points have been made to facilitate connections to the planned residential schemes on the Bailey Gibson & Player Wills sites for which there are extant permissions (Ref. No.'s ABP-307221-20 & ABP-308917-20).

The development will also provide for all associated ancillary site development infrastructure including site clearance & demolition of boundary wall along Margaret Kennedy Road and playing pitch on eastern side of site and associated fencing/lighting, the construction of foundations, ESB substations, switch room, water tank rooms, storage room, meter room, sprinkler tank room, comms room, bin storage, bicycle stores, green roofs, hard and soft landscaping, play equipment, boundary walls, attenuation area and all associated works and infrastructure to facilitate the development including connection to foul and surface water drainage and water supply.

The Proposed Development Site layout is presented in Figure 6-1.

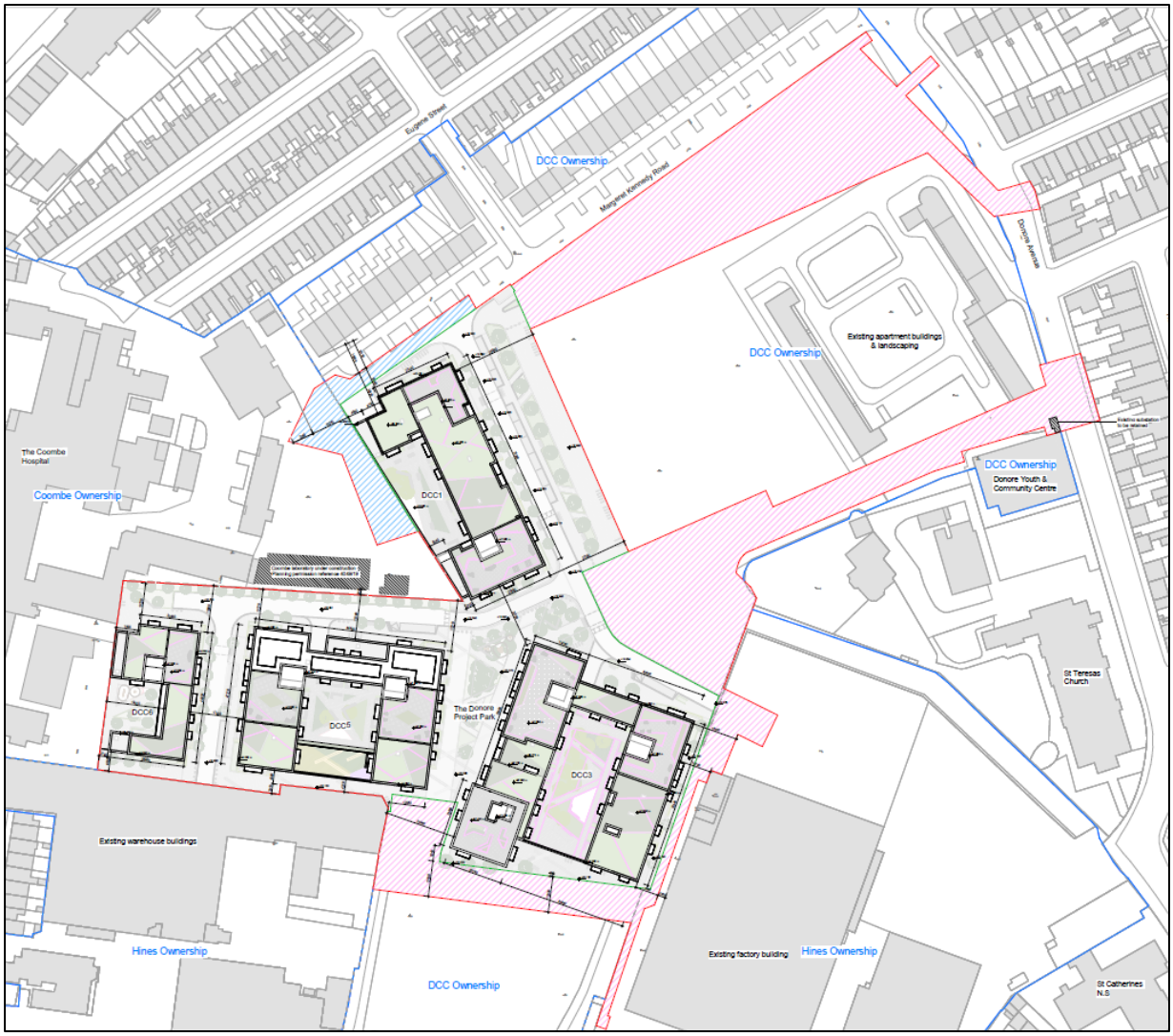


Figure 6-1: Proposed Site Layout (refer to DWG No.: STG-MW-S1b-00-XX-DR-A-1100002-S4-P1, Metropolitan Workshop Ltd, September, 2022)

6.2 Study Methodology

6.2.1 Regulations and Guidance

The methodology adopted for the assessment takes cognisance of the relevant guidelines in particular, the following:

- Directive 2011/92/EU- of The European Parliament and of the Council on the assessment of the effects of certain public and private projects on the environment as amended by Directive 2014/52/EU
- Directive 2008/98/EC - of The European Parliament and of the Council on waste and repealing certain Directives as amended
- Environmental Protection Agency, May 2022. Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022)
- Environmental Protection Agency, 2002. Guidelines on Information to be contained in Environmental Impact Statements (EPA, 2002);

- Environmental Protection Agency, 2003. Advice Notes on Current Practice in the preparation of Environmental Impact Statements (EPA, 2003);
- Institute of Geologists of Ireland Guidelines, 2002. Geology in Environmental Impact Statements, A Guide (IGI, 2002);
- Institute of Geologists of Ireland Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements (IGI, 2013); and
- National Roads Authority, 2009. Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (NRA, 2009).

6.2.2 Phased Approach

A phased approach was adopted for this EIAR in accordance with Environmental Protection Agency (EPA) and Institute of Geologists of Ireland (IGI) guidelines as set out above and is described in the following sections.

Element 1: An Assessment and Impact Determination stage was carried out by Enviroguide to establish the project location, type and scale of the development, the baseline conditions, and the type of land, soils and geological environment, to establish the activities associated with the Proposed Development and to undertake an assessment and impact determination.

This stage of the assessment included a desk top study that comprised a review of the following sources of information:

- Environmental Protection Agency (EPA) web mapping 2022;
- GSI Datasets Public Viewer and Groundwater web mapping, 2022;
- Ordnance Survey Ireland (OSI) web mapping 2022;
- National Parks and Wildlife Services (NPWS) web mapping 2022; and
- Information provided by the Applicant including:
    - AECOM, 2022 (AECOM, 2022a), The Donore Project Part 10 Application Infrastructure Report;
    - AECOM, 2022 (AECOM, 2022b). Construction & Demolition Waste Management Plan Donore Project, Donore Avenue, Dublin 8.;
    - AECOM, 2022. (AECOM, 2022c). Overall Proposed Drainage Layout (Sheet No.: STG-AEC-S1b-00-DR-C-0000500);
    - Metropolitan Workshop Ltd., 2022. Proposed Site Layout (Drawing No.: STG-MET-S1b-00-00-DR-A-1100002-S4-P1); and
    - Ground Investigations Ireland, October 2021 (GII, 2021) Saint Teresa's Gardens AECOM Waste Classification & GQRA Report (Appendix H)

The study area, for the purposes of assessing the baseline conditions for the Land, Soils and Geology Chapter of the EIAR, extends beyond the site boundaries and includes potential receptors with which there may be a pathway to from the Proposed Development and receptors that may be indirectly impacted by the Proposed Development. The extent of the wider study area was based on the IGI, 2013 Guidelines which recommend a minimum distance of 2.0km from the Site.

Element 2: Based on a review of the information compiled and reviewed in Element 1, it was determined that an additional direct or indirect site investigations and studies stage was not required as there was sufficient information including direct site investigation data, for the

Proposed Development Site that provide sufficient insight on the subsurface and geological conditions at the Site to inform the impact assessment of the Proposed Development Site on the receiving land, soil, and geology environment.

Element 3: Mitigation Measures, Residual Impacts and Final Impact Assessment were based on the outcome of the information gathered in Element 1 of the assessment. Mitigation measures to address all identified adverse impacts that were identified in Element 1 of the assessment were considered. These mitigation measures were then considered in the impact assessment to identify any residual impacts.

6.2.3 Description and Assessment of Potential Impact

The Transport Infrastructure Ireland (TII) criteria for rating of the importance of geological features at the Site as documented in the National Roads Authority Guidelines (NRA, 2009), are summarised in Table 6-1.

Impacts will vary in quality from negative, to neutral or positive. The effects of impacts will vary in significance on the receiving environment. Effects will also vary in duration. The terminology and methodology used for assessing the 'impact' significance and the corresponding 'effect' throughout this chapter is described in Table 6-1.

Table 6-1: Criteria for Rating Site Importance of Geological Features

Importance	Criteria	Typical Example
Very High	Attribute has a high quality, significance or value on a regional or national scale. Degree or extent of soil contamination is significant on a national or regional scale. Volume of peat and/or soft organic soil underlying route is significant on a national or regional scale.	Geological feature rare on a regional or national scale (NHA). Large existing quarry or pit. Proven economically extractable mineral resource.
High	Attribute has a high quality, significance or value on a local scale. Degree or extent of soil contamination is significant on a local scale. Volume of peat and/or soft organic soil underlying route is significant on a local scale.	Contaminated soil on-site with previous heavy industrial usage. Large recent landfill site for mixed wastes. Geological feature of high value on a local scale (County Geological Site). Well drained and/or high fertility soils. Moderately sized existing quarry or pit. Marginally economic extractable mineral resource.
Medium	Attribute has a medium quality, significance or value on a local scale. Degree or extent of soil contamination is moderate on a local scale. Volume of peat and/or soft organic soil underlying route is moderate on a local scale.	Contaminated soil on-site with previous light industrial usage. Small recent landfill site for mixed wastes. Moderately drained and/or moderate fertility soils. Small existing quarry or pit. Sub-economic extractable mineral resource.
Low	Attribute has a low quality, significance or value on a local scale. Degree or extent of soil contamination is minor on a local scale. Volume of peat and/or soft organic soil underlying route is small on a local scale.	Large historical and/or recent site for construction and demolition wastes. Small historical and/or recent landfill site for construction and demolition wastes. Poorly drained and/or low fertility soils. Uneconomically extractable mineral resource.

6.2.4 Description and Assessment of Potential Impact

Impacts will vary in quality from negative, to neutral or positive. The effects of impacts will vary in significance on the receiving environment. Effects will also vary in duration. The terminology and methodology used for assessing the 'impact' significance and the corresponding 'effect' throughout this Chapter is described in Table 6-2 as per EPA,2022 Guidelines on the information to be contained in Environmental Impact Assessment Reports..

Table 6-2: Assessment of Potential Terminology and Methodology

Quality of Effects / Impacts	Definition
Negative	A change which reduces the quality of the environment
Neutral	No effects or effects that are imperceptible, within the normal bounds of variation or within the margin of forecasting error.
Positive	A change that improves the quality of the environment
Significance of Effects / Impacts	**Definition**
Imperceptible	An effect capable of measurement but without significant consequences.
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters a sensitive aspect of the environment.
Profound	An effect which obliterates sensitive characteristics.
Duration of Effects / Impacts	**Definition**
Momentary	Effects lasting from seconds to minutes
Brief	Effects lasting less than a day
Temporary	Effects lasting one year or less
Short-term	Effects lasting one to seven years
Medium-term	Effects lasting seven to fifteen years
Long-term	Effects lasting fifteen to sixty years
Permanent	Effects lasting over sixty years
Reversible	Effects that can be undone, for example through remediation or restoration

6.3 The Existing and Receiving Environment (Baseline Situation)

6.3.1 Site Location

The Proposed Development Site occupies 3.26 hectares (Ha) and is bound to the south by a number of industrial units along South Circular Road, to the east and north-east by Donore Avenue and Ebenezer Terrace and by Margaret Kennedy Road to the north-west and Cameron Court beyond.

The Proposed Development Site location is presented in Figure 6-2.

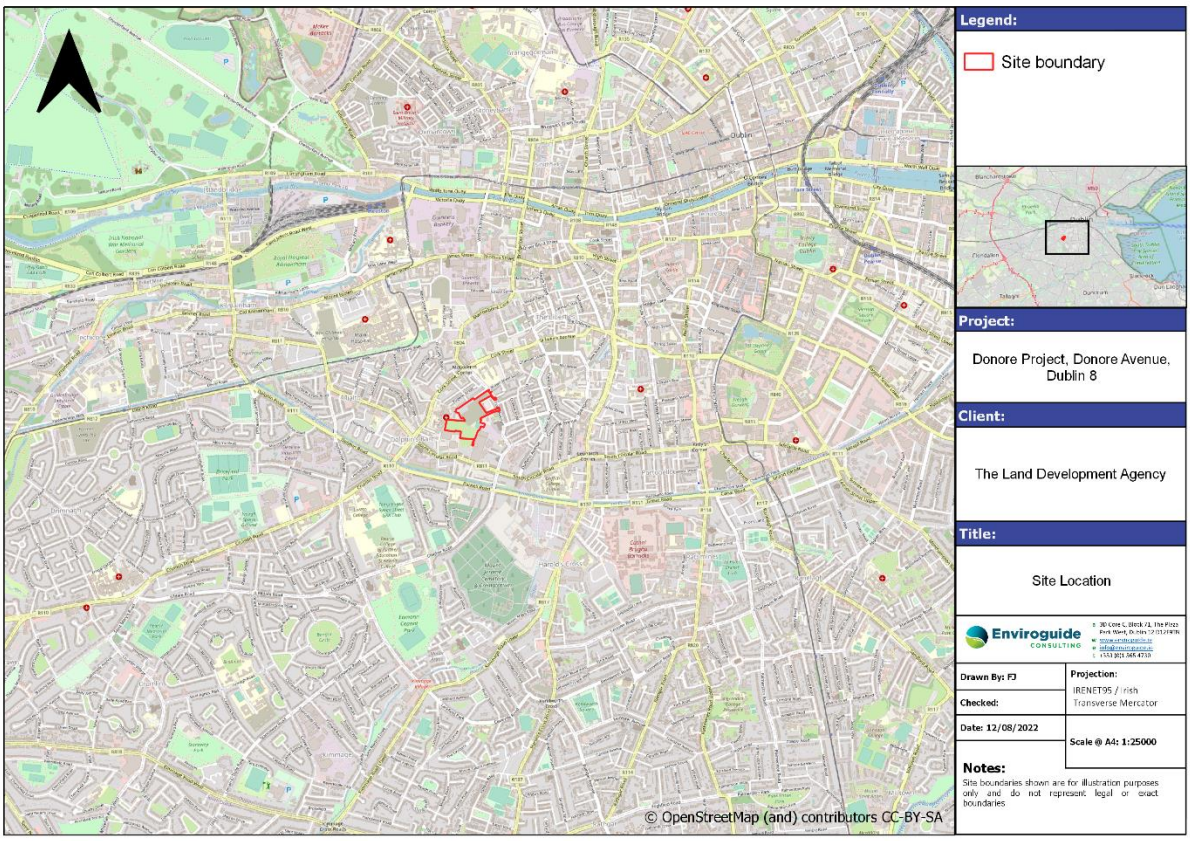


Figure 6-2: Site Location

6.3.2 Current and Historical Land Use

Historical mapping and aerial photography available from the Ordnance Survey of Ireland website (OSI, 2022) and Google Earth (Google Earth, 2022) were reviewed and key observations on-site and off-site are summarised in Table 6-3.

Table 6-3: Historical Land Use

Date	Information Source	Site Description
1837-1842	**OSI map 6inch**	**On-site:** The Proposed Development Site is shown as open fields divided by field boundaries. **Off-site:** The surrounding lands are predominantly open fields divided by field boundaries with a number of unidentified houses to the west of the Site There is a "nunnery" and a "female school" 66.2m south of the site. The grand canal is located 264m south of the site. South Circular Road is located 121m south of the site. There is a hospital located 192m north of the site.
1888-1913	**OSI map 25inch**	**On-site:** No significant changes. **Off-site:** The area surrounding the site is made up of residential houses.
1830-1930	**OSI Cassini map 6inch**	**On-site:** There is a "Factory & Printing Works" mapped on the western portion of the Site **Off-site:** There is a laundry mapped adjoining the western boundary of the site. There is tobacco factory located outside the southern boundary of the site. There is a school situated 98m east of the site and a cinema 178m west of the site. The Griffith Barracks is located 441m south-east of the site.
1995	**OSI Aerial photography**	**On-site:** The northern section of the site comprises a number of residential blocks and the eastern section of the site is shown to be undeveloped **Off-site:** The addition of more housing estates surrounding the site. The Coombe Women and Infants University Hospital is situated outside the western boundary of the Site.
2000	**OSI Aerial photography**	**On-site:** No significant changes. **Off-site:** No significant changes.
2005	**OSI Aerial photography**	**On-site:** No significant changes. **Off-site:** No significant changes.
2005-2012	**OSI Aerial Photography**	**On-site:** No significant changes. **Off-site:** No significant changes.
2013-2018	**OSI Aerial photography**	**On-site:** Some of the residential blocks are shown to be demolished in the northern portion of the site. **Off-site:** No significant changes.
2022	**Google Maps Photography**	**On-site:** Residential buildings are shown bounding the north-western site boundary. The residential units in the northern portion of the site are no longer shown and the rest of the land holding is undeveloped. **Off-site:** No significant changes.

The Site has previously remained undeveloped while a small portion of land located of the Site has been previously used for some industrial/ commercial use in the western and southern areas and more recently for residential as part of the now largely demolished St. Teresa's Gardens flats complex with a mix of residential buildings and public open spaces. The Site is currently undeveloped brownfield land.

The lands located within the Proposed Development Site are zoned for "Strategic Development & Regeneration Area" under the Dublin City Council Development Plan for the

period of 2016-2022 (DCC, 2016) and for "Strategic Development and Regeneration Area" under the Dublin City Development Plan 2022-2028.

6.3.3 Licenced Sites

There are two (2 no.) EPA licenced facilities located within a 2km radius which are described in Table 6-4.

Table 6-4: EPA Licenced Sites within 2km of the Site

Facility Name	Licence No.	Location from Site	Distance from Site (km)
B.G. Flexible Packaging Limited.	P305-01	West	0.75
Diageo Ireland (St. James Gate)	P0301-04	North	0.18

6.3.4 Topography

The regional topography generally slopes towards the north and to the east around the Proposed Development from the regional highpoint of Belgard Park which is located approximately 8.23km southwest of the Site.

The topography at the Site slopes towards the north with elevations recorded at 17.82mOD in the northern portion of the Site and at 19.99maOD in the southern portion of the Proposed Development (Metropolitan Workshop Ltd., 2022).

6.3.5 Soils

The soils beneath the Site are mapped as "Made ground" (MADE) described as "Made/ built land" (GSI, 2022). The GSI (GSI, 2022) mapped soils at the Site are presented in Figure 6-3.

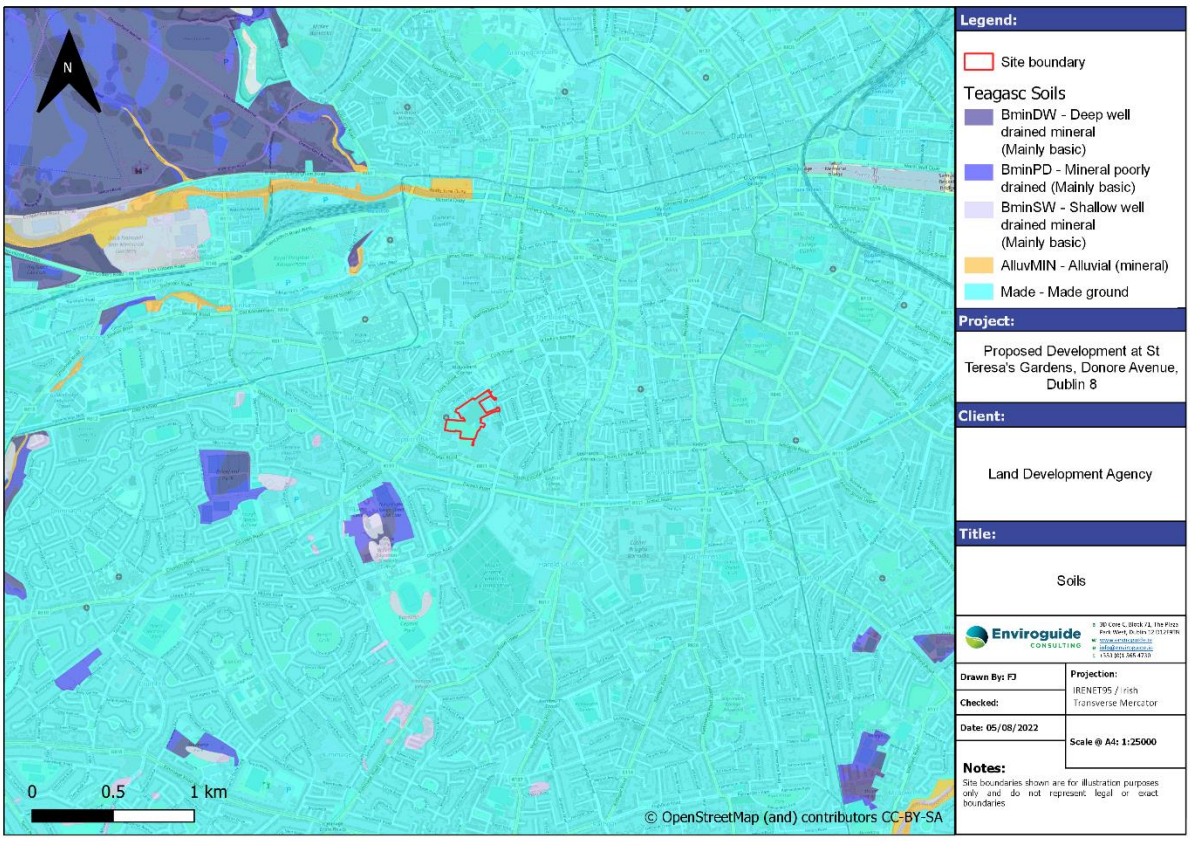


Figure 6-3: Soils

6.3.6 Quaternary Soils

The quaternary sediments beneath the majority of the Site are mapped as Till derived from limestones (TLs) while quaternary sediments underlying the south-eastern corner of the Site are mapped as Gravels derived from Limestone (GLs) (GSI, 2022). The quaternary geology at the Proposed Development Site is presented in Figure 6-4.

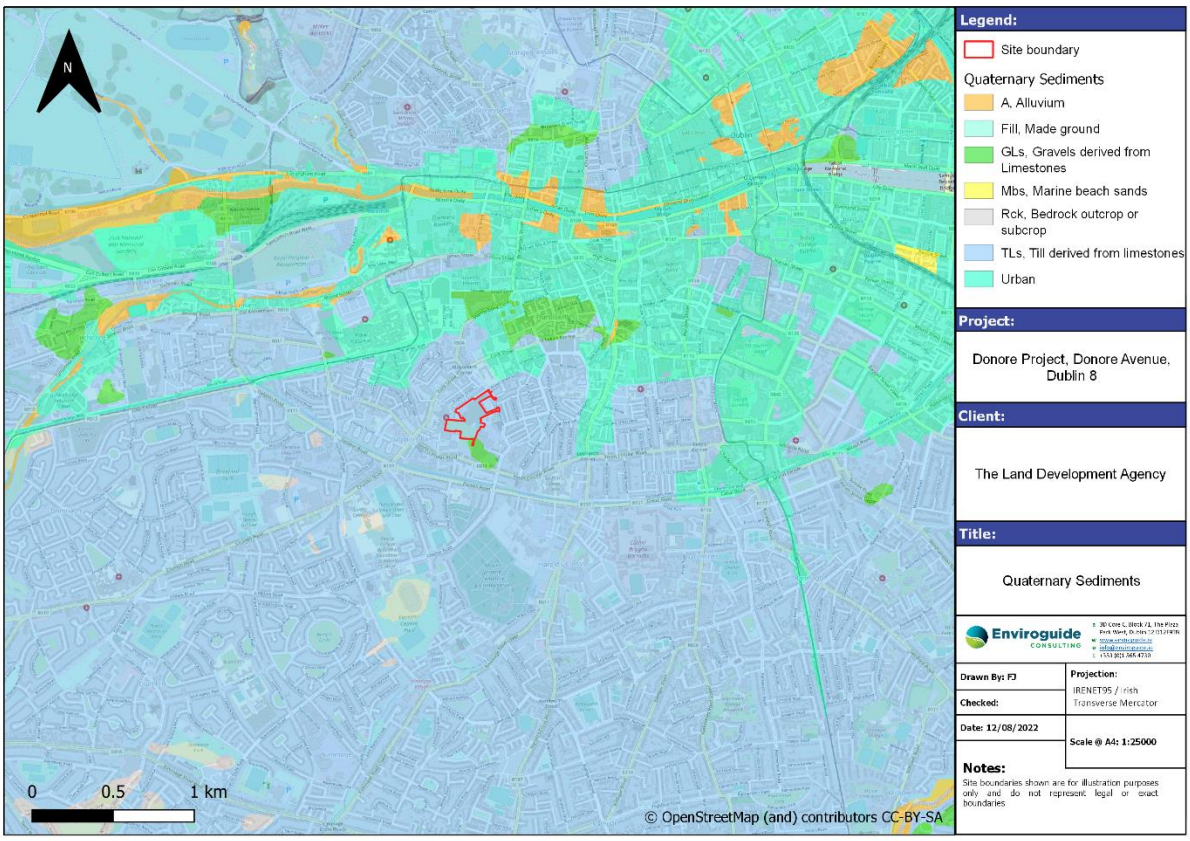


Figure 6-4: Quaternary Sediments

6.3.7 Quaternary Geomorphology

Quaternary sediments underlying the south-eastern corner of the Site which are mapped by the GSI as Gravels derived from Limestones are also mapped as a hummocky sand and gravel deglacial landform (GSI, 2022) as shown in Figure 6-4.

There are three undifferentiated meltwater channels and glaciofluvial terrace landforms of the Liffey River System identified within a 2km radius of the Proposed Development Site; two located approximately 1.1km and 1.75km north of the Site and one located approximately 1.05km north-west of the Site (GSI, 2022).

There is also a streamlined bedrock subglacial lineation identified 1.77km northwest of the Proposed Development Site. The subglacial lineation is orientated in a northwest to southeast direction (GSI, 2022).

6.3.8 Bedrock Geology

Based on the GSI database (GSI, 2022) the bedrock beneath the Proposed Development Site is mapped as the Lucan Formation (Stratigraphic Code: LU; New Code CDLUCN) which is comprised of dark-grey to black, fine-grained, occasionally cherty, micritric limestones that weather paler, usually to pale grey from the lower Carboniferous period. The formation ranges from 300m to 800m in thickness.

There are no outcrops mapped within the Site however, there are a number of outcrops mapped within a 2km radius of the Site, the closest of which is located 0.69km south-west of the Site. The GSI bedrock geology map is presented in Figure 6-5.

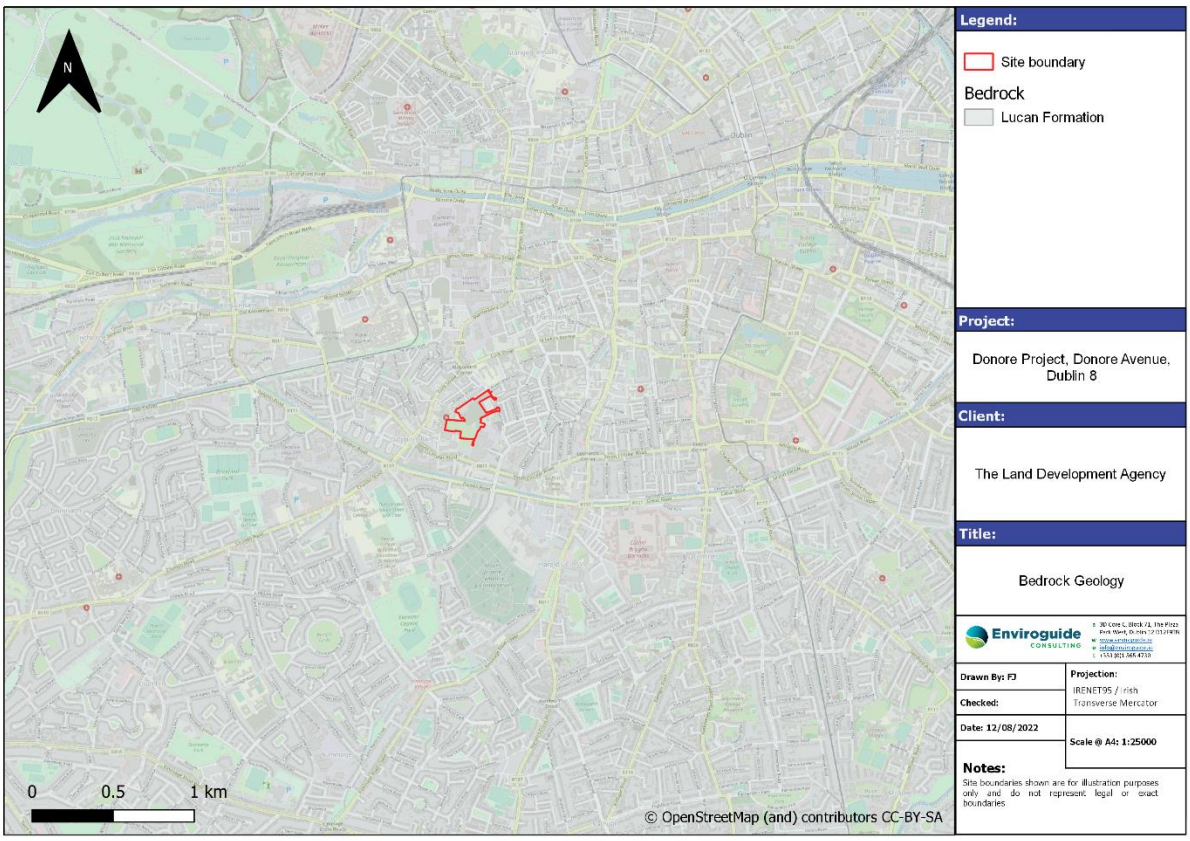


Figure 6-5: Bedrock Geology

6.3.9 Site Investigation Results

6.3.9.1 *Soils and Geology*

The soil and geology encountered during the site investigation (GII, 2021 refer to Appendix A) is summarised as:

- MADE GROUND as brown or grey slightly sandy, gravelly CLAY and / or grey, clayey GRAVEL with containing fragments of concrete, red brick, glass, ceramic and plastic which varies in thickness across the Site to depths of 0.7mbGL and 3.0mbGL at the Site;
- The made ground is underlain by stiff, grey to brown, slightly sandy, slightly gravelly CLAY and varies in thickness of 1.3m to 5m at the Site; and
- Bedrock was encountered between 4.2mbGL and 6.6mbGL beneath the stiff clay and comprised of interbedded grey thinly laminated, fine-grained Limestone and dark grey, fine-grained Mudstone.

6.3.9.2 *Groundwater*

Groundwater is assessed in Chapter 7 of this EIAR.

6.3.9.3 *Soil Analytical Results*

Soil analytical data for samples collected from the Site is provided in the site investigation report (GII, 2021) (Appendix A).

The made ground soils at the Site were identified to contain varying concentrations of metals, and hydrocarbons and results are summarised as follows:

- **Metals** It was identified that the concentrations of metals do not pose a risk to the receiving groundwater (GII, 2021 (Appendix H) and Enviroguide Consulting, 2022) however one of the 61 samples was located in shallow soil at the west of the Site (BH08 0.4-1.0m) was identified to contain an elevated mercury concentration in excess of the human health assessment criteria (GII, 2021) (Appendix A).

- **Petroleum hydrocarbons** Soil was identified to contain petroleum hydrocarbons (total aliphatic and aromatic C5-C40 (TPH)) in 10 of the 61 soil samples at concentrations ranging to a maximum of 660mg/kg (WS05 0-1.0m190mg/kg; WS09A 0.0-0.85m 660mg/kg; BH01 0-1.6m 286mg/kg; BH02 0.0-1.4m 456mg/kg; BH05 0.2-1.60m 171mg/kg; BH09 0.0-0.9m 105mg/kg; BH11 0.0-0.7m 144mg/kg; BH14 0.3-0.9m 96 mg/kg; BH15 0.3-0.8 m 120mg/kg; BH170-0.6m 208mg/kg). Where petroleum hydrocarbons were reported this was generally in the upper 1.6m of soil and petroleum hydrocarbons were not detected in samples from deeper depth. The reported soil concentrations for petroleum hydrocarbons at all other samples locations were below laboratory limit of detection (<52mg/kg).

  Reported concentrations of MTBE and BTEX (benzene toluene, ethylbenzene and xylene) were reported as less than laboratory limit of detection for all samples.

  There was no exceedance of human health risk assessment criteria for petroleum hydrocarbons in soil samples at the Site (Refer to Appendix A). The potential for leaching of soil contaminants to groundwater is considered to be limited albeit some impacts have been identified at the Site (Enviroguide Consulting, 2022).

- **Polycyclic Aromatic Hydrocarbons** Soil was identified to contain detectable concentrations of total Polycyclic Aromatic Hydrocarbons (PAH Total 17) in 24 of the 61 samples analysed at concentrations ranging up to a maximum of 22.52mg/kg (total PAHs reported at 22.52mg/kg at Site investigation location WS05 in the southern portion of the Site). PAHs were reported for samples collected from the upper 2.7m of soil and were not detected in sampled collected below this depth. There was no identified human health risk associated with petroleum hydrocarbons in soil at the Site.

- **Polychlorinated biphenyls (PCBS)** were not detected in soil sampled at the Site**.**
- **Asbestos** was not detected in soil sampled at the Site.

The potential impacts of soil contamination on the receiving water environment are discussed in Chapter 7 of this EIAR.

6.3.9.4 *Waste Classification*

The waste classification assessment results for sixty-one samples (61 No.), are presented in Appendix 8 of the GII, 2021 report (Appendix A) (Appendix H of this EIAR). The report does not identify any hazardous waste category from the site investigation at the Site.

Samples collected from made ground were found to meet the criteria set out in the GII report for waste category B1 (inert landfill), B2 (inert IMS landfill) and C (Non-Hazardous landfill). None of the samples were classified as Hazardous.

The key findings of the waste classification assessment are documented in the GII, 2021 report (Appendix H) and the waste classification summary is presented in Table 6-5.

Table 6-5: Waste Classification Summary (Source GII, 2021; Refer to Appendix A of the document, Appendix H of this EIAR)

Waste Classification	No. Sample Locations
Category A	28
Category B1 (inert).	15
Category B2 (inert IMS).	12
Category C (non-hazardous).	6
Category D (hazardous for export).	0

6.3.10 Radon

The majority of the Proposed Development Site is mapped by the EPA (EPA, 2022) as being in an area where about 1 in 20 homes in that area are likely to have high radon levels, while a portion of the eastern boundary of the Site is mapped as being in an area where about 1 in 10 homes are likely to have high radon levels.

The EPA cite the reference level for radon as 200 Bq/m^3 and a High Radon Area where more than 10% of homes may have more than the reference level of radioactivity. As 5-10% of the houses in the area are mapped by the EPA as being over this reference level it indicates that the Site is not considered a High Radon Area however, it is noted that a high radon level can be found in any home, in any part of the country.

6.3.11 Geohazards

The GSI (GSI, 2022) records for karst features indicate that there are no karst features within 2km of the Proposed Development Site and the closest karst feature within the Lucan Formation, which is the bedrock formation beneath the Proposed Development Site, is located approximately 14km to the northwest.

The Proposed Development Site is located within an area with a 'Low' landslide susceptibility classification (GSI, 2022). There are no recorded landslides at or within a 2km radius the Proposed Development Site and the closest is recorded for the Diswellstown1990 event at the Knockmaroon Glen Quarry. (GSI, 2022).

In Ireland, seismic activity is recorded by the Irish National Seismic Network operated by Dublin Institute for Advanced Studies (DIAS) which has been recording seismic events in Ireland since 1978. There are six permanent broadband seismic recording stations in Ireland operated by DIAS. Records since 2010 show that the majority of recorded seismic events were associated with quarry blasts and no recent events have been recorded within 2km of the Proposed Development Site or the greater Dublin area.

6.3.12 Geological Heritage

A review of the GSI Geological Heritage Database (GSI, 2022) indicates four geological heritage sites located within 2km radius of the Proposed Development which are summarized in Table 6-6.

Table 6-6: Sites of Geological Importance within 2km of the Proposed Development

Site Name	Site Code	Location	Distance from Site (km)	Geological Importance
River Poddle	**DC011**	East	0.71	The site is important owing to the channelisation and in the lore associated with the Poddle
Dublin City Walls	**DC002**	North-east	1.43	The walls are composed of local Calp Limestone, built between 1100 and 1125
Guinness Wells	**DC005**	North	1.21	For historical, technical and cultural importance, the wells within Dublin City are unusual
Phoenix Park	**DC009**	North	1.67	The complexity of the site in terms of its glacial form and the manipulation of this is unusual.

6.3.13 Economic Geology

The lands within the Site have no mapped granular aggregate potential however lands adjoining the eastern boundary are mapped by the GSI as having a 'low potential' (GSI, 2022).

The bedrock beneath the Site have been identified by the GSI as having a 'moderate potential' to 'high potential' for granular crushed rock aggregate (GSI, 2022).

There are a number of historical pits and quarries mapped by the GSI (GSI, 2022) located within a 2km radius of the Proposed Development Site which are listed in Table 6-7.

Table 6-7: Historical Pits and quarries located within 2km of the Proposed Development Sites

Name/Type	Status	Distance from Proposed Development(km)	Location from Site
Quarry	Historic	0.86	South-west
Pit	Historic	1.05	South-west
Pit	Historic	1.08	South-west
Clay pit	Historic	1.18	South-west
Quarry	Historic	1.22	West
Pit	Historic	1.3	West
Pit	Historic	1.61	North-west
Pit	Historic	1.88	North-west
Pit	Historic	1.51	North-west
Quarry	Historic	1.64	South

6.3.14 Summary of Baseline Environment

It is noted that, in accordance with the TII Guidance as documented by the NRA (NRA, 2009) and as outlined in Table 6-5 the soil and geology underlying the Proposed Development would be rated as attributes of 'low to medium' importance, given that the Site has previous had some light industrial use underlain by low permeability soils and with a small portion of the Proposed Development is located within an area of 'high' potential for crushed rock aggregate and as the Proposed Development Site is located in an area with low granular aggregate potential, the economic extraction of granular aggregate would not be feasible and in addition, there are no sites of geological importance or quarries within the boundary of the Proposed Development Site.

6.4 Characteristics of the Proposed Development

The characteristics required to carry out the Proposed Development as described in Section 6.1.2 are detailed in Sections 6.4.1 and 6.4.2.

6.4.1 Construction Phase

The Construction Phase of the Proposed Development will require:

- Site clearance and demolition of boundary wall along Margaret Kennedy Road;
- Bulk excavation to reduce levels to construct the foundations, undercroft levels beneath Blocks DCC1 (FFL 19.10mOD), DCC3 and DCC5 (FFL 20.20mOD) and the surface water drainage including an attenuation tank to a maximum depth of 1.2mbGL;
- Piling for the construction of foundations to a maximum depth of 9mbGL;
- Excavated material that cannot be reused on-site will be temporarily stockpiled at the Site and then be removed as a by-product or a waste (as considered appropriate) and sent for reuse or recovery with disposal considered as a final option only; and

- The Proposed Development will include the importation of aggregates for the construction of, roads and other infrastructure.

6.4.2 Operational Phase

During the Operational Phase the Proposed Development will be accessed via the newly constructed site entrances located along Donore Avenue to the fully functioning residential buildings, creche, car-parking and vehicular areas at the Proposed Development.

There will be no excavation or regrading of soil or bedrock during the Operation Phase of the Proposed Development.

6.5 Potential Impact of the Proposed Development

6.5.1 Construction Phase

6.5.1.1 *Direct*

6.5.1.1.1 Land Take and Land-use

The total are of the Proposed Development Site is 3.26Ha on pre-developed brownfield land that is currently undeveloped. The Proposed Development will result in site betterment and re-development of brownfield land for residential use in accordance with the zoning objective for “Strategic Development & Regeneration Area” under the Dublin City Council Development Plan for the period of 2016-2022 (DCC, 2016) and "Strategic Development and Regeneration Area” under the Dublin City Development Plan 2022-2028 (DCC, 2022) and avoid the potential requirement for land-take at an alternative greenfield site.

There will be an overall ‘positive’, ‘moderate’ and ‘permanent’ impact taking account of the surrounding land and zoning objectives on land at the Site. There is no significant, adverse, long-term impact associated with the proposed land take and land-use.

6.5.1.1.2 Soil Quality and Contamination

The Site is on brownfield land with made ground soil that has been impacted with metals and hydrocarbons (GII, 2021) (Appendix A).

There was no identified human health risk (post construction) associated with the soil quality (GII, 2021) (Appendix A) with the exception of an isolated occurrence of mercury at BH08. Up to 1.2m of soil will be excavated from the Site and identified soil contamination in the made ground and shallow soils will be removed from the Site thereby removing the associated identified potential sources of contamination. However, as with any brownfield land there remains the potential for unidentified contamination to be encountered during construction. The potential risks to construction workers for working on brownfield land is outside the scope of this assessment will need to be considered as part of the construction and management plans. Human Health is assessed in Chapter 4 of this EIAR.

The potential impacts of soil contamination on the receiving water environment are assessed in Chapter 7 of this EIAR.

As up to 1.2mbGL of soil will be excavated and unsuitable for use on site soil will be removed from the Site there will be the removal of contaminated soils including any as yet unidentified

contamination sources associated with made ground and shallow soils. This will result in overall improvement of the Site and soil quality and there will be 'positive', 'slight' and 'permanent' impact on the Site for the Construction Phase and Operational Phase. There is no significant, adverse, long-term impact associated with the excavation of soil from the Site.

There is a potential risk associated with the use of cementitious materials during construction including subsurface structures on the underlying soil at the Proposed Development. It is considered that this may result in a 'negative', 'slight' and 'medium-term' impact on existing quality of soil within a localised area underlying the Proposed Development. There is no significant, adverse, long-term impact associated with the use of cementitious materials at the Site.

The potential accidental release of deleterious materials including fuels and other materials being used on-site, through the failure of secondary containment or a materials' handling accident on the Proposed Development could potentially result in a 'negative', 'moderate', 'long-term' impact on the receiving soil and geology depending on the nature of the incident.

6.5.1.1.3 Excavation of Soil and Bedrock

Excavation of soil and subsoils will be required to an anticipated maximum depth of 1.2mbGL at the Proposed Development. It is expected that a total volume of 19,209m^3 will be excavated during the construction works (AECOM, 2022b). Where possible, it is intended to retain and re-use suitable excavated soil and subsoil at the Site for fill and landscaping for the Proposed Development.

Based on the maximum depth of excavation and the fact that bedrock was encountered in boreholes below 4.2mbGL (GII, 2021) (Appendix A), there will be no requirement for excavation of bedrock and no impact on bedrock geology at the Site.

Any surplus soils will be stockpiled prior to removal offsite for reuse. The removal of surplus soil offsite will be undertaken in accordance with applicable statutory requirements. This may include where suitable, removal as by-products that meet the legislative requirements of Article 27 of the European Communities (Waste Directive) Regulations, 2011-2020. The potential impact with removal offsite of surplus soil and other material as wastes is assessed in Chapter 12 Material Assets.

The soils underlying the Proposed Development Site are considered to be 'low to very low' importance based the existing gravel aggregate potential (NRA, 2009) moreover, the site investigation carried out at the Site (GII, 2021) (Appendix A) identifies made ground to a maximum depth of 3m beneath the Site and soil analytical results identified elevations in the reported concentrations of mercury at one location (BH08 0.4-1.0m).

Based on the assigned importance of the underlying in-situ soils and substrate at the Site there is an overall anticipated 'negative', 'moderate' and 'permanent' impact associated with the loss of soils at the Site.

6.5.1.1.4 Importation of Aggregates

The Proposed Development will require the importation of aggregates during the Construction Phase as construction materials for filter drains in accordance with the specification of the detailed design.

In order to minimize the requirement to import virgin quarried materials, recycled aggregates will be used where available and subject to meeting specified design requirements and relevant construction and environmental legislation. This will include where suitable, by-products that meet the legislative requirements of Article 27 and 28 of the European Communities (Waste Directive) Regulations, 2011-2020 and other applicable statutory requirements.

In the unlikely event that aggregate materials are sourced from unlicensed or unauthorised sources, it may result in the importation of contaminated materials, uncertified or material not suitable for use at the Proposed Development. In the unlikely event of the importation of contaminated materials onsite, there would be a 'negative', 'moderate to significant' and 'long term' impact on the receiving lands, soil and geology at the Proposed Development. No adverse significant impact associated with the importation of aggregates to the Site, long-term.

6.5.1.1.5 Geological Hazards

Earthquakes are not likely to occur in the vicinity of the Proposed Development at a sufficient intensity to pose a risk for the Proposed Development. The GSI database indicates that the Proposed Development is located within an area of low susceptibility to landslides.

There are no karst features recorded within a 2km radius of the Proposed Development or within the bedrock of the Lucan Formation with an associated with the Site and therefore there are no identified risks associated with karst features.

The EPA maps the Proposed Development Site as an area where between 5-10% of houses are above the high radon reference level and is therefore identified as not being located within a High Radon Area. There are no identifiable significant, adverse, long-term impacts from geological hazards.

6.5.1.2 *Indirect*

It is anticipated that the Construction Phase of the Proposed Development will include the excavation and removal offsite of surplus soil and stone for reuse / recovery. In this scenario, the removal of soil and stone will be managed in accordance with the Construction Management Plan (CMP) and all statutory obligations. Surplus material to be removed offsite will be reused as a by-product under Article 27 or 28 notification or sent for recovery at a suitable authorised facility. The receiving waste facilities will be appropriately licenced/permitted to accept the surplus soil and stone and the potential impacts will therefore have been adequately assessed and mitigated. Accordingly, it is considered that offsite removal and recovery will have a 'neutral', 'imperceptible' 'permanent' impact on the receiving site. There are no identified significant, adverse, long-term impacts associated with the offsite removal and recovery.

The Proposed Development will include the importation of aggregates during the Construction Phase for the construction of filter drains at the Proposed Development. The potential impacts may include loss of attribute and changes in the geological regime at the source site. It is anticipated that the required aggregates identified for importation onsite will have a 'neutral', 'imperceptible' and 'permanent' impact on the source site taking account of the fact that the statutory consent process would have required the necessary environmental impacts to be assessed and mitigated as appropriate at the source site. There is no identified significant, adverse, long term impact associated with the importation of aggregates.

6.5.1.3 *Secondary*

There will be no secondary impacts associated with the Construction Phase of the Proposed Development.

6.5.2 Operational Phase

6.5.2.1 *Direct*

Design measures taken during the Construction Phase will limit any potential for any direct adverse impact on the receiving land, soil, geological environment during the operational phase of the Proposed Development.

There will be no discharges to ground with the exception of rainfall on landscaped or unpaved areas. Surface water runoff from paved areas including higher risk areas such as the undercroft carparks, and roadways will be collected in newly constructed surface water and foul drainage for treatment and discharge to the mains sewers in accordance with appropriate consents. Please refer to Chapter 7 of this EIAR. Therefore, there will be a 'neutral', 'imperceptible' and 'Permanent' impact on the receiving geological environment for the duration of the Operational Phase. There are no identified significant, adverse, long-term impacts associated with the Operational Phase of the Proposed Development.

There is no identified potential human health impact associated with residual soil and the geological environment at the Site taking account of the fact that any identified contaminated soil that poses a human health risk will be removed from the Site.

6.5.2.2 *Indirect*

There will be no indirect impacts associated with the Operational Phase of the Proposed Development.

6.5.2.3 *Secondary*

There will be no secondary impacts associated with the Operational Phase of the Proposed Development.

6.5.3 Potential Cumulative Impacts

Cumulative Impacts can be defined as “impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project”. Effects which are caused by the interaction of effects, or by associated or off-site projects, are classed as indirect effects. Cumulative effects are often indirect, arising from the cumulation of different effects that are individually minor. Such effects are not caused or controlled by the project developer. The cumulative effects of the Proposed Developments on the land soils and geology environment have been assessed taking other planned, existing and permitted developments in the surrounding area into account. The planning history was reviewed from data sources including:

- Dublin City Council planning website: https://planning.agileapplications.ie/dublincity; and
- An Bord Pleanála website: http://www.pleanala.ie/

A review of other off-site developments and permitted developments was completed as part of this assessment. The following projects and plans were reviewed and considered for possible cumulative effects with the Proposed Development as outlined in Table 6-8.

Table 6-8: Recent applications granted permission in the vicinity of the Proposed Development

Planning Ref No.	Applicant Name	Summary of Development
3537/21	Coombe Lying-in Hospital	Planning permission for development at the Coombe Women and Infants University Hospital, Dolphin's Barn Street, Dublin 8, D08 XW7X on a 0.15 hectare site to the south-east of the hospital site, such site also including the existing Colposcopy building. The development for which planning permission is sought comprises of the development of a new dedicated Colposcopy/Women's Health Unit building of 3 no. storeys plus rooftop plant room which will be attached to the existing Colposcopy building to the west by way of glazed link. The development will include the partial demolition of the eastern meeting room and lobby area wing to the existing Colposcopy building to facilitate the connection to the new building. The proposed building comprises of a 988 sq.m gross floor area building. The building will comprise of: (i) at ground floor level; a waiting area, 2 wc's (1 accessible), 1 plant room, 1 meeting room, 3 gynaecology examination rooms (with associated changing rooms), 1 utility room, a waste room, an early pregnancy assessment unit with dedicated entrance, 2 assessment rooms, reflection room, 1 wc, and an office/reception; (ii) at first floor; a waiting area, a check in room, a supplies store, 2 wc's (1 accessible), 4 colposcopy examination rooms and with associated changing and consultation areas, a utility and a waste room; (iii) at second floor; a meeting room, 2 staff changing rooms (1 accessible with shower and wc), a wc, a staff canteen, a photocopier room and 4 staff office rooms. The proposed Colposcopy building will involve the loss of 10 existing parking spaces, at the south- eastern corner of the hospital site. 2

Planning Ref No.	Applicant Name	Summary of Development
		number accessible car parking spaces will be provided to the south of the proposed extension. Planning permission is also sought for site drainage, a glazed link to the existing Colposcopy building, site landscaping works, and all other associated and ancillary works. Access is via the main hospital campus which is accessed from Dolphin's Barn Street. Grant Permission 25 Apr 2022
SHD0031/20 ABP 308917-20	DBTR-SCR1 Fund, a Sub-Fund of the CWTC Multi Family ICAV,	Demolition of all buildings excluding the original fabric of the former Player Wills Factory, construction of 492 no. Build to Rent apartments, 240 no. Build to Rent shared accommodation along, creche and associated site works. Grant Permission 15 Apr 2021
ABP-307221-20 (BG1)	DBTR-SCR1 Fund aSub-Fund of the CWTC Multi Family ICAV	Demolition of all structures, construction of 416 no. residential units (4 no. houses, 412 no. apartments) and associated site works. Planning Permission Granted with Conditions 14/09/2020
4049/19	The Coombe Women & Infant's University Hospital	The development will consist of a new four storey laboratory building (1340m^2) within the existing Coombe site with the provision of rooftop plant and 2 no. rear extensions to the existing adjacent laboratory building to include a new link, office and store (68m2) with all associated site works. This application site is in S.D.R.A. no.12, St Teresa's Gardens and Environs Strategic Development and Regeneration Area. Grant Permission 11 Feb 2020
2475/18	D.C.C. Housing Development	Pursuant to the requirements of the above, notice is hereby given of the intention to amend the previously permitted development comprising 50 no. units (16 no. apartments, 24 no. 3 bedroom terraced houses and 10 no. 2 bedroom terraced units - Planning ref 2033/14) to allow for the construction of an additional 4 no. terraced residential units and associated works; amendments to the design of 12 no. previously permitted units; development of a temporary grass multisport pitch in addition to the previously permitted park development (Phase A); demolition of 2 no. existing flat blocks to facilitate the future provision of a landmark park (Phase B) with full size multisport pitch and associated works at St. Teresa's Gardens, Donore Avenue, Dublin 8.
ABP-314171-22 (BG2)	CWTC Multi Family ICAV acting solely in respect of its sub fund DBTR SCR1 Fund	Demolition of buildings, construction of 345 no. residential units (292 no. Build to Rent apartments, 49 no. Build to Sell apartments, 4 no. Build to Sell Houses) creche and associated site works. Case is due to be decided by 14/11/2022 www.bgscr1shd2.ie

It is noted following a review of the applications specified in *Table 6-8* that applications ABP-307221-20 (BG1) and ABP-314171-22 (BG2) have been submitted for the same site however, only one of these applications will progress for development if the submissions for the site are approved.

Excavation and removal of soil and stone from the Proposed Development could potentially be directed to the same receiving waste facilities for recovery as excavated soil and stone from the permitted developments outlined in Table 6-6. All surplus soil and stone from the Proposed Development will be managed in accordance with the CDWMP (AECOM, 2022b), the recommendations included in Chapter 12 (Material Assets, Traffic, Waste and Utilities) of this EIAR as well as with relevant waste management legislation and directed to appropriately permitted/licenced waste facilities operated in compliance with the relevant statutory consents for the facility or reused as by-products. Accordingly, it is considered that any cumulative impact on the land, soils and geology associated with the Proposed Development Site and the permitted developments outlined in Table 6-6 would be 'neutral', 'imperceptible' and 'permanent'. There are no identified significant adverse cumulative impacts associated with the excavation and removal of soil and stone from the Proposed Development in the long-term.

There will be no other cumulative impacts on land, soil and geology associated with the Proposed Development.

6.5.4 "Do Nothing" Impact

In the 'Do Nothing' scenario the potential impact on the receiving land, soils and geological environment of the Proposed Development Site did not proceed is considered.

It is considered that there would be no change or resulting impact on the nature of the Proposed Development Site which would remain as an undeveloped, brownfield land and there would be no impact or change to the land, soil, geology at the Proposed Development Site including the site-betterment that will result of the removal of made ground at the Site. If the Proposed Development did not proceed at a brownfield Site there may be a requirement for land-take at a greenfield site.

6.6 Avoidance, Remedial & Mitigation Measures

The mitigation measures, as outlined below, will ensure that there will be no significant impact on the receiving land, soil, and geology environment.

6.6.1 Construction Phase

A Construction Environmental Management Plan (CEMP) which has been prepared by Enviroguide Consulting and the Construction and Demolition Waste Management Plan (AECOM, 2022b) will be implemented by the Contractor to ensure, site-specific procedures and mitigation measures to monitor and control environmental impacts throughout the Construction Phase of the Proposed Development and ensure that construction activities do not adversely impact the environment. The CEMP will take cognisance of the measures outlined in the EIAR and the CDWMP prepared by the Contractor and CEMP prepared by

Enviroguide Consulting to be submitted under separate cover with the planning application for the Proposed Development.

Mitigation measures will be adopted as part of the construction works on the Proposed Development Site. The measures will address the main activities of potential impact which include:

- Control and Management of Water and Surface Runoff;
- Management and control of works nearby water courses;
- Management and construction materials from off-site sources;
- Fuel and Chemical handling, transport and storage; and
- Accidental release of contaminants – notify relevant statutory authorities.
- Management of any as yet unidentified, unanticipated, contaminated materials on site encountered during the Construction Phase.

6.6.1.1 *Export of Soil and Stone Material*

The removal offsite of the existing stockpiled soils and surplus soil and stone from the Proposed Development will be reused as a by-product under Article 27 by-product notification or sent for recovery at a suitable authorised facility. It will be the contractor's responsibility to engage a specialist waste service contractor (s) who will possess the requisite authorisations, for the collection and movement of by-product / waste materials offsite. Material will be brought to an authorised facility which currently holds an appropriate waste facility permit or licence for the specified waste types. Waste Permitting, Licences & Documentation under the Waste Management (Collection Permit) Regulations 2007, as amended, a collection permit to transport waste, must be held by each waste collection contractor.

The reuse of excavated soil and stone for the Proposed Development (i.e. topsoil for landscaping) will be subject to assessment of the suitability for use in accordance with engineering and environmental specifications for the Proposed Development.

6.6.1.2 *Import of Aggregates*

Contract and procurement procedures will ensure that all imported aggregates required for the Proposed Development will be sourced from reputable suppliers operating in a sustainable manner and in accordance with industry conformity/compliance standards and statutory obligations. The importation of aggregates will be subject to management and control procedures which will include testing for contaminants, invasive species and other anthropogenic inclusions and assessment of the suitability for use in accordance with engineering and environmental specifications for the Proposed Development. Therefore, any unsuitable material will be identified prior to unloading / placement onsite.

6.6.1.3 *Management of Stockpiles (soil and other materials/ waste)*

For any excavated material identified for removal offsite, while assessment and approval of acceptance at a destination re-use, recovery site or waste facility is pending, excavated soil for recovery/disposal will be stockpiled as follows:

- A suitable temporary storage area will be identified and designated;
- All stockpiles will be assigned a stockpile number;
- Material identified for reuse on site, off site and waste materials will be individually segregated; and all segregation, storage & stockpiling locations will be clearly delineated on the Site drawings;
- Soil stockpiles will be sealed to prevent run-off from the stockpiled material generation and/or the generation of dust;
- Any waste that will be temporarily stored / stockpiled will be stored on impermeable surface high-grade polythene sheeting, hardstand areas or skips to prevent cross-contamination of the soil below or cross contamination with soil;
- Overburden material will be protected from exposure to wind by storing the material in sheltered regions of the Site;
- Regular watering will take place to ensure the moisture content is high enough to increase the stability of the soil and thus suppress dust; and
- Stockpiles will not be located near Site boundaries or sensitive receptors and a set-back of 10m will be maintained from any boundary with offsite receptors.

When a stockpile has been sampled for classification purposes, it will be considered to be complete, and no more soil will be added to that stockpile prior to removal off site. An excavation/stockpile register will be maintained on-site

Any waste generated from construction activities, including concrete, asphalt and soil stockpiles, will be stored on-site in such a manner as to:

- Prevent environmental pollution (bunded and/or covered storage, minimise noise generation and implement dust/odour control measures, as may be required);
- Maximise waste segregation to minimise potential cross contamination of waste streams and facilitate subsequent re-use, recycling and recovery; and
- Prevent hazards to site workers and the general public during construction phase (largely noise, vibration and dust).

6.6.1.4 *Concrete Works*

Where possible precast concrete will be used where required during construction. However, where cast-in-place concrete is required (i.e. foundations, footpaths), all work will be carried out to avoid any contamination of the receiving soil and geological environment through the use of appropriate design and methods implemented by the Contractor and in accordance with industry standards.

All ready-mixed concrete will be delivered to the Proposed Development Site by truck. Concrete mixer trucks will not be permitted to wash out on-site with the exception of cleaning the chute into a container which will then be emptied into a skip for appropriate compliant removal offsite.

6.6.1.5 *Handling of Chemicals and Fuels*

- Refuelling of plant during the Construction Phase will only be carried out at designated refuelling station to be determined by the contractor. Each station will be fully equipped for spill response and a specially trained and dedicated Environmental and Emergency Spill Response team will be appointed before the commencement of works onsite;

- Only emergency breakdown maintenance will be carried out onsite. Drip trays and spill kits will be available on site to ensure that any spills from vehicles are contained and removed offsite;
- Any diesel, fuel or hydraulic oils stored on site will be stored in bunded storage tanks- the bunded area will have a volume of at least 110% of the volume of the stored materials as per best practice guidelines (Enterprise Ireland, BPGCS005) and Environmental Protection Agency guidelines 'Storage and Transfer of Materials for Scheduled Activities' and amending supporting documents (EPA, 2004); and
- Emergency procedures will be developed by the appointed contractor, and spillage kits will be available on-site including in vehicles operating on-site. Construction staff will be familiar with emergency procedures for in the event of accidental fuel spillages. Remedial action will be immediately implemented to address any potential impacts in accordance with industry standards and legislative requirements. In the event of a leak or spill from equipment in the instance of a mechanical breakdown during operation, any contaminated soil will be removed from the Site and compliantly disposed off-site. Residual soil will be tested to validate that all potentially contaminated material has been removed. This procedure will be undertaken in accordance with industry best practice procedures and standards. These measures will ensure that there is minimal risk to soils and geology associated with the Construction Phase of the Proposed Development.

6.6.2 Operational Phase

There is no requirement for mitigation measures for the Operational Phase taking account of the design measures for the Proposed Development.

The Proposed Development Site is not considered to be within a High Radon Area and where required radon barriers will be installed in accordance with current building regulations.

6.6.3 "Worst Case" Scenario

Surface water runoff including runoff of deleterious material (i.e. fuels from vehicles onsite) will be directed to the stormwater drainage system and treated via. the oil interceptor at the Proposed Development.

In a 'Worst Case' scenario there is a potential risk of accidental release of untreated water via failure of the drainage system with potential impacts on the receiving geological environment. It is considered that the potential risk of the release of untreated water would present a 'negative', moderate' and 'medium-term' impact on the receiving environment. However, this is deemed to be an unlikely scenario.

6.7 Residual Impacts

Residual Impacts are defined as 'effects that are predicted to remain after all assessments and mitigation measures. They are the remaining 'environmental costs' of a project and are the final or intended effects of a development after mitigation measures have been applied to avoid or reduce adverse impacts.

The predicted impacts of the Construction and Operational Phases are described in terms of quality, significance, extent, likelihood and duration. The relevant mitigation measures are detailed, and the residual impacts are determined which take account of the avoidance, remedial and mitigation measures.

A summary of the predicted impacts of the Construction and Operational Phase are outlined in Table 6-9.

Table 6-9: Summary of Impacts

Activity	Attribute	Predicted Impact	Quality	Significance	Duration	Type	Mitigation	Residual Impact
Construction Phase								
Construction of the Proposed Development.	Land-use	The land-use at the site of the Proposed Development Site will be changed from agricultural land use to industrial land use.	Positive	Moderate	Permanent	Direct	The Proposed Development Site is permitted in principle under the current DCC development Plan 'Zone Z14 to seek the social, economic and physical development and/or rejuvenation of an area with mixed use of which residential and "Z6 zoning objective and under the proposed zoning objective in the DCC 2022-2028 Development Plan DCC "Strategic Development and Regeneration Area" zoning objective	Moderate
Accidental release of deleterious materials	Soil Quality	Potential for uncontrolled release of deleterious materials including fuels and other materials being used	Negative	Moderate	Long term	Direct	All work will be carried out to avoid any contamination of the receiving geological	Imperceptible

Activity	Attribute	Predicted Impact	Quality	Significance	Duration	Type	Mitigation	Residual Impact
including fuel and other materials being used on-site.		on-site, through the failure of secondary containment or a materials handling accident, to the land, soil and geological environment.					environment through the use of appropriate design and methods implemented by the Contractor and in accordance with industry standards.	
Use of cementitious materials.	Soil quality	Potential release of cementitious material during the Construction Phase including the construction of foundations, footpaths and other in-ground works.	Negative	Slight	Medium-term	Direct	All work will be carried out to avoid any contamination of the receiving geological environment through the use of appropriate design and methods implemented by the Contractor and in accordance with industry standards.	Imperceptible
Excavation of soil at the Site	Soil and Bedrock Quality	Removal of soil from the site including localized pockets of contaminated soil at the Site, to a maximum depth of 1.2mbGL	Positive	Slight	Permanent	Direct	All work will be carried out to avoid any contamination of the receiving geological environment through the use of appropriate design and methods implemented by the	Imperceptible

Activity	Attribute	Predicted Impact	Quality	Significance	Duration	Type	Mitigation	Residual Impact
							Contractor and in accordance with industry standards.	
Excavation of soil at the Site	Soils	There will be an unavoidable a loss of in-situ soil and subsoil through excavation works to achieve the formation levels for the Proposed Development as well as ,during the construction of roadways, undercroft, drainage infrastructure and landscaping.	Negative	Moderate	Permanent	Direct	Where possible, it is intended to retain and re-use suitable excavated soil and subsoil at the Proposed Development Site for fill and landscaping. The removal of surplus soil offsite will be undertaken in accordance with applicable statutory requirements. This may include where suitable, removal as by-products that meet the legislative requirements of Article 27 of the European Communities (Waste Directive) Regulations, 2011.	Imperceptible
Operational Phase								
Infiltration of Surface Water	Soil Quality	Given the low permeability rate of the underlying soils	Neutral	Imperceptible	Permanent	Direct	None required.	Imperceptible

Activity	Attribute	Predicted Impact	Quality	Significance	Duration	Type	Mitigation	Residual Impact
Runoff to Ground.		(GSI, 2022) it is considered that there is limited potential for infiltration to ground via the storm water drainage network (i.e. perforated pipes within filter drains and the underground infiltration area within carparking areas).						

6.8 Monitoring

There are no monitoring requirements specifically in relation to land, soil and geology.

6.9 Interactions

6.9.1 Material Assets (Traffic)

Soil excavated during construction works for the Proposed Development will be transported by road for disposal in approved locations as provided for in this EIAR. Movements of construction traffic will be managed in accordance with the Construction Traffic Management Plan.

Specific issues relating to Traffic associated with the Proposed Development are set out in Chapter 12 of this EIAR.

6.9.2 Population and Human Health

No public health issues associated with the land, soil, geology conditions at the Proposed Development have been identified for the Construction or Operational Phase.

The Proposed Development is not considered to be within a High Radon Area and where required radon barriers will be installed in accordance with current building regulations.

Appropriate industry standard and health and safety legislative requirements will be implemented during the Construction Phase that will be protective of site workers.

The necessary measures will also be implemented to address any nuisance issues associated with dust dispersion during construction works including the offsite removal of surplus soil. The potential impacts associated with airborne dust is addressed in Chapter 8 (Air) and Chapter 4 (Population& Human Health) of this EIAR.

The design of the Proposed Development includes the removal of contaminated soil that will pose any human health risk for future occupants and the Proposed Development will be construction in accordance with current building regulations and guidance (e.g., Dept of Housing, Local Government and Heritage (2020) Technical Guidance Document C).

Specific issues relating to Public Heath associated with the Proposed Development are set out in Chapter 4 of this EIAR.

6.9.3 Hydrology and Hydrogeology

An assessment of the potential impact of the Proposed Development on the hydrological and hydrogeological environment is included in Chapter 7 of this EIAR.

6.9.4 Material Assets

An assessment of the potential impact of the Proposed Development on the material assets including built services, infrastructure, traffic, and waste management is included in Chapter 12 of this EIAR.

6.9.5 Biodiversity

An assessment of the potential impacts of the Proposed Development on the Biodiversity of the Proposed Development, with emphasis on habitats, flora and fauna which may be impacted a result of the Proposed Development are included in Chapter 5 of this EIAR. It also provides an assessment of the impacts of the Proposed Development on habitats and species, particularly those protected by national and international legislation or considered to be of particular conservation importance and proposes measures for the mitigation of these impacts.

6.9.6 Landscape and Visual

During the construction phase the site landscape will undergo a change from agricultural land to a contemporary logistics park with extensive landscaping. An assessment of the potential impact of the Proposed Development on the receiving landscape is included in Chapter 10 of this EIAR.

6.9.7 Archaeology

The excavation of soil and subsoils at the Proposed Development Site could have a direct impact on any archaeological remains identified onsite. An assessment of the potential impact of the Proposed Development on archaeology is included in Chapter 11 of this EIAR.

6.9.8 Air Quality and Climate

The excavation of soils across the Proposed Development Site and the temporary stockpiling of soils pending reuse or removal offsite has the potential to generate nuisance impacts (i.e. dust). An assessment of the potential impact of the Proposed Development on air quality and climate is included in Chapter 8 of this EIAR.

6.10 Difficulties Encountered When Compiling

There were no difficulties encountered in compiling this Chapter of the EIAR assessment.

6.11 References

AECOM, 2022 (AECOM, 2022a), The Donore Project Part 10 Application Infrastructure Report.

AECOM, 2022 (AECOM, 2022b). Construction & Demolition Waste Management Plan Donore Project, Donore Avenue, Dublin 8.

AECOM, 2022 (AECOM, 2022c). Overall Proposed Drainage Layout (Sheet No.: STG-AEC-S1b-00-DR-C-0000500).

DoHPLG, 2018. Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment.

Dublin City Council, 2016. Dublin City Development Plan 2016-2022.

Dublin City Council, 2022. Dublin City Development Plan 2022-2028.

Enterprise Ireland. Best Practice Guide BPGCS005. Oil Storage Guidelines.

Environmental Protection Agency, 2022, Guidelines on the information to be contained in Environmental Impact Assessment Reports.

Environmental Protection Agency, August 2017. Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports.

Environmental Protection Agency, September 2015. Draft Advice Notes for preparing Environmental Impact Statements.

Environmental Protection Agency, 2002. Guidelines on Information to be Contained in Environmental Impact Statements.

Environmental Protection Agency, 2003. Advice Notes on Current Practice in the Preparation of Environmental Impact Statements.

Environmental Protection Agency, 2022. EPA Envision Maps. https://gis.epa.ie/EPAMaps/ Consulted on 25/07/2022.

Environmental Protection Agency, 2020. Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities.

Geological Society of Ireland, 2020. Geochemical Characterization and Geochemically Appropriate Levels for Soil Recovery Facilities

Geological Society of Ireland, 2022. GSI webmapping. https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aaac3c228. Consulted on 25/07/2022.

Ground Investigations Ireland, 2021. Saint Teresa's Gardens AECOM Waste Classification & GQRA Report.

Google Earth Pro, 2022. Consulted on 25/07/2022.

Institute of Geologists of Ireland Guidelines, 2002. Geology in Environmental Impact Statements, A Guide.

Institute of Geologists of Ireland Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements.

Metropolitan Workshop Ltd., 2022. Proposed Site Layout (Drawing No.: STG-MET-S1b-00-00-DR-A-1100002-S4-P1).

National Roads Authority, 2009. Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes.

Ordnance Survey Ireland, 2022 (OSI, 2022). Ordnance Survey Ireland webmapping http://map.geohive.ie/mapviewer.html. Consulted on 25/07/2022.

Planning and Development Acts 2000 to 2022 and the Planning and Development Regulations 2001 to 2022.

7 HYDROLOGY AND HYDROGEOLOGY

7.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) provides a description of the hydrology and hydrogeology (water) environment within and immediately surrounding the Site of the Proposed Development and an assessment of the potential impacts of the Proposed Development on hydrology and hydrogeology and sets out any required mitigation measures where appropriate and the residual impact post mitigation

The principal objectives of this chapter are to identify:

- Hydrological and hydrogeological characteristics of the receiving environment at the Proposed Development Site;
- Potential impacts that the Proposed Development may have on the receiving water environment;
- Potential constraints that the environmental attributes may place on the Proposed Development;
- Required mitigation measures which may be necessary to minimise any adverse impacts related to the Proposed Development; and
- Evaluate the significance of any residual impacts.

7.1.1 Quality Assurance and Competence

This EIAR Chapter was written by Fionnuala Joyce, BSc., MSc., Hydrogeologist who has five years experience of hydrological and hydrogeological impact assessment including EIAR This EIAR Chapter was written and reviewed by Claire Clifford BSc., MSc., PGeo., EurGeol who is Technical Director - Contaminated Land and Hydrogeology with Enviroguide Consulting and is a Professional Geologist with the Institute of Geologists of Ireland. Claire has over 19 years experience in preparing hydrogeological and environmental impact assessments for a range of project types including Strategic Housing Developments in varying hydrogeological site settings.

7.1.2 Description of the Proposed Development

The Proposed Development will consist of the construction of a residential scheme of 543 no. apartments on an overall site of 3.26 ha (GFA of c. 53,227 sqm) containing the following mix of apartments:

- 225 No. 1 bedroom apartments (36 no. 1-person & 189 no. 2-person)
- 274 No. 2 bedroom apartments (including 52 No. 2 bed 3 person apartments and 222 No. 2 bed 4 person apartments)
- 44 No. 3 bedroom 5-person apartments
- A retail/café unit (168 sq.m.), mobility hub (52 sq.m.) and 952 sq.m. of community, artist workspace, arts and cultural space, including a creche, set out in 4 No. blocks.

The breakdown of each block will contain the following apartments:

- Block DCC1 comprises 111 No. apartments in a block of 6-7 storeys;
- Block DCC 3 comprises 247 No. apartments in a block of 6-15 storeys;
- Block DCC5 comprises 132 No. apartments in a block of 2-7 storeys;

- Block DCC6 comprises 53 No. apartments in a block of 7 storeys;

The Proposed Development will also provide for public open space of 3,408 sqm, communal amenity space of 4,417 sqm and an outdoor play space associated with the creche. Provision of private open space in the form of balconies or terraces is provided to all individual apartments.

The Proposed Development will provide 906 no. residential bicycle parking spaces which are located within secure bicycle stores. 5% of these are over-sized spaces which are for large bicycles, cargo bicycles and other non-standard bicycles. In addition, 138 spaces for visitors are distributed throughout the site.

A total of 79 no. car parking spaces are provided at undercroft level. Six of these are mobility impaired spaces (2 in each of DCC1, DCC3 & DCC5). 50% of standard spaces will be EV fitted. Up to 30 of the spaces will be reserved for car sharing (resident use only). A further 15 no. on-street spaces are proposed consisting of:

- 1 no. accessible bay (between DCC5 & DCC6)
- 1 no. short stay bay (between DCC5 & DCC6)
- 1 no. crèche set-down / loading bay (between DCC5 & DCC6)
- 1 no. set-down / loading bay (northern side of DCC5)
- 1 no. set-down/loading bay (northern side of DCC 3)
- 10 no. short stay spaces (north-east of DCC1)

In addition, 4 no. motorcycle spaces are also to be provided.

Vehicular, pedestrian and cyclist access routes are provided from a new entrance to the north-west from Margaret Kennedy Road. Provision for further vehicular, pedestrian and cyclist access points have been made to facilitate connections to the planned residential schemes on the Bailey Gibson & Player Wills sites for which there are extant permissions (Ref. No.'s ABP-307221-20 & ABP-308917-20).

The development will also provide for all associated ancillary site development infrastructure including site clearance & demolition of boundary wall along Margaret Kennedy Road and playing pitch on eastern side of site and associated fencing/lighting, the construction of foundations, ESB substations, switch room, water tank rooms, storage room, meter room, sprinkler tank room, comms room, bin storage, bicycle stores, green roofs, hard and soft landscaping, play equipment, boundary walls, attenuation area and all associated works and infrastructure to facilitate the development including connection to foul and surface water drainage and water supply.

The Proposed Development Site layout is presented in Figure 7-1.

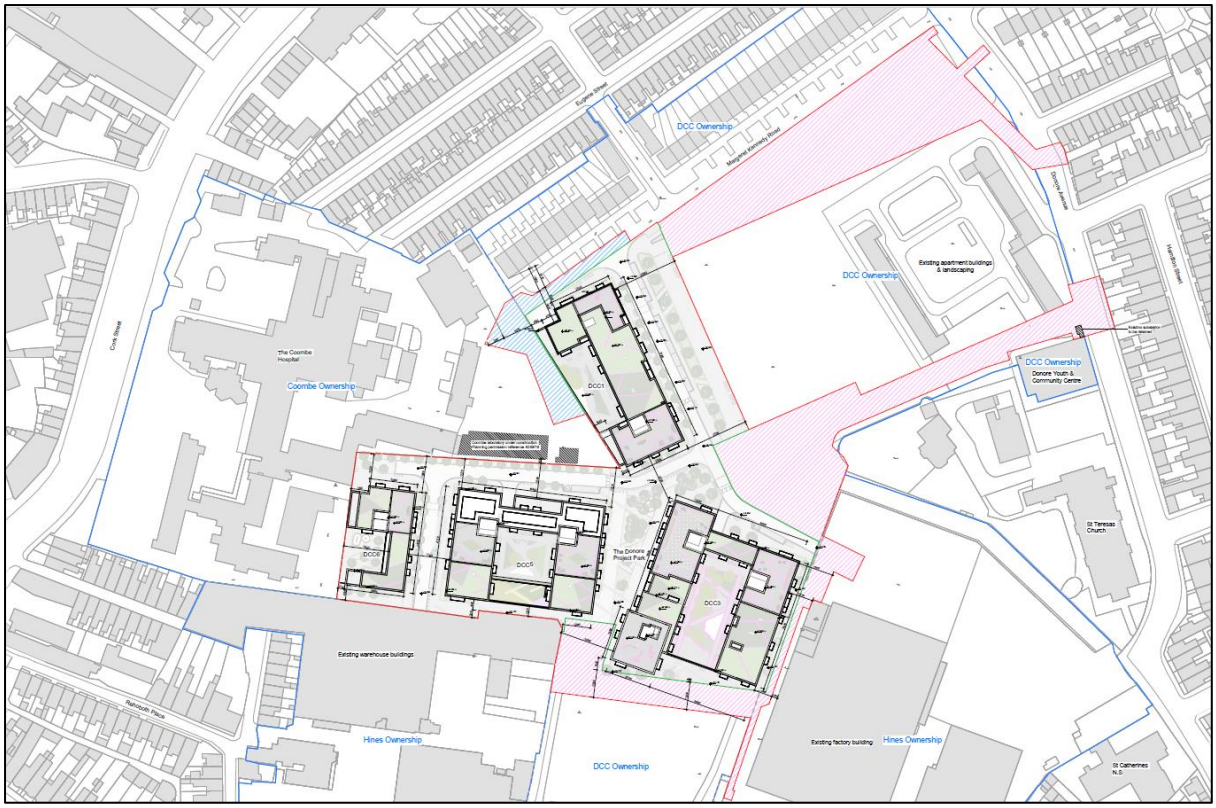


Figure 7-1: Proposed Site Layout (Source: DWG No.: STG-MW-S1b-00-RF-DR-A-1100002-S1-15, Metropolitan Workshop Ltd, September 2022)

A detailed description of the aspects of the Construction and Operational Phases of the Proposed Development relevant to the assessment of the potential impact on the hydrological and hydrogeological environment is provided in Section 7.4.

7.2 Study Methodology

7.2.1 Regulations and Guidelines

The study methodology adopted for the assessment was in accordance with relevant best practice guidance and legislation including:

- Council Directive 2006/118/EEC, 2006. On the protection of groundwater against pollution and deterioration. European Parliament and the Council of European Communities;
- Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy with amendments 2455/2001/EC, 2008/32/EC and 2008/105/EC (Water Framework Directive, WFD);
- European Commission, 2022. WFD Reporting Guidance 2022. Final Draft V4.;
- Local Government, October 2021. No. 1.1977. Local Government (Water Pollution (Amendment) Act;
- Local Government, October 2007. No. 30.2007. Water Services Act 2007 Revised in 22 October 2018
- Local Government, July 1990. No. 21.1990. Local Government (Water Pollution) (Amendment) Act, 1990;

- Local Government, March 1977. No. 01/1977. Local Government (Water Pollution) Act, 1977 with amendments;
- S.I. No. 722/2003 – European Communities (Water Policy) with amendment S.I.No. 413/2005;
- S.I. No. 489/2011 – European communities (Technical Specifications for the Chemical Analysis and Monitoring of Water Status) Regulations, 2011;
- S.I. No. 122/2010 – European Communities (Assessment and Management of flood Risks) (Amendment) Regulations 2010 including amendment S.I. No. 495/2015;
- S.I. No. 272/2009 - European Communities Environmental Objectives (Surface Waters) Regulations 2009 including amendments S.I. No. 327/2012, S.I. No. 386/2015 and S.I. No. 77/2019;
- S.I. No. 9 of 2010 - European Communities Environmental Objectives (Groundwater) Regulations 2010 including amendments S.I. No. 149 of 2012 and S.I. No. 366 of 201; and
- WFD Working Group, 2005. Guidance on the Assessment of the Impact of Groundwater Abstractions (WFD, 2005).

Other guidance used in the assessment of potential impacts on the receiving water environment are referenced where relevant in this EIAR Chapter and includes

- Construction Industry Research and Information Association, 2001. Control of Water Pollution from Construction Sites (CIRIA – C532);
- Construction Industry Research and Information Association, 2015. Environmental good practice on site guide (CIRIA – C741);
- Construction Industry Research and Information Association, 2016. Groundwater control: design and practice (CIRIA – C750);
- Department of the Environment, Heritage and Local Government, Environmental Protection Agency and Geological Survey of Ireland, 1999. Groundwater Protection Schemes (DEHLG/EPA/GSI, 1999);
- Department of the Environment, Heritage and Local Government, 2009. Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DEHLG, 2009);
- Department of Housing, Planning and Local Government, August 2018. Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (DHPLG, 2018);
- Environmental Protection Agency, 2014. Guidance on the Authorisation of Direct Discharges to Groundwater;
- Environmental Protection Agency, 2013. Guidance on the Management of Contaminated Land and Groundwater at EPA Licensed Sites;
- Environmental Protection Agency, 2004. Storage and Transfer of Materials for Scheduled Activities;
- Environmental Protection Agency, May 2022. Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022);
- Environmental Protection Agency, 2002. Guidelines on Information to be contained in Environmental Impact Statements (EPA, 2002);
- Environmental Protection Agency, 2003. Advice Notes on Current Practice in the preparation of Environmental Impact Statements (EPA, 2003);

- Institute of Geologists of Ireland Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements (IGI, 2013); and
- National Roads Authority, 2009. Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (NRA, 2009).

7.2.2 Phased Approach

A phased approach was adopted for this EIAR in accordance with Environmental Protection Agency (EPA) and Institute of Geologists of Ireland (IGI) guidelines as set out above and is described in the following sections.

Element 1: An initial Assessment and Impact Determination stage was carried out by Enviroguide Consulting to establish the project location, type and scale of the Proposed Development, the baseline conditions, and the type of hydrological and hydrogeological environment, to establish the activities associated with the Proposed Development and to undertake an initial assessment and impact determination.

This stage of the assessment included a desktop study that comprised a review of published environmental information for the Proposed Development Site. The study area, for the purposes of assessing the baseline conditions for the Hydrology and Hydrogeology Chapter of the EIAR, extends beyond the Site boundaries and includes receptors that may be potentially hydraulically connected to the Proposed Development Site.

The desk study involved collecting all the relevant data for the Proposed Development site and surrounding area including published information and details pertaining to the Proposed Development provided by the Applicant and design team.

The Element 1 stage of the assessment was completed by Enviroguide Consulting and included the review of the following sources of information:

- Environmental Protection Agency (EPA) webmapping (EPA, 2022);
- Geological Survey Ireland (GSI) Datasets Public Viewer and Groundwater webmapping (EPA, 2022);
- National Parks and Wildlife Services (NPWS) webmapping (NPWS, 2022);
- Ordnance Survey Ireland (OSI) webmapping (OSI, 2022);
- Water Framework Directive Ireland (WFD) webmapping (WFD, 2022);
- Teagasc webmapping (Teagasc, 2022);
- Office of Public Works (OPW) database on historic flooding and the Catchment Flood Risk Assessment and Management (CFRAM) maps (OPW, 2022); and
- Information provided by the Applicant including:
    - AECOM, 2022 (AECOM, 2022a), The Donore Project Part 10 Application Infrastructure Report;
    - AECOM, 2022 (AECOM, 2022b) The Donore Project Part 10 Application Flood Risk Assessment;
    - AECOM, 2022. (AECOM, 2022c). Construction & Demolition Waste Management Plan. Donore Project, Donore Avenue, Dublin 8;
    - AECOM, 2022. (AECOM, 2022d). Overall Proposed Drainage Layout (Sheet No.: STG-AEC-S1b-00-DR-C-0000500);
    - Metropolitan Workshop Ltd., 2022. Proposed Site Layout (Drawing No.: STG-MET-S1b-00-00-DR-A-1100002-S4-P1); and

- Ground Investigations Ireland, October 2021 (GII, 2021) (Appendix H) Saint Teresa's Gardens AECOM Waste Classification & GQRA Report.

Element 2: Based on a review of the information compiled and reviewed in Element 1, it was determined based on professional judgement that in accordance with industry best practice guidance and standards (refer to Section 7.2.1) there was adequate scientific data was available for the assessment. The previous studies reviewed as part of Element 1 provided sufficient information including site investigation data and site-specific information on the hydrological and hydrogeological conditions at the Site to inform the impact assessment of the Proposed Development Site on the receiving hydrological and hydrogeological environment.

Element 3: Mitigation Measures, Residual Impacts and Final Impact Assessment were based on the outcome of the information gathered in Element 1 of the assessment. Mitigation measures to address all identified adverse impacts that were identified in Element 1 of the assessment were considered in relation to the Operational Phase of the Proposed Development. These mitigation measures were then considered in the impact assessment to identify any residual impacts.

Element 4: Completion of the Hydrology and Hydrogeology sections of the EIAR in this Chapter which includes all the associated figures and documents.

7.2.3 Description of Importance of the Receiving Environment

As documented by the IGI (IGI, 2013), the National Roads Authority (NRA) have provided useful matrices for estimation of the importance of hydrogeological features at the Proposed Development Site during the Environmental Impact Assessment (EIA) stage for identifying the magnitude of the potential impact, and are summarised in

Table *7-1*.

Table 7-1: Criteria for Rating Site Importance of Hydrogeological Features

Importance	Criteria	Typical Example
Extremely High	Attribute has a high quality or value on an international scale.	Groundwater supports river, wetland or surface water body ecosystem protected by European Union (EU) legislation e.g., SAC or SPA status.
Very High	Attribute has a high quality or value on a regional or national scale.	Regionally Important Aquifer with multiple wellfields. Groundwater supports river, wetland, or surface water body. ecosystem protected by national legislation – e.g., NHA status. Regionally important potable water source supplying >2500 homes Inner source protection area for regionally important water source.
High	Attribute has a high quality or value on a local scale.	Regionally Important Aquifer. Groundwater provides large proportion of baseflow to local rivers. Locally important potable water source supplying >1000 homes. Outer source protection area for regionally important water source. Inner source protection area for locally important water source.
Medium	Attribute has a medium quality or value on a local scale.	Locally Important Aquifer Potable water source supplying >50 homes. Outer source protection area for locally important water source.
Low	Attribute has a low quality. or value on a local scale.	Poor Bedrock Aquifer. Potable water source supplying <50 homes.

7.2.4 Description and Assessment of Potential Impact

Impacts will vary in quality from negative, to neutral or positive. The effects of impacts will vary in significance on the receiving environment. Effects will also vary in duration. The terminology and methodology used for assessing the 'impact' significance and the corresponding 'effect' throughout this Chapter are described in Table 7-2 as per EPA,2022 Guidelines on the information to be contained in Environmental Impact Assessment Reports.

Table 7-2: Assessment of Potential Impacts Terminology and Methodology

Quality of Effects / Impacts	Definition
Negative	A change which reduces the quality of the environment
Neutral	No effects or effects that are imperceptible, within the normal bounds of variation or within the margin of forecasting error.
Positive	A change that improves the quality of the environment
Significance of Effects / Impacts	**Definition**
Imperceptible	An effect capable of measurement but without significant consequences.
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant	An effect which, by its character, magnitude, duration, or intensity alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration, or intensity significantly alters a sensitive aspect of the environment.
Profound	An effect which obliterates sensitive characteristics.
Duration of Effects / Impacts	**Definition**
Momentary	Effects lasting from seconds to minutes
Brief	Effects lasting less than a day
Temporary	Effects lasting one year or less
Short-term	Effects lasting one to seven years
Medium-term	Effects lasting seven to fifteen years
Long-term	Effects lasting fifteen to sixty years
Permanent	Effects lasting over sixty years
Reversible	Effects that can be undone, for example through remediation or restoration

7.3 The Existing and Receiving Environment (Baseline Situation)

7.3.1 Site Location and Description

The Proposed Development site forms part of a wider area known as the St. Teresa's Gardens and Environs is located on Donore Avenue, Dublin 8. It is bounded by Donore Avenue to the north-east, Margaret Kennedy Road to the north-west, The Coombe Women and Infants University Hospital to the west, the former Bailey Gibson factory buildings to the south-west, and the former Player Wills factory to the southeast. The site location is shown in Figure 7-2.

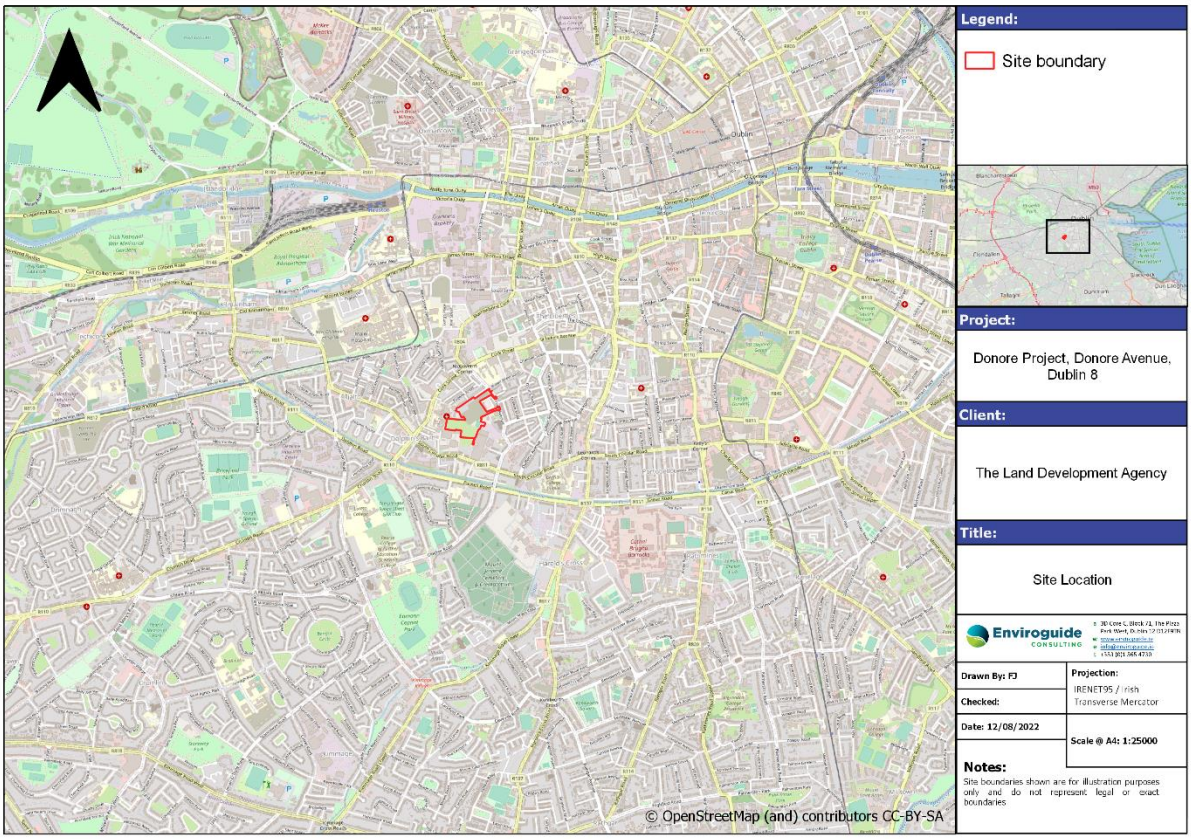


Figure 7-2: Site Location

7.3.2 Topography

The regional topography generally slopes towards the north and to the east around the Site from the regional highpoint situated at Belgard Park which is located approximately 8.23km southwest of the Site.

The topography at the Site is generally even with elevations 18.08mOD in the centre of the Site to 19.56maOD in the southern portion of the Site (Murphy Geospatial Ltd., 2021).

7.3.3 Rainfall

Monthly rainfall data available for 1km x 1km grids (for the period 1981 to 2010) was sourced from Met Éireann (Walsh, 2012) and is presented in Table 7-3.

Table 7-3: Long Term Mean Monthly Rainfall Data (mm) (Walsh, 2012)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual
62	48	53	50	67	60	50	64	58	76	72	71	722
Note: 1km x 1km Irish Grid Coordinates selected for the Proposed Development Site = X (Easting): 328000, Y (Northing):239000												

Table 7-4: Average Potential Evapotranspiration (Met Eireann, 2022)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual
13.9	23.5	36.9	55.8	81.6	82.5	86.6	71.15	47.4	28.6	13.4	12.9	555
Note: 1km x 1km Irish Grid Coordinates selected for the Proposed Development Site = X (Easting): 328000, Y (Northing):239000												

The average annual PE at the Proposed Development Site is 555mm/year (Met Eireann, 2022) (refer to Table 7.4). The GSI (GSI, 2022) have calculated an effective Rainfall (ER) value of 285.2mm/year for the Site with a recharge coefficient of 20%.

7.3.4 Soil, Geology

The Soils and Geology encountered during the site investigations as well as soil analytical results are assessed in Chapter 6 of this EIAR.

The soil and geology at the Site is mapped as of 'Made Ground' over 'Till derived from Limestones' (GSI, 2022). Subsoil (Till) at the Site comprises of stiff CLAY (GII, 2021;Reder to Appendix A of the report, Appendix H of this EIAR). The bedrock beneath the Site is mapped as being underlain by the limestone of the Lucan Formation (GSI, 2022) which was encountered at depths of 4.2mBGL to 6.6mBGL with limited fractures (GSI, 2021).

7.3.5 Regional Hydrogeology

7.3.5.1 Groundwater Body

The bedrock aquifer of the Lucan Formation beneath the Proposed Development Site is within the Dublin GWB (EU Code: IE_EA_G_008) (EPA, 2022). The Dublin GWB covers 837km^2 across Co. Dublin, Co. Kildare and Co. Meath (GSI, 2022).

Dublin City is highly urbanized with made ground and impermeable cover which limits recharge to the bedrock (GSI, 2022). The GSI description of the Dublin GWB identifies that the dominant recharge process will be diffuse recharge from water percolating through the subsoils and into the aquifer with recharge in the Dublin City area of the groundwater body occurring through infiltration in open areas such as parks, squares and gardens with some recharge occurring through leaking from sewers, mains and storm drains (GSI, 2022). Due to generally low permeability of the aquifers within Dublin Urban GWB, a high proportion of the recharge will run off and discharge rapidly to surface watercourses via the upper layers of the aquifer (GSI, 2022). Dublin Urban GWB is at risk due to point and diffuse sources of pollution which are normally found in an urban environment such as contaminated land and leaking sewer networks (GSI, 2022).

Regional groundwater flow is towards Dublin Bay and the Irish Sea to the east (GSI, 2022).

7.3.5.2 Recharge

The GSI has calculated the average annual recharge for the aquifer beneath the Proposed Development Site as 20mm/year based on effective rainfall (ER) value of 285.200mm/year and a recharge coefficient of 20% (GSI, 2022). This low recharge potential is due to the presence of low permeability subsoil mapped beneath the Site. The Site is currently unpaved however, was paved prior to the demolition of the former St. Teresa's flats.

7.3.5.3 Aquifer Classification and Groundwater Vulnerability

The bedrock aquifer within the Lucan Formation beneath the Site is classified by the GSI (2022) as a 'Locally Important Aquifer – Bedrock' (Aquifer Code: LI) which is Moderately Productive only in Local Zones.

The vulnerability categories, and methods for determination, are presented in the Groundwater Protection Schemes publication (DEHLG/EPA/GSI, 1999) and summarised in Table 7-6. The publications state that '*as all groundwater is hydrologically connected to the land surface, it is the effectiveness of this connection that determines the relative vulnerability to contamination. Groundwater that readily and quickly receives water (and contaminants) from the land surface is considered to be more vulnerable than groundwater that receives water (and contaminants) more slowly and in lower quantities. The travel time, attenuation capacity and quantity of contaminants are a function of the following natural geological and hydrogeological attributes of any area:*

- *the subsoils that overlie the groundwater;*
- *the type of recharge - whether point or diffuse; and*
- *the thickness of the unsaturated zone through which the contaminant moves*'.

Table 7-5: Vulnerability Mapping Criteria (DEHLG/EPA/GSI, 1999)

Subsoil Thickness	Hydrogeological Requirements				
	Diffuse Recharge			Point Recharge	Unsaturated Zone
	Subsoil Permeability & Type			(Swallow holes, losing streams)	(sand & gravel aquifers *only*)
	High permeability (sand & gravel)	Moderate permeability (sandy subsoil)	Low permeability (clayey subsoil, clay, peat)		
0-3m	Extreme	Extreme	Extreme	Extreme (30m radius)	Extreme
3-5m	High	High	High	N/A	High
5-10m	High	High	Moderate	N/A	High
>10m	High	Moderate	Low	N/A	High
Notes: (i) N/A = not applicable (ii) Permeability classifications relate to the material characteristics as described by the subsoil description and classification method.					

The GSI has assigned a groundwater vulnerability rating of 'Moderate' (M) for the groundwater beneath the majority of the Site and a rating of 'High' (H) to the south-eastern portion of the Site (GSI, 2022).

The bedrock aquifer classification and groundwater vulnerability rating maps are provided in Figure 7-3 and Figure 7-4 respectively.

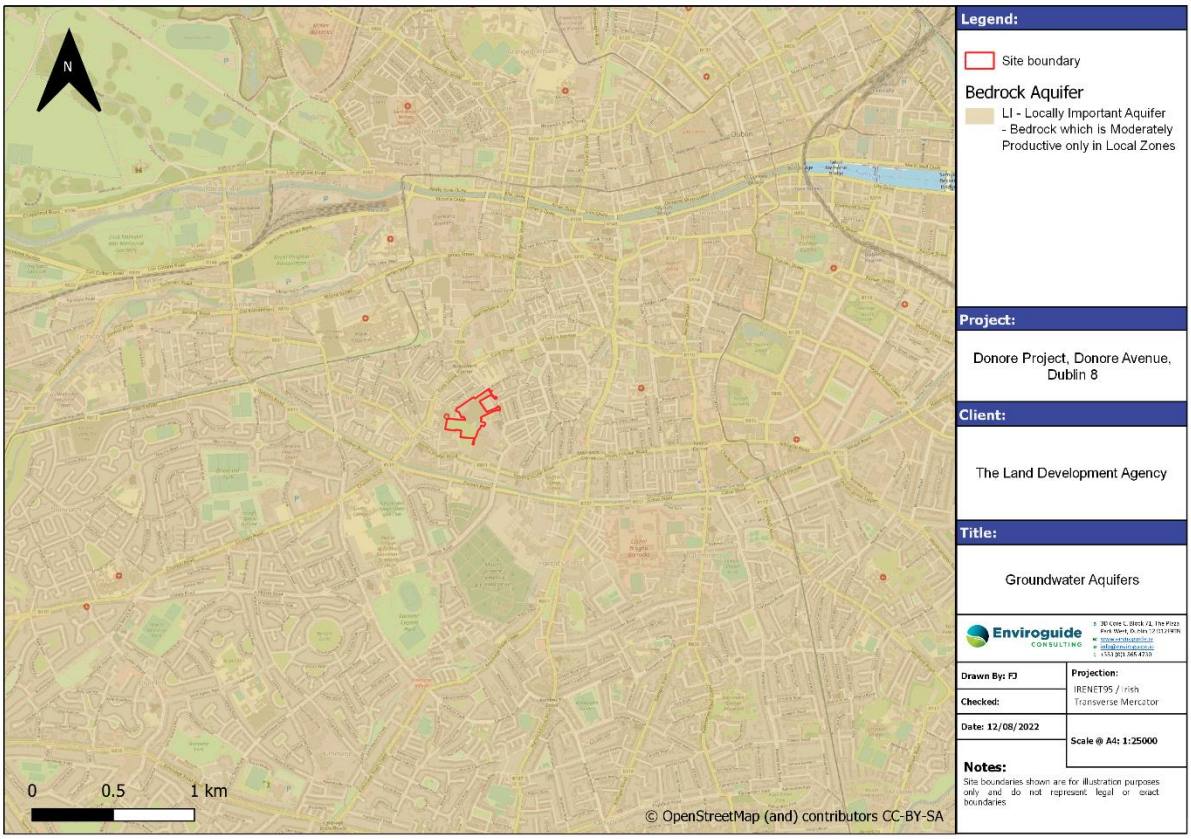


Figure 7-3: Aquifer Classification (Source: GSI, 2022)

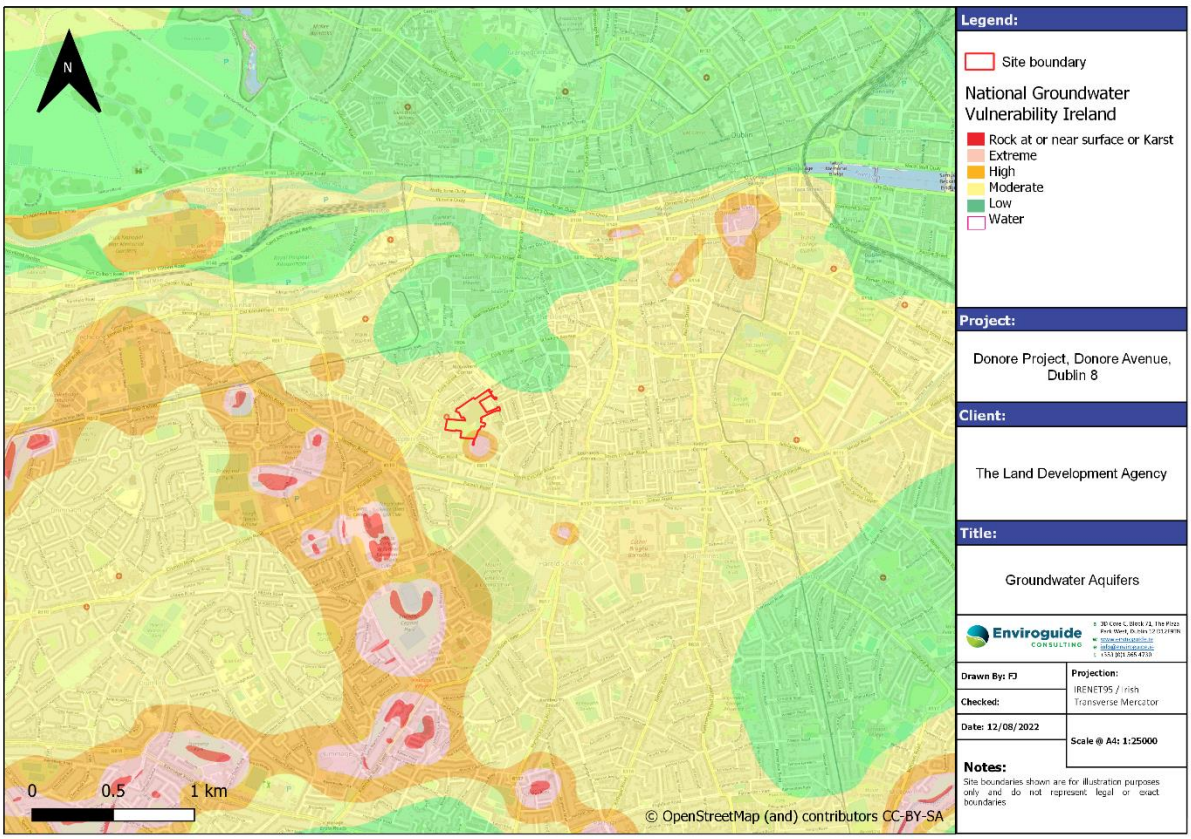


Figure 7-4: Groundwater Vulnerability (Source: GSI, 2022)

7.3.5.4 Site Hydrogeology - Groundwater Levels and Flow Direction

Groundwater strikes were recorded during the site investigation in trial pits, trenches and boreholes at depths ranging between 1mbGL and 4.9mbGL (14.33mOD and 18.32mOD) (GII, 2021;Refer to Appendix A) (Appendix H of this EIAR). Groundwater was encountered within the clay strata above the bedrock and shallow water strikes occasionally recorded within the made ground at isolated locations only in the southwest of the Site (BH07, BH08). Groundwater monitoring wells were installed within the bedrock and groundwater level measurements recorded by GII on the 13th of October 2021 are presented in Table 7-6.

Table 7-6: Groundwater Levels Measured Onsite (GII, 2021;Refer to Appendix A, Appendix H of this EIAR)

Monitoring Location ID	Groundwater Strike During Drilling (mBGL)	Groundwater Level (mbGL)	Groundwater Level (mOD)
BH01	4.7	1.73	17.37
BH05	4.2	1.19	18
BH06	None recorded	0.67	18.65
BH14	3.8	0.86	18.31
BH17	4.2	0.43	18.98
Data sourced from GII, 2021. Saint Teresa's Gardens Waste Classification & GQRA Report.			

Based on the measured groundwater levels the inferred groundwater flow direction at the Proposed Development Site is to the north-east as shown in Figure 7-5.

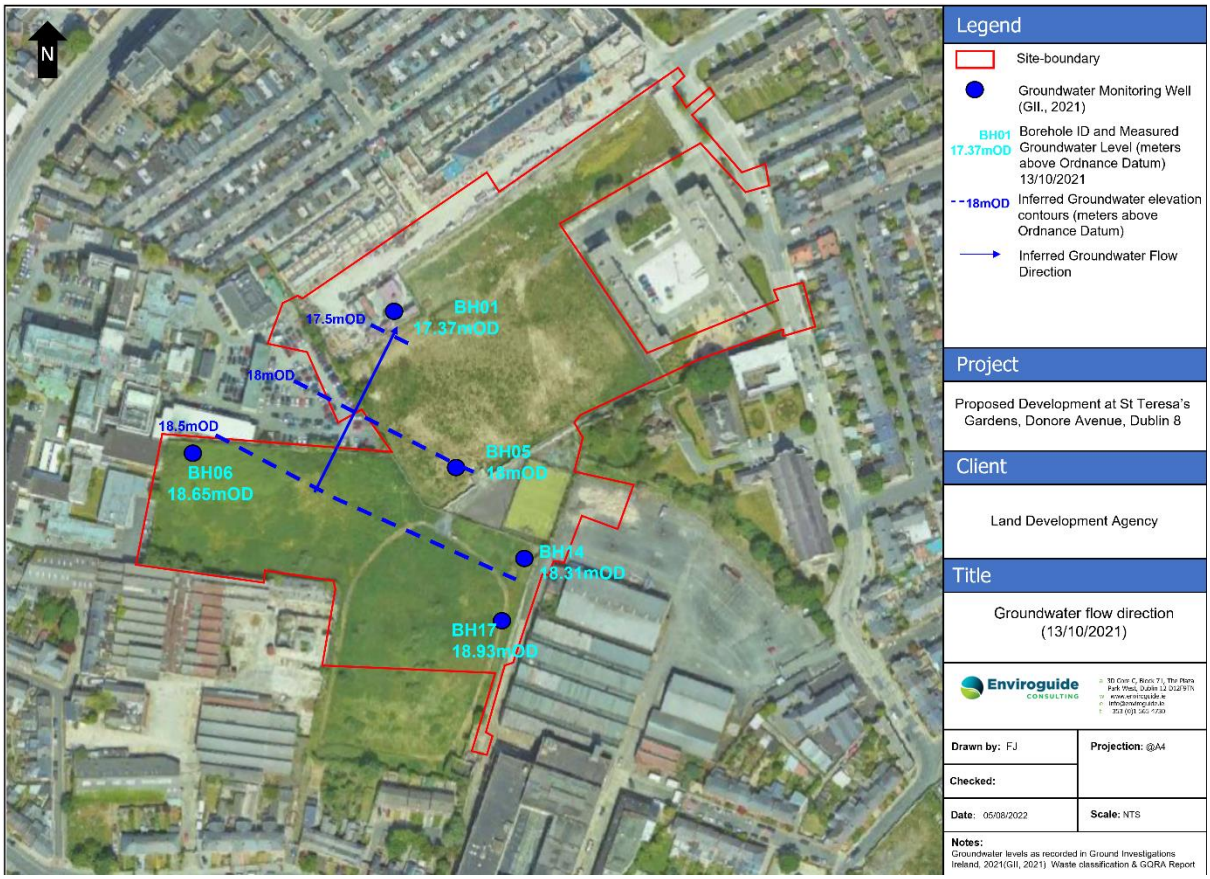


Figure 7-5: Inferred Groundwater Flow Direction

7.3.6 Hydrology

The Site is located within the Liffey and Dublin Bay Catchment (Catchment ID 09) and the Dodder SC_010 sub-catchment (Sub-Catchment ID 09_16).

The Site is located within Hydrometric Area 09 and within the Poddle_010 River Sub-basin (EPA, 2022).

The EPA records a number of surface waterbodies with a potential hydraulic connection to the Proposed Development Site which include the following:

- The Grand Canal Main Line (EU code: IE_09_AWB_GCMLE) is located approximately 0.27km to the south of the Site but does not have a hydraulic connection to the Site;
- The Camac River (EU Code: IE_EA_09C020500) is located approximately 1.1km north-west of the Site and flows in a northeast direction where it joins the Liffey Estuary Upper transitional waterbody. This water course is located upgradient/cross gradient of the Site;
- The Poddle Stream (EPA Code: 09P03) is located approximately 0.6km east of the Site and flows in a northwards direction where it joins the Liffey Estuary Upper transitional waterbody, which is located approximately 1.3km north of the Site. The Poddle Stream is culverted as it passes the site. This reduces the likelihood of there being a hydraulic pathway to the river via groundwater migration. A hydraulic

connection is identified from the Site to this waterbody via the existing surface water drainage network at the Site; and

- The Liffey Estuary Upper transitional waterbody (EU Code: IE_EA_090_0400) is located approximately 1.3km north of the Site and is connected to the Liffey Estuary Lower transitional waterbody (EU Code: IE_EA_090_0300) and to the Dublin Bay coastal waterbody (EU Code: IE_EA_090_0000).

The Water Framework Directive (WFD) risk status and water quality of the relevant water bodies, as recorded by the EPA (EPA, 2022) is outlined in

Table *7-8*.

The surface water courses and relevant other water bodies to the Site are presented in Figure 7-8.

7.3.7 Site Drainage

There is existing foul drainage network at the Site comprising a 225mm combined sewer which currently collects foul water from lands located west of the Site and discharges to an existing 1,020mm combined sewer located north of the Site on Donore Avenue (AECOM, 2022a). This combined network is directed to the Ringsend Wastewater Treatment Plant (WWTP) located approximately 6.5km east of the Site at Poolbeg, which treats foul water prior to discharge to Dublin Bay.

There is an existing surface water network at the Site as outlined in the Application Infrastructure Report (AECOM. 2022a) comprising the following:

- A 150mm surface water connection directs surface water from lands located to the south-west of the Site (previously the Bailey-Gibson warehouse) through the Site, to connect to a 300mm sewer located in lands west of the Site before discharging to a 1m stormwater culvert located to the north of the Site on Donore Avenue. This stormwater culvert ultimately discharges at an outfall point at the Poddle Stream located approximately 0.65km north-east of the Proposed Development;
- The remains of a 1,030mm combined sewer is identified in the northern portion of the site which flows to a storage a surface water network located to the west of the Site which is then directed to a 450mm sewer located adjoining the eastern Site boundary as described below; and
- The 450mm sewer is located adjoining the eastern Site boundary directs water towards the north, however, the outfall location for this is not known at the time of writing this report.

7.3.8 Flooding

A site-specific flood risk assessment report (SSFRA) was produced (AECOM, 2022b) for the Proposed Development Site which assessed the potential flood risk associated with fluvial, groundwater, coastal and pluvial flooding. The SSFRA takes account of the potential impact of climate change.

The AECOM SSFRA concludes:

> *The mixed-use development is proposed on an SDRA (Strategic Development & Regeneration Area) and comprises of 'Less Vulnerable' retail and commercial units at ground floor, a creche ('Highly Vulnerable') at ground floor (and first floor) and residential units ('Highly Vulnerable') at higher floors.*
>
> *Based on the available CFRAM mapping published in 2016, which is based on outdated and no longer relevant topography, approx. 90% of the site is located within Flood Zone C, 10% within Flood Zone B and <1% situated within Flood Zone A. However, by assessing the current topographical information, it is apparent that the flood routes are now different to what was modelled as part of CFRAM, and the site would not receive flood waters given the topography following the demolition of the St. Gardens flats.*

Therefore, the Site and Proposed Development is not considered to be within a flood risk zone.

7.3.9 Water quality Data

7.3.9.1 Published Regional Surface Water Quality

The EPA surface water quality monitoring database was consulted and relevant data pertaining to the Site was reviewed. There are no recorded surface water monitoring stations located on the Poddle Stream however there is available EPA water quality monitoring data published for the Camac Close Emmet Rd (Station Code: RS09C020500) station located 2.3km northeast of the Site on the Liffey Estuary Lower. An overall upward trend was reported for the Camac Close Emmet Rd station in the analytical results for Total Oxidised Nitrogen as N, Ammonia-Total as N and Ortho-phosphate as P for the period of 2013-2018 (EPA, 2022).

The biotic indices also known as Q values, which reflect the average water quality, were assessed by the EPA at the "LIFFEY – Islandbridge – UCD Boat Club" which is located upstream relative to the Site and results are provided in Table 7-7.

Table 7-7: EPA surface water monitoring stations and assigned Q values

EPA Monitoring Station name	Station Code	Location from Site	Distance from Site (km)	Assigned Q value
LIFFEY – Islandbridge – UCD Boat Club	RS09L012400	North-west	2.27	3 "Poor"

7.3.9.2 Published Regional Groundwater Quality

The EPA groundwater monitoring data was reviewed and there are no groundwater quality monitoring stations that are hydraulically connected to the Site (EPA, 2022).

The closest groundwater monitoring station to the Site for which there is available data which is located in the Dublin Groundwater Body is the Ryewater RW1 groundwater monitoring station which is located approximately 19.2km north-west of the Site (EPA, 2022).

7.3.9.3 Site Groundwater Quality Results

Groundwater sampling was carried out by GII on the 13th of October 2021 and sample analytical laboratory reports are provided in Appendix 6 of the site investigation report (GII, 2021;Refer to Appendix A of the report) (Appendix H of this EIAR) and summarised in the Hydrological and Hydrogeological Risk Assessment Report (Enviroguide Consulting, 2022) for the Proposed Development. The site investigation and monitoring locations are presented in Figure 7-6.

Groundwater analytical data indicates that groundwater has been impacted by Total Petroleum hydrocarbons (TPH) beneath the north-west and at the eastern boundary of the Site. Reported detectable concentrations of TPH ranged to a maximum of 2,290ug/l (BH01: 2290ug/l; BH03: 830ug/l; BH14: 1,989ug/l; and BH17:700ug/l) and an isolated occurrence of elevated Polycyclic Aromatic Hydrocarbons (PAH61.38ug/l) was reported for one location BH05, at the eastern boundary of the Site.

Soil analytical data is discussed in Chapter 6 of this EIAR. It was identified in the HRA (Enviroguide Consulting, 2022) that soil and shallow groundwater at the Site was impacted with TPH, PAHs and metals however, metals are not identified to pose a risk to groundwater quality (Enviroguide Consulting, 2022). It is noted in the HRA and site investigation report that while there are localised groundwater impacts identified, the Site is underlain by stiff glacial till which is likely to limit downward migration of contaminants from the Site and due to the limited and relatively poorly connected network of fissures and joints and low fissure permeability decreases risk of contaminant travel from the Site within the aquifer (Enviroguide Consulting, 2022).

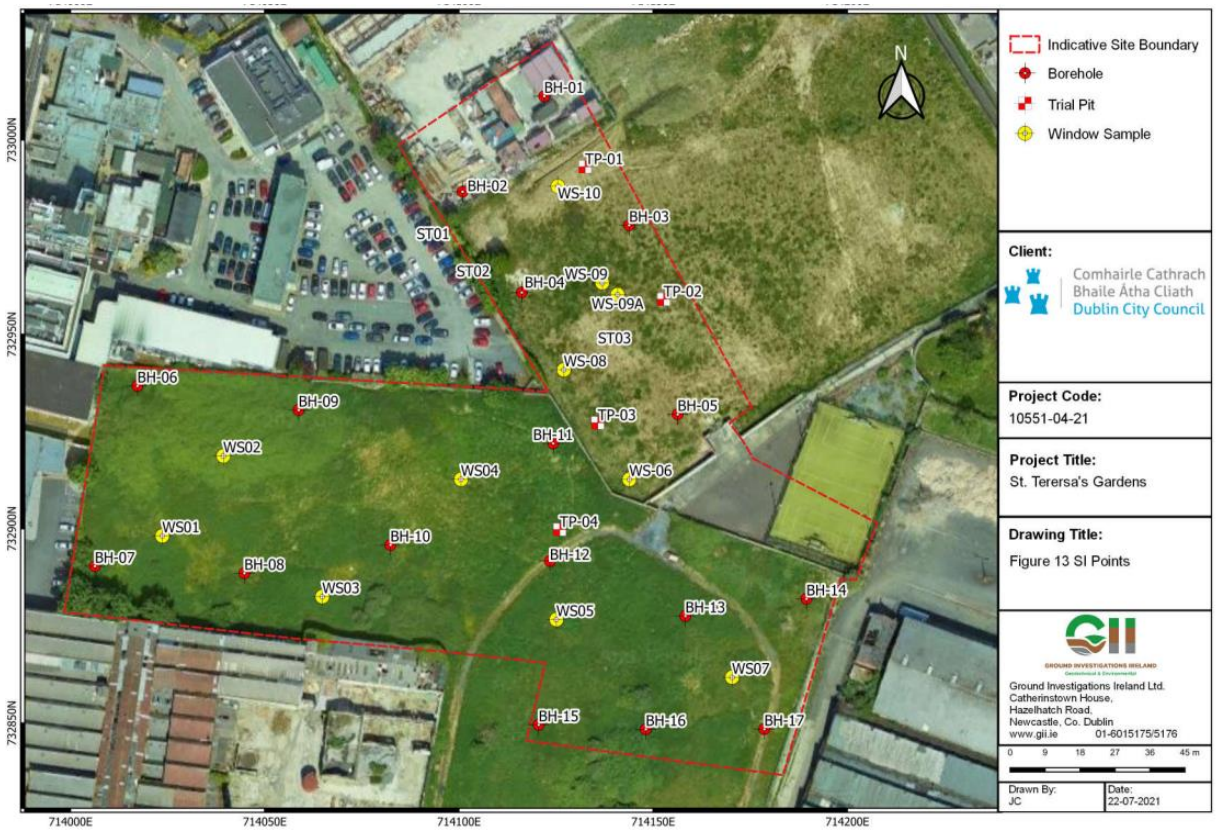


Figure 7-6: Site Investigation Locations (Source: GII, 2021. Waste Classification & GQRA Report (GII, 2021;Refer to Appendix A of the report, Appendix H of this EIAR))

7.3.10 Water Use and Drinking Water Source Protection

There are no surface water features delineated as drinking water rivers or lakes in accordance with European Communities (Drinking Water) (No. 2) Regulations 2007 (SI no. 278/2007) that have a hydraulic connection to the Site. The bedrock aquifer of the Dublin GWB is delineated as a drinking water source.

There are a total of three (3 No.) groundwater sources recorded within a 2km radius of the Site; one located approximately 1.5km northeast of the Site (Unknown use), one located approximately 1.46km north of the Site (Industrial use) and one located approximately 1.67km south of the Site (Domestic use) (GSI, 2022). The sources located to the north of the Site (i.e. potentially downgradient) are located on the opposite side of the River Liffey and therefore not within the same catchment as the Site.

There are no groundwater source protection areas recorded that have any hydraulic connection to the Site or within a 2km radius of the Site or potentially hydraulically connected. The closest recorded source protection area is recorded as the Dunboyne Water Supply Groundwater Source Protection Area which is located approximately 15.6km north-west of the Site (GSI, 2022). The locations of these wells are shown in Figure 7-7.

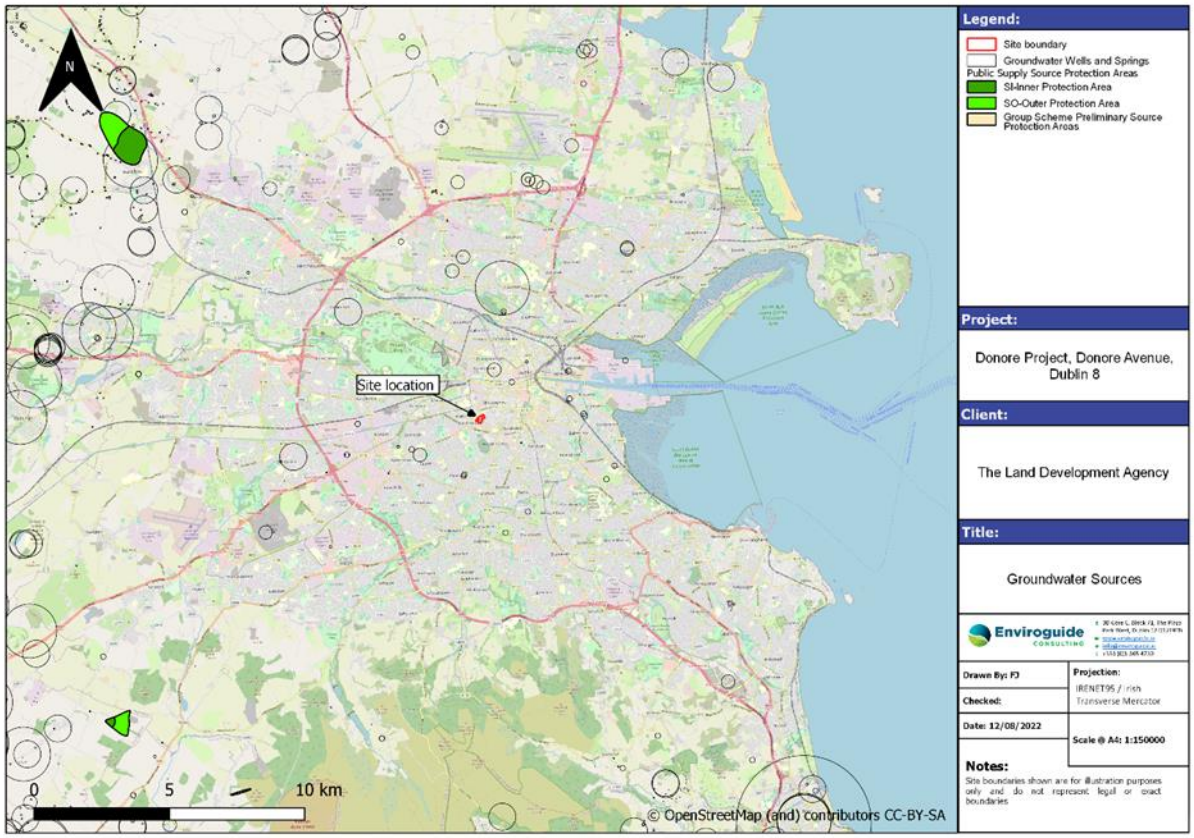


Figure 7-7: Groundwater Sources

7.3.11 Water Framework Directive Status

The Waterbody Status for river, groundwater and coastal water bodies that have a potential hydraulic connection to the Site as recorded by the EPA (2022) in accordance with European Communities (Water Policy) Regulations 2003 (SI no. 722/2003) are provided in Table 7-8 and shown in Figure 7-8.

Table 7-8: WFD Risk and Water body Status

Waterbody Name	Water body; EU code	Location from Site	Distance from Site (km)	WFD water body status (for the period of 2013-2018)	WFD 3rd cycle Risk Status	Hydraulic Connection to the Site
Surface Water Bodies						
River Poddle	IE_EA_09 P030800	East	0.6	Poor	At Risk	Downstream of the Site
Camac River	IE_EA_09 C020500	North	1.1	Poor	At Risk	No direct connection identified with the Site
Coastal Water Bodies						
Dublin Bay	IE_EA_090 _0000	East	8.78	Good	Not at Risk	Downstream of the Poddle Stream
Groundwater Bodies						
Dublin Groundwater Body	IE_EA_G_ 008	N/A	N/A	Good	Review	Underlying groundwater-body
Transitional Water Bodies						
Liffey Estuary Upper	IE_EA_090 _0400	North	1.3	Poor	Review	Downstream of the Poddle Stream
Liffey Estuary Lower	IE_EA_090 _0300	Northeast	2.7	Poor	Review	Downstream of the Poddle Stream
Canal Water Bodies						
Grand Canal Main Line (Liffey and Dublin Bay)	IE_09_AW B_GCMLE	South	0.27	Good	Not at Risk	No direct connection identified with the Site

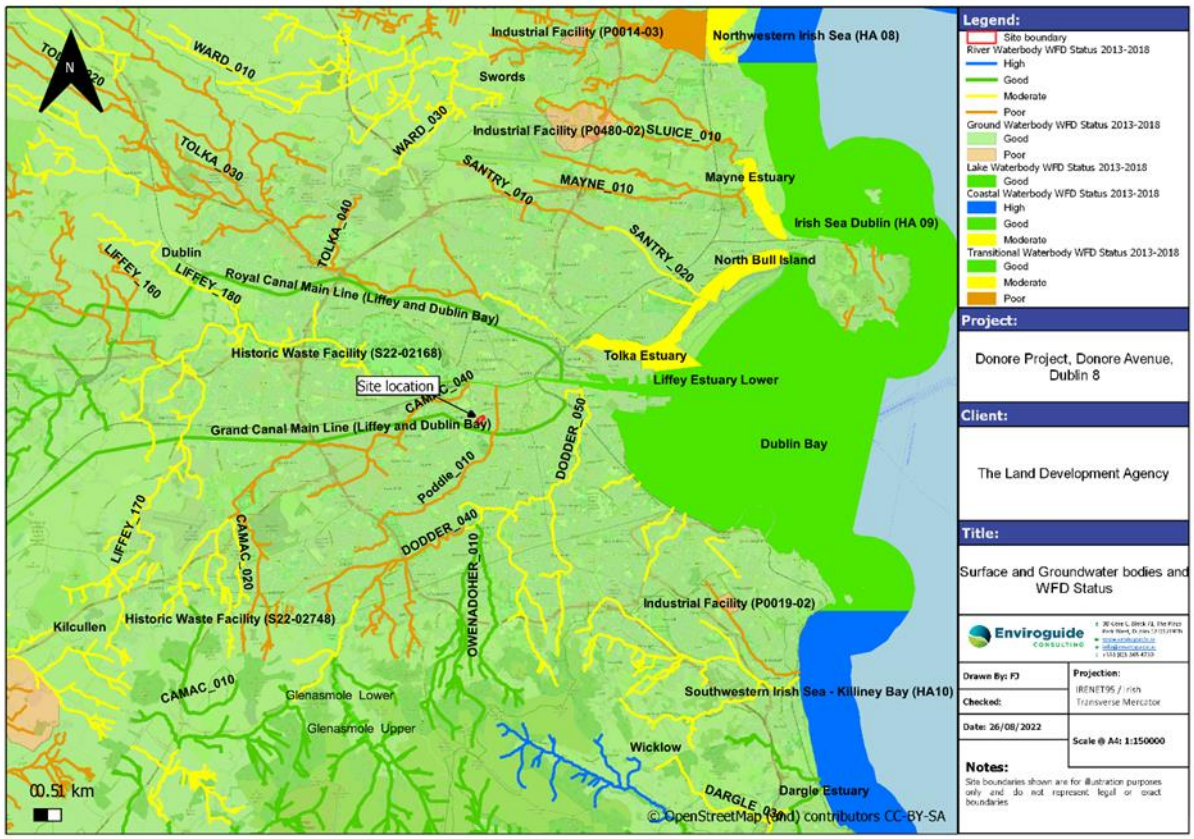


Figure 7-8: Water Bodies and WFD Status

7.3.12 Designated and Protected Sites

Designated and protected sites considered are Special Areas of Conservation (SAC) and Special Protection Areas (SPA), Natural Heritage Areas (NHA) and proposed NHAs (pNHA).

There are no designated and protected sites within the 2km radius of the Site however and sites with a potential hydraulic connection to the Proposed Development Site outside of the 2km radius are considered for this assessment. The Natura 2000 sites (SACs and SPAs) potential hydraulic connection to the Proposed Development Site as identified in the Hydrological and Hydrogeological Risk Assessment Report (HRA) (Enviroguide Consulting, 2022) are shown in Figure 7-9: summarised in Table 7-9 together with the pNHA sites, there are no NHAs considered to be hydraulicly connected with the Site.

Chapter 5 (Biodiversity) of this EIAR provides further details regarding the designated and protected sites.

Table 7-9: Designated and Protected Sites with Hydraulic Connection to the Site

Site Name & Code	Direction from Site	Distance to Site	Hydraulic Connection to Site
Special Areas of Conservation			
South Dublin Bay SAC (000210)	East	7.2km	Connection (indirect) via surface water/ foul water network
North Dublin Bay SAC (000206)	East	8.8	Connection (indirect) via surface water/ foul water network
Special Protection Areas			
South Dublin Bay and River Tolka Estuary SPA (004024)	East	7.1km	Connection (indirect) via surface water/ foul water network
North Bull Island SPA (004006)	East	8.7	Connection (indirect) via surface water/ foul water network
Natural Heritage Areas (NHAs)			
There are no NHAs with a hydraulic connection to the Proposed Development			
Proposed Natural Heritage Areas (pNHAs)			
South Dublin Bay pNHA (0002100)	East	7.2km	Connection (indirect) via surface water/ foul water network
North Dublin Bay pNHA	East	8.8	Connection (indirect) via surface water/ foul water network

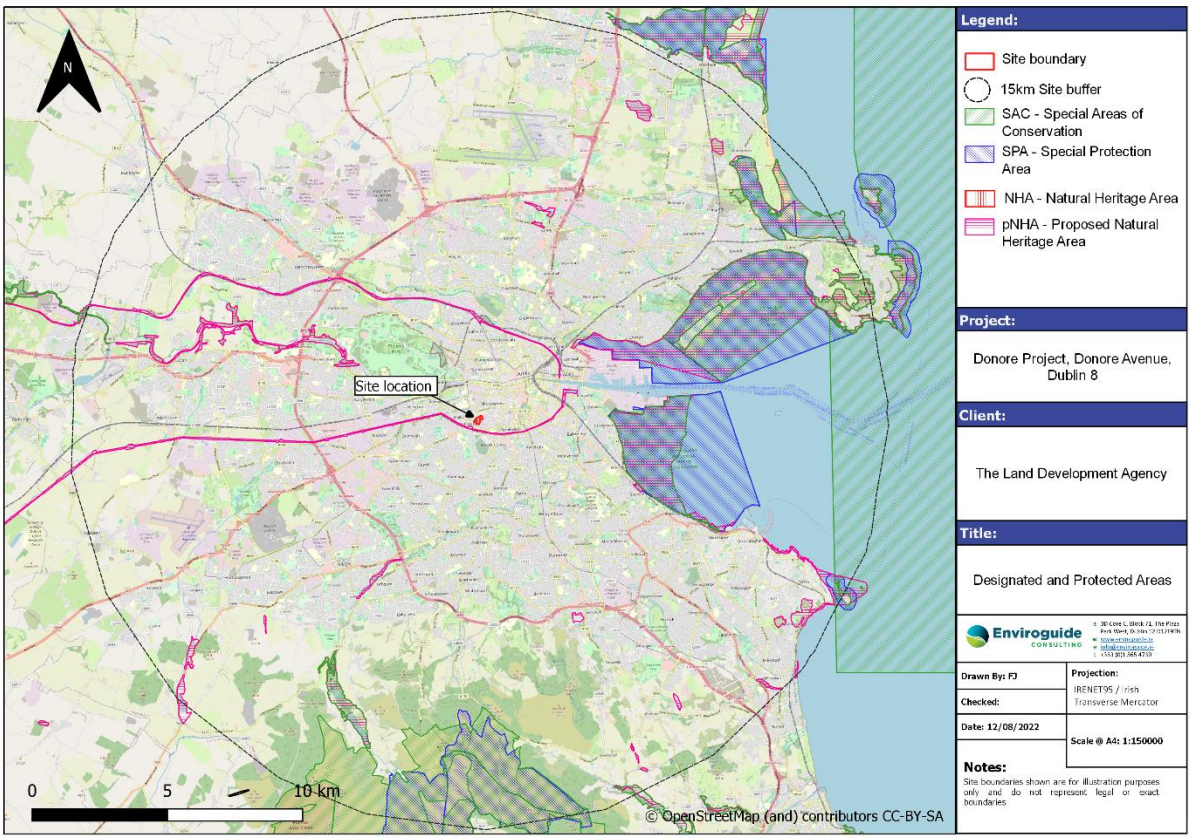


Figure 7-9: Designated and Protected Areas

7.3.13 Importance of the Receiving Environment

The bedrock aquifer beneath the Site classified as locally important aquifer with three groundwater abstraction sources identified within a 2km radius of the Site and none are identified as public potable supplies. There are no recorded sources hydraulically downgradient or connected to the Site.

The WFD Status of 'Good' has been assigned to Dublin GWB and Dublin Bay, and 'Poor' WFD status has been assigned to the Poddle Stream and Liffey Estuary Upper.

There is an identified indirect hydraulic connection between the Proposed Development Site and designated and protected sites within the Dublin Bay via surface water and foul drainage from the existing and Proposed Development.

In accordance with the criteria outlined in Table 7-1 the hydrological and hydrogeological features associated with the Site are of 'Low' to 'Moderate' importance.

7.4 Characteristics of the Proposed Development

The characteristics required to carry out the Proposed Development as described in Section 7.1.2 are detailed in Section 7.4.1 and Section 7.4.2.

7.4.1 Construction Phase

The Construction Phase of the Proposed Development will require:

- Site clearance and demolition of boundary wall along Margaret Kennedy Road;

- Excavation to reduce levels to construct the foundations, undercroft levels beneath Blocks DCC1 (19.8, DCC3 and DCC5 (FFL 20.20mOD) the surface water drainage including the 1.2m deep attenuation;
- Piling for the construction of foundations to a maximum depth of 9mbGL;
- Excavated material that cannot be reused on-site will be removed offsite and authorised reuse or recovery and if necessary disposal in accordance with waste management legislation;
- Diversion of existing drainage and connection of new drainage infrastructure to the mains drainage network. Divert the existing 225mm diameter combined sewer (currently collecting foul water from lands located west of the Site and flowing to the eastern side of the Site) from the west to connect to a 225mm diameter foul sewer located at Margaret Kennedy Road at the north-western boundary of the Site; and
- Construction of foul and storm water drainage and mains water connections.

7.4.2 Operational Phase

As outlined in the AECOM Application Infrastructure Report (AECOM, 2022a), foul water from the Proposed Development will be directed to the public foul sewer network located on Donore Avenue. The Irish Water Confirmation of Feasibility letter dated 1st October 2021 states that foul water connection is feasible and that the development is to limit peak discharge of foul water from the Site to 2DWF with either a throttle or a pump. The proposed foul water network for the Site will collect foul water from the residential and commercial areas of the Proposed Development as well as from undercroft car parking to a connection to the existing 1,020mm combined sewer located north of the Site on Donore Avenue via a Class 1 interceptor. Foul water from the Proposed Development will ultimately be treated at Ringsend WWTP and discharged to Dublin Bay.

All below ground foul sewers will be constructed in accordance with current Irish Water requirements and all drains will be laid in compliance with current Building Regulations and the recommendations contained in the Technical Guidance Document H.

It is proposed to discharge surface water from the Site with a connection to the existing 1.2m diameter surface water sewer located on Donore Avenue. The surface water direct runoff from swales in permeable paving and rooftop as well as land drains in landscaped areas of the Site to an attenuation tank via a Class 1 petrol interceptor to the connection on Donore Avenue. Surface water from the Site will ultimately discharge to the Poddle Stream at a point located approximately 0.65km north-east of the Proposed Development.

The surface water drainage system has been designed in accordance with the requirements of the Greater Dublin Strategic Drainage Study (GDSDS) and in the SuDS Manual (CIRIA C753). The following attenuation and SuDS measures will be incorporated into the Proposed Development as detailed in the Application Infrastructure Report (AECOM, 2022a):

- Permeable paving;
- Filter drains at hardstanding areas at the Site;
- Extensive and intensive green roofs on the buildings;
- Rain gardens and bio-retention areas located throughout the Site;
- Underground attenuation tank;
- Flow control device (as approved by Irish Water); and

- Class 1 Bypass petrol interceptor located up-gradient of the attenuation tank.

7.5 Potential Impact of the Proposed Development

7.5.1 Construction Phase

7.5.1.1 Hydrogeological Flow Regime

The Site is currently unpaved, however was previously paved prior to demolition of the former St. Teresa's flats and the construction of the Proposed Development will convert approximately 50% of the surface cover to impermeable surfaces due to the construction of buildings, roads and other infrastructure.

During the Construction Phase soil and subsoil will be exposed and excavated with temporary increase in the potential of infiltration of surface water to the underlying aquifer. This will be reduced over the course of the construction of Proposed Development with an overall increase in impermeable areas and reduced infiltration potential from surface during the Construction Phase (and maintained during the Operational Phase) of the Proposed Development. It is noted that the GSI have identified that recharge potential to the bedrock aquifer is a low due to a combination of the urban setting, low permeability overburden and limited capacity of the aquifer to accept recharge. Therefore, there will be no overall significant adverse impacts anticipated on the groundwater recharge within the Dublin GWB in the long-term.

Based on the available groundwater level data (Refer Section 7.3.7) and the proposed construction excavation requirements to a maximum of 1.2mbGL for the attenuation tank, there will be no requirement for large-scale dewatering of groundwater. There may be a requirement for temporary localised dewatering where surface water or perched water within shallow soil is encountered during within excavations and for the construction of the attenuation tank where the base of the tank may intersect groundwater based on measured groundwater levels.

Overall, it is considered that any impact on the hydrogeological regime within the aquifer is unavoidable and will be 'negative', 'imperceptible', 'temporary' ('long-term' during post construction/operational phase) within a very localised zone of the aquifer only and there will be no impact on the hydrogeological regime of the receiving groundwater body and associated downgradient receptors.

7.5.1.2 Water Quality

Sources of contamination that could impact on water quality arising from construction activities required for the Proposed Development include:

- Soil (made ground) and shallow groundwater at the Site impacted with TPH, PAHs:
    - Potential for leaching of contaminants to groundwater beneath the Site in particular if exposed;
    - During groundworks contaminants in soil could potentially become entrained in surface runoff; and
    - Shallow groundwater at the Site has been impacted with TPH and PAHs and could potentially be discharged from works areas to groundwater or surface water drainage.

- Storage and use of fuel, oils and chemicals used during construction which in the event of an accidental release could infiltrate to the underlying groundwater or migrate via surface water runoff to offsite water bodies;
- Use of concrete and cementitious materials or other potentially hazardous materials (e.g. drilling fluids during piling) during construction in particular for below ground structures and foundations including piling where shallow groundwater may be encountered;
- Accidental release of wash-water or foul water from facilities at the Site (e.g. wheel wash, welfare facilities) and accidental release of hazardous or deleterious material including fuels, chemicals and materials required for construction; and
- Release of foul water from existing foul water drainage at the Proposed Development Site during decommissioning or connection to live sewers.
- Discharges or leaks from temporary welfare facilities could introduce contaminants to the water environment. There will be no connection from welfare to the mains sewer during construction.

The identified potential pathways and pollutant linkages for the Construction Phase as identified in the HRA (Enviroguide Consulting, 2022) are:

- Infiltration of contaminants to the subsurface and bedrock aquifer including infiltration via potential conduits introduced through piling and other groundworks as well as through the existing monitoring wells if damaged during works;
- Vertical and lateral migration via groundwater beneath and downgradient of the Site towards downgradient receptors;
    - The presence of low permeability stiff clay will minimise any potential for vertical migration to the bedrock aquifer and due to the nature of the bedrock aquifer including limited poorly connected fracture permeability and relatively short flowpaths there will be reduced potential for offsite migration within the aquifer.
    - The Poddle Stream is culverted from the Grand Canal to the Liffey Estuary Upper and therefore the pathway of groundwater discharge into the Poddle Stream will be restricted or prevented and is not considered further as a pathway.
- Discharges to existing surface water and foul drainage during construction phase, including during the decommissioning and connection to live sewers as outlined (refer to AECOM, 2022 Drawing reference: STG-AEC-STb-00-00-DR-C-0000501), to receiving water courses and waterbodies including:
    - Surface water discharges from the Proposed Development that ultimately discharge to the Poddle Stream via the surface water drainage and potentially to downstream water courses and water bodies including the Liffey Estuary Lower and to Dublin Bay; and
    - Foul water discharges from the Proposed Development via foul drainage to Dublin Bay via discharge from Ringsend WWTP.

The worst-case scenarios associated with the pathways of discharges to ground and via drainage are assessed in Section 7.6.3.

The potential risk to the receiving water is considered in the absence of standard and appropriate construction management and mitigation measures that will be in place.

The design requirement for offsite removal of made ground including contaminated soils will result in overall Site betterment with the removal of this source of contamination and the associated potential risk to groundwater and downgradient receiving water bodies (Enviroguide Consulting, 2022).

There is a potential risk to water quality during the construction works where groundwater may be encountered during groundworks, bulk excavations and piling, in particular in a worst-case scenario accidental release of contaminants (ie. fuels, drilling fluids or cementitious materials). Due to the reduced potential for infiltration to groundwater afforded with the presence of the stiff clay above the bedrock aquifer and limited offsite migration via the limited poorly connected fractures within the bedrock aquifer there is a potential risk to groundwater beneath and immediately downgradient of the Site (Enviroguide Consulting, 2022). However, there is no risk to the water quality of the overall offsite Dublin GWB and hydraulically connected downgradient receiving surface water courses from a groundwater migration pathway including to the Poddle Stream Liffey Estuary Upper, Liffey Estuary Lower and Dublin Bay. Therefore, it is considered that there would be a 'negative', 'significant' and 'medium term' impact on the water quality in the underlying groundwater at the Site but no identified impact to receiving receptors downgradient of the Site and no significant adverse impact is anticipated to groundwater receptors in the long-term.

The release of suspended solids or other contaminants entrained in surface runoff or a release of contaminants (e.g. contaminated water from dewatering, wheelwash, welfare) could enter drainage gullies or open drainage during construction. The HRA identified that any potential impact to surface water quality associated with discharges to surface water drainage will be locally in the Poddle Stream where surface water drainage outfalls to the Poddle Stream. There is no identified potential impact from discharges to surface water drainage to the downstream receiving Liffey Estuary Upper and Liffey Estuary Lower transitional waterbodies and the Dublin Bay coastal waterbody associated with the Proposed Development.

Discharges via surface water drainage will have a 'negative', 'moderate' and 'medium term' impact on the water quality of the Poddle Stream taking account of dilution within the drainage network and Poddle Stream but no impact on water quality of waterbodies and watercourses elsewhere within the catchment. There is no identified significant adverse impact on water quality of waterbodies and watercourses in the long-term.

There is a potential for release to groundwater from foul during drainage works or temporary connections of site welfare drainage development works. However due to the reduced potential for infiltration to groundwater in the underlying substrate and limited migration potential in the bedrock there is only a potential risk to groundwater beneath and immediately downgradient of the Site but not to the water quality of the overall Dublin GWB and downgradient receiving water bodies (Enviroguide Consulting, 2022). The impact from foul is considered to be 'neutral', 'imperceptible' and 'short-term'. There is no identified significant adverse impact from foul in the long-term.

All surplus materials and waste will require removal offsite. In the unlikely event that surplus soil or other waste materials are directed to an unauthorised location there is potential for a 'negative', 'moderate' and 'medium-term' impact on the water quality at any receiving

unauthorised locations. There is no identified significant adverse impact associated with the offsite removal of surplus materials and waste in the long-term.

The potential importation of contaminated materials could result in the leaching or runoff of contaminants to the underlying groundwater bodies and receiving water courses water courses. In the unlikely event that contaminated materials are introduced directly to the Site of the Proposed Development there is a potential for a 'negative', 'significant' and 'long-term' impact on the receiving water environment.

7.5.2 Operational Phase

7.5.2.1 Hydrogeological Flow Regime

The potential impacts on groundwater flow regime associated with the Proposed Development including the increased hardstand cover, undercroft and other subsurface structures are the same for the Construction Phase and Operational Phases and have been assessed and detailed in Section 7.5.1.1.

There will be an unavoidable 'negative', 'imperceptible', 'long-term' within a very localised zone of the aquifer only and there will be no impact on the offsite groundwater within the GWB and flow regime of receiving surface water or other water bodies.

7.5.2.2 Drainage and Flood Risk

The Site and Proposed Development is not considered to be within a flood risk zone. The design of the Proposed Development will not result in a flood risk at the Site or elsewhere.

7.5.2.3 Water Quality

The identified potential impacts to water quality are considered in the absence of any mitigation measures that will prevent and limit any potential impact to water quality. The embedded design and avoidance measures (Refer to Section 7.6) will prevent and limit any potential impact on water quality within the receiving river basin district associated with the Proposed Development.

There will be no significant sources of contamination at the Site during the operational phases taking account of the following design considerations:

- The removal of made ground including contaminated soils and potentially as yet unidentified contaminated soils will result in overall Site betterment and the removal of this source of contamination. As identified in the HRA (Enviroguide Consulting, 2022) the site will be paved/covered (with 53% total impermeable cover) and therefore there will be limited infiltration and potential to mobilise any residual contamination from soil to the underlying groundwater;
- There will be no bulk storage of petroleum hydrocarbon-based fuels or other hazardous materials during the Operational Phase, thereby removing any associated potential contaminant sources;
- There will be no discharges to ground other than rainfall on unpaved landscaped areas:
    - All surface water will be managed within the proposed surface water drainage network with discharge to the public mains surface water drainage network.

Surface water drainage has been designed in accordance with GDSDS and SuDS (AECOM; 2022a); and

- Surface runoff from the Site and from the highest risk area within the undercroft carparking will be directed to foul drainage following treatment in Class 1 oil interceptor (AECOM, 2022a).

- Foul water discharge from the Site will be to mains sewer and discharge to be treated at Ringsend WWTP to before discharge to Dublin Bay.

The proposed surface drainage design in accordance with GDSDS and SuDS strategy includes a number of measures that will capture any potentially contaminating compounds (petroleum hydrocarbons, metals, and suspended sediments mobilised from contaminated soils) in surface water runoff from roads and the impermeable areas that could potentially otherwise discharge to the receiving water environment.

The measures incorporated in the SuDS design include filter drains, swales, green roofs, bio-retention/ rain gardens, permeable paving on roof terrace, tree pits and porous asphalt in the drainage and SuDS system. The filter drains, swales and bio-retention areas will be effective in treating and removal of any contaminants (metals, hydrocarbons and suspended solids) entrained in surface water runoff, the effectiveness of these SuDS measures is documented in TII guidance (TII,2014) and the SuDS Manual (C753). The Proposed Development also includes Class 1 by-pass petrol interceptors prior to discharge to the mains surface water sewer at Donore Avenue which will be effective in removal of hydrocarbons that may enter the drainage system in particular in the event of worst-case scenario spill incident (e.g., collision on the roadway resulting in the loss of fuel from a vehicle).

There will be no risk to water quality during the Operational Phase taking account of these embedded design avoidance measures. For the purposes of this assessment the potential impact to water quality in the absence of avoidance and mitigation has been considered including embedded design features such as SuDS.

In the absence of the embedded design measure (i.e., Class 1 interceptor and SuDS) there could be a potential impact on the receiving water of the Poddle Stream. Taking account of assimilation within the drainage network, a worst-case unmitigated discharge of surface water drainage could result in a ‘negative’, ‘moderate’ and ‘medium-term’ impact on water quality within the Poddle Stream taking account of dilution within the drainage network and Poddle Stream. There is no identified impact to the Liffey, Dublin Bay (Enviroguide Consulting 2022).

Foul drainage from the Site including runoff from undercroft carparking will ultimately be treated at Ringsend WWTP. There will be no impact on the receiving water environment with an overall, the foul and surface water drainage for the Proposed Development will result in an overall ‘neutral’, ‘imperceptible’ ‘permanent’ impact on receiving surface water quality and groundwater quality compared to the baseline conditions (Enviroguide Consulting 2022). Overall, in the absence of the embedded design measures, there is no identified significant adverse impact to surface water in the long-term.

7.5.3 Potential Cumulative Impacts

Cumulative Impacts can be defined as “*impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project*”. Effects which are caused by the interaction of effects, or by associated or off-site projects, are classed

as indirect effects. Cumulative effects are often indirect, arising from the accumulation of different effects that are individually minor.

7.5.3.1 Existing Planning Permissions

The cumulative effects of the Proposed Developments on the hydrological and hydrogeological environment have been assessed taking other planned, existing and permitted developments in the surrounding area into account. The planning history was reviewed from data sources including:

- Dublin City Council planning website: https://planning.agileapplications.ie/dublincity
- An Bord Pleanála website: http://www.pleanala.ie/

A review of other off-site developments and permitted developments was completed as part of this assessment. The following projects and plans were reviewed and considered for possible cumulative effects with the Proposed Development as outlined in Table 7-10.

Table 7-10: Recent applications granted permission in the vicinity of the Proposed Development

Planning Ref No.	Applicant Name	Summary of Development
3537/21	Coombe Lying-in Hospital	Planning permission for development at the Coombe Women and Infants University Hospital, Dolphin's Barn Street, Dublin 8, D08 XW7X on a 0.15 hectare site to the south-east of the hospital site, such site also including the existing Colposcopy building. The development for which planning permission is sought comprises of the development of a new dedicated Colposcopy/Women's Health Unit building of 3 no. storeys plus rooftop plant room which will be attached to the existing Colposcopy building to the west by way of glazed link. The development will include the partial demolition of the eastern meeting room and lobby area wing to the existing Colposcopy building to facilitate the connection to the new building. The proposed building comprises of a 988 sq.m gross floor area building. The building will comprise of: (i) at ground floor level; a waiting area, 2 wc's (1 accessible), 1 plant room, 1 meeting room, 3 gynaecology examination rooms (with associated changing rooms), 1 utility room, a waste room, an early pregnancy assessment unit with dedicated entrance, 2 assessment rooms, reflection room, 1 wc, and an office/reception; (ii) at first floor; a waiting area, a check in room, a supplies store, 2 wc's (1 accessible), 4 colposcopy examination rooms and with associated changing and consultation areas, a utility and a waste room; (iii) at second floor; a meeting room, 2 staff changing rooms (1 accessible with shower and wc), a wc, a staff canteen, a photocopier room and 4 staff office rooms. The proposed Colposcopy building will involve the loss of 10 existing parking spaces, at the south- eastern corner of the hospital site. 2 number accessible car parking spaces will be provided to the south of the proposed extension. Planning permission is also sought for site drainage, a glazed link to the existing Colposcopy

Planning Ref No.	Applicant Name	Summary of Development
		building, site landscaping works, and all other associated and ancillary works. Access is via the main hospital campus which is accessed from Dolphin's Barn Street. Grant Permission 25 Apr 2022
SHD0031/20 ABP 308917-20	DBTR-SCR1 Fund, a Sub-Fund of the CWTC Multi Family ICAV,	Demolition of all buildings excluding the original fabric of the former Player Wills Factory, construction of 492 no. Build to Rent apartments, 240 no. Build to Rent shared accommodation along, creche and associated site works. Grant Permission 15 Apr 2021
ABP-307221-20 (BG1)	DBTR-SCR1 Fund aSub-Fund of the CWTC Multi Family ICAV	Demolition of all structures, construction of 416 no. residential units (4 no. houses, 412 no. apartments) and associated site works. Planning Permission Granted with Conditions 14/09/2020
4049/19	The Coombe Women & Infant's University Hospital	The development will consist of a new four storey laboratory building (1340m^2) within the existing Coombe site with the provision of rooftop plant and 2 no. rear extensions to the existing adjacent laboratory building to include a new link, office and store (68m2) with all associated site works. This application site is in S.D.R.A. no.12, St Teresa's Gardens and Environs Strategic Development and Regeneration Area. Grant Permission 11 Feb 2020
2475/18	D.C.C. Housing Development	Pursuant to the requirements of the above, notice is hereby given of the intention to amend the previously permitted development comprising 50 no. units (16 no. apartments, 24 no. 3 bedroom terraced houses and 10 no. 2 bedroom terraced units - Planning ref 2033/14) to allow for the construction of an additional 4 no. terraced residential units and associated works; amendments to the design of 12 no. previously permitted units; development of a temporary grass multisport pitch in addition to the previously permitted park development (Phase A); demolition of 2 no. existing flat blocks to facilitate the future provision of a landmark park (Phase B) with full size multisport pitch and associated works at St. Teresa's Gardens, Donore Avenue, Dublin 8.
ABP-314171-22 (BG2)	CWTC Multi Family ICAV acting solely in respect of its sub fund DBTR SCR1 Fund	Demolition of buildings, construction of 345 no. residential units (292 no. Build to Rent apartments, 49 no. Build to Sell apartments, 4 no. Build to Sell Houses) creche and associated site works. Case is due to be decided by 14/11/2022 www.bgscr1shd2.ie

It is noted following a review of the applications specified in *Table 7-10* that applications ABP-307221-20 (BG1) and ABP-314171-22 (BG2) have been submitted for the same site however, only one of these applications will progress for development if the submissions for the site are approved.

Capacity within the existing foul sewer network has been confirmed by Irish Water (COF Ref: CDS21000854) on the 1st October 2021 (AECOM, 2022a) and the proposed connections and diversion (Diversion ref.: DIV21217) have been agreed with and confirmed by Irish Water in correspondence dated 31st March 2022 and dated the 8th July 2022. The WWTP is operated under relevant statutory approvals. It is noted that the most recent available 2020 AER for the Ringsend WWTP identifies a non-compliant status for final effluent with an exceedance of Emission Limit Values (ELVs) (Irish Water, 2021). The foul water from the Proposed Development will ultimately be treated at Ringsend WWTP which operates under existing statutory consents. However, Irish Water have completed the first phase of upgrade works to Ringsend WWTP in December 2021, which increased the capacity of the facility by 400,000 P.E. These works, together with the further works will ultimately increase the capacity of the facility from 1.6 million PE to 2.4 million PE. This plant upgrade will result in an overall reduction in the final effluent discharge loading to the receiving waters and is expected to be completed in 2025 (Irish Water, 2016).

Irish Water have confirmed that there is capacity within the foul network (refer to Irish Water, 2022 Certificate of Feasibility as Appendix C in AECOM, 2022a (Appendix I of this EIAR) to accept foul water from the Proposed Development and considering the proposed upgrades to the Ringsend WWTP, there are therefore, no anticipated cumulative impacts on the receiving water environment associated with the Proposed Development due to discharges from Ringsend WWTP.

The Proposed Development will be connected to the existing mains water supply subject to agreement from Irish Water who issued a Confirmation of Feasibility for the connection on 1st October 2021 (COF Ref: CDS21000854) (AECOM, 2022a). The mains water supply is operated in accordance with relevant existing statutory consents.

As long as the agreement/ application is granted and the connection is operated in accordance with relevant existing statutory consents therefore there will be no cumulative impacts associated with the Proposed Development Site on water resources

The transport of material to and from the Site if not appropriately managed could result in sediment and debris being tracked offsite on trucks and other site vehicles from the Proposed Development and other development sites in the area. There is a possibility of impact for water courses to offsite locations in the immediate vicinity of the Site due to sediment that may be entrained in road runoff entering the surface water drainage system and outfalling at offsite locations (i.e., Poddle Stream).

There are no other cumulative impacts associated with the construction phase of the Proposed Development.

7.5.4 “Do Nothing” Impact

In the ‘Do Nothing’ scenario it is considered that the Proposed Development did not proceed and the potential impact on the receiving hydrological and hydrogeological environment is considered.

If the Proposed Development did not proceed the Proposed Development Site would remain as an undeveloped, brownfield Site with no change to and there would be no change to the drainage at the Site or to the hydrological and hydrogeological regime at the Proposed Development Site including the site-betterment as a result of the removal of made ground and associated positive impact on groundwater quality and upgraded drainage on the Site.

7.6 Avoidance, Remedial & Mitigation Measures

The mitigation measures, as outlined below, will ensure that there will be no significant impact on the receiving groundwater and surface water environment. Hence, the Proposed Development Site will not have any impact on compliance with the EU Water Framework Directive, European Communities (Environmental Objectives) Surface Water Regulations, 2009 (SI 272 of 2009, as amended 2012 (SI No 327 of 2012), and the European Communities Environmental Objectives (Groundwater) Regulations, 2010 (S.I. No. 9 of 2010), as amended 2012 (SI 149 of 2012) and 2016 (S.I. No. 366 of 2016).

7.6.1 Construction Phase

A Construction Environmental Management Plan (CEMP), has been prepared by Enviroguide Consulting and a Construction and Demolition Waste Management Plan (CDWMP), prepared by AECOM (AECOM, 2022c) will be implemented by the appropriate contractor to ensure, site-specific procedures and mitigation measures to monitor and control environmental impacts throughout the Construction Phase of the Proposed Development and ensure that construction activities do not adversely impact the environment. The CEMP and CDWMP will be submitted under separate cover with the planning application for the Proposed Development.

Mitigation measures will be adopted as part of the construction works on the Proposed Development Site. The measures will address the main activities of potential impact which include:

- Control and Management of Water and Surface Runoff;
- Management and control of materials from off-site sources;
- Appropriate fuel and Chemical handling, transport and storage; and
- Management of accidental release of contaminants at the Site.

The construction works will be managed in accordance with all statutory obligations and regulations and with standard international best practice; good construction management practices will minimise the risk of pollution from construction activities at the site including but not limited to:

- CIRIA, (2001), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors;
- Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (C650), 2005;
- BPGCS005, Oil Storage Guidelines;
- EPA (2004) IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities;
- CIRIA 697, The SuDS Manual, 2007;
- UK Pollution Prevention Guidelines (PPG) UK Environment Agency, 2004; and
- Construction Industry Research and Information Association CIRIA C649: Control of water pollution from linear construction projects: Technical guidance (Murnane et al. 2006).

7.6.1.1 Control and Management of Water

There will be no direct discharges from construction activities to groundwater or surface water during the Construction Phase other than clean rainfall on ground. The Contractor will to ensure that no contaminated water/ liquids leave the Proposed Development Site (as surface water and run-off or otherwise) and enter the existing drainage at the Site or local drainage gullies on the adjoining roads including Margaret Kennedy Road and Donore Avenue.

There may be a requirement for localised dewatering or sump pumping on a temporary basis during excavation and management of water from these excavations will include control of surface water runoff and pumping of water from excavations.

Where necessary the water will be treated onsite to remove sediment or other potentially contaminating compounds. The treated water will be tankered offsite or discharged to foul sewer only under licence from Irish Water as appropriate.

A regular review of weather forecasts of heavy rainfall will be conducted, and a contingency plan will be prepared for before and after such events to minimise any potential nuisances. As the risk of the break-out of silt laden run-off is higher during these weather conditions, no work will be carried out during such periods where possible.

7.6.1.2 Control and Management of Soil

Based on the findings of the Site investigations at the Site (GII, 2021;Refer to Appendix A) (Appendix H of this EIAR) localised pockets of contaminated soil are expected to be encountered at the Site. The proposed floor levels and depth required for drainage infrastructure for the Proposed Development indicate that these localised contaminated soils will be removed during excavation works at the Site.

As with any brownfield site there may be as yet unidentified contaminated soils or other contaminated materials and infrastructure. Any potentially contaminated materials including those encountered during construction works will be managed in accordance with relevant guidelines including EPA 'Guidance on the Management of Contaminated Land and Groundwater at EPA Licensed Sites' (EPA, 2013) and guidance and standards current at the time of construction works. Therefore, there will be no residual sources of contamination that will remain onsite that could pose a risk to water quality. Potentially contaminated soil to be excavated and removed and disposed of off-site in accordance with the Waste Management (Amendment) Act, 2001, and associated regulations and guidance.

Any surplus soil not suitable for re-use as a by-product and other waste materials arising from the Construction Phase will be removed offsite by an authorised contractor and sent to the appropriately authorised (licensed/permitted) receiving waste facilities.

Stockpiled soil and stone materials pending removal offsite or reuse onsite will be located in in designated areas only and there will be no storage of materials within 10m of any boundary, drains and watercourses.

While waste classification and acceptance at a waste facility is pending, excavated soil for recovery/disposal will be stockpiled as follows:

- A suitable temporary storage area will be identified and designated;
- All stockpiles will be assigned a stockpile number;

- Soil waste categories will be individually segregated; and all segregation, storage & stockpiling locations will be clearly delineated on the Site drawings;
- Any waste to be temporarily stockpiled will be stockpiled only on hard-standing or high-grade polythene sheeting to prevent cross-contamination of the soil below; and
- Soil stockpiles will be sealed to prevent run-off of rainwater and leaching of potential contaminants from the stockpiled material generation and/or the generation of dust.

7.6.1.3 Importation of Soil and Aggregates

Contract and procurement procedures will ensure that all aggregates and fill material required are sourced from reputable suppliers operating in a sustainable manner and in accordance with industry conformity and compliance standards and statutory obligations.

The importation of aggregates will be subject to management and control procedures which will include testing and assessment of the suitability for use in accordance with engineering and environmental specifications for the Proposed Development including the suitability of material that may be imported in accordance with a By-Product Notification under Article 27 of the European Communities (Waste Directive) Regulations 2011. Therefore, any unsuitable material will be identified, avoided and not imported to the Site.

7.6.1.4 Concrete Works

The use of cementitious grout used during the construction of the undercroft structures and other infrastructure will be required and any potential impact to water quality will be avoided through the use of appropriate design and methods that will be implemented by the Contractor and in accordance with industry standards.

All ready-mixed concrete will be delivered to the Proposed Development Site by truck. Concrete mixer trucks will not be permitted to wash out onsite with the exception of cleaning the chute into a container which will then be emptied into a skip for appropriate compliant removal offsite.

7.6.1.5 Piling Methodology

The proposed piling methodology will minimise the potential for the introduction of any temporary conduit between any potential sources of contamination at the ground surface and underlying groundwater. The piling method will include procedures to ensure any potential impact to water quality is prevented including preventing surface runoff or other piling/drilling fluids from entering the pile bores and surrounding formation. Where there is a requirement to use lubricants, drilling fluids or additives the contractor will use water-based, biodegradable, and non-hazardous compounds under controlled conditions.

7.6.1.6 Handling of Fuels and Hazardous Materials:

Fuel, oils and chemicals used during construction are classified as hazardous.

Storage of fuel and hazardous materials will be undertaken with a view to protecting any essential services (electricity, water etc.) and the receiving land, soil and geology environment.

Bulk quantities of fuel will not be stored at the Site.

There will be appropriate storage areas for any fuel, oils and chemicals. Storage will be within a clearly marked bund on an impervious base remote from any surface water features such as oil. Temporary oil interceptors will be installed for period of the construction phase. Fuel

will only be stored in the quantities required for emergency use and re-fuelling. All drums to be quality approved and manufactured to a recognised standard. If drums are to be moved around the Site, they will be secured and moved on spill pallets. Drums will be loaded and unloaded by competent and trained personnel using appropriate equipment.

Bunds will have regard to Environmental Protection Agency guidelines 'Storage and Transfer of Materials for Scheduled Activities' (EPA, 2004) and Enterprise Ireland. Best Practice Guide BPGCS005. Oil Storage Guidelines. All tank and drum storage areas will, as a minimum, be bunded to a volume not less than the greater of the following:

- 110% of the capacity of the largest tank or drum within the bunded area; or
- 25% of the total volume of substance that could be stored within the bunded area.

Only emergency maintenance will be carried out on site.

Emergency response procedures will be put in place, in the unlikely event of spillages of fuels or lubricants.

Spill kits including oil absorbent material will be provided so that any spillage of fuels, lubricants or hydraulic oils will be immediately contained.

In the event of a leak or spill from equipment in the instance of a mechanical breakdown during operation, any contaminated soil will be removed from the Site and compliantly disposed of off-site. Residual soil will be tested to validate that all potentially contaminated material has been removed. This procedure will be undertaken in accordance with current industry best practice procedures and EPA guidelines.

Site staff will be familiar with emergency procedures in the event of accidental fuel spillages and all staff on-site will be fully trained on the use of equipment to be used on-site.

Refuelling of plant and vehicles during the Construction Phase will only be permitted at designated refuelling station locations onsite and will be from a road tanker brought to site as required. Each station will be fully contained and equipped for spill response and a specially trained and dedicated Environmental and Emergency Spill Response team will be appointed by the contractor before the commencement of works onsite.

7.6.1.7 Welfare Facilities

Welfare facilities have the potential, if not managed appropriately, to release organic and other contaminants to ground or surface water courses. All waste from welfare facilities will be managed in accordance with the relevant statutory obligations through either a temporary connection to mains foul sewer (subject to receipt of the relevant consent from Irish Water) which will be constructed in accordance with Irish Water guidelines or by tankering of waste offsite by an appropriately authorised contractor in compliance with all legislative requirements.

7.6.1.8 Wheel-Wash and Water Treatment Facilities

The use of wheel-wash and water treatment facilities and water treatment facilities will be used as required on Site. The correct use and management of these will be undertaken by the appointed contractor to ensure that there is no harm or impact to the receiving water environment.

To prevent tracking of dust and debris on haul routes offsite the following will be undertaken:

- Implement a wheel washing system where required;
- Use of dedicated internal haul routes and set down areas that will be covered with hardcore or similar; and
- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site.

To prevent fugitive runoff from the Site the following will be implemented:

- Silt traps, silt fences will need to be provided by the contractor where necessary to prevent silts and soils being washed away by heavy rains during the course of the construction stage;
- Where localised shallow water is encountered in excavations during the construction phase, surface water runoff and water pumped from the excavation works will be discharged via a silt trap / settlement pond to the existing foul drainage network;
- Onsite water treatment system will be used if required to remove suspended solids and hydrocarbons; and
- All sludges and other waste from wheel-wash and water treatment infrastructure will be removed from the Site by the approved contractor in accordance with all legislative requirements.

7.6.1.9 Decommissioning of Boreholes

Site investigation and monitoring boreholes (wells) at the Site (Refer Section 7.4.1) that are no longer required for monitoring during the Construction Phase or Operational Phase will be decommissioned prior to construction works commencing in accordance with current best-practice at the time of decommissioning and at a minimum the specifications outlined in EPA Advice Noted 14 (EPA, 2013).Monitoring boreholes (wells) retained will be protected to ensure that the well is not damaged during construction works. This will remove any potential direct conduit for contaminants to enter the groundwater directly and potentially migrate offsite.

7.6.2 Operational Phase

Ongoing regular operational monitoring and maintenance of drainage and the SuDS measures in accordance with CIRIA SuDS Manual C753 will be incorporated into the overall management strategy for the Proposed Development.

With regard to the proposed discharge of treated operational surface water from the Proposed Development to the Poddle Stream, the potential for surface water generated at the Site of the Proposed Development to cause significant effects to downstream sensitivities during the Operational Phase would be considered negligible due in part to the SuDS measures and interceptor incorporated in the Project Design. Project specific SuDS measures are described below.

There is no other requirement for mitigation measures for the Operational Phase of the Proposed Development

7.6.3 “Worst Case” Scenario

During the Construction Phase or Operational Phases there is a potential risk of accidental release of petroleum hydrocarbons (e.g., a fuel spill) that could migrate to groundwater or offsite to surface water via site drainage would result in in a ‘negative’, ‘significant’, ‘medium-term’ impact on the quality of the receiving water depending on the nature of the incident.

However, taking account of the avoidance and mitigation measures the worst-case scenario is deemed to be an unlikely scenario.

7.6.4 Human Health

No public health issues have been identified for the Construction Phase or Operational Phase of the Proposed Development.

Appropriate industry standard and health and safety legislative requirements will be implemented during the Construction Phase that will be protective of site workers.

The water supply for the Proposed Development will be via connection to the public supply.

There are three recorded groundwater sources located within a 2km radius of the Site, however, in the event of unidentified groundwater users (i.e., drinking water supply well) taking account of the design of the Proposed Development and the avoidance and mitigation measures there will be no potential risk to any drinking water sources associated with the Proposed Development.

7.7 Water Framework Directive

The findings of the assessment of the potential impact on the WFD status of water bodies hydraulically connected with the Proposed Development Site and within the same river basin district as the Site are provided in the HRA (Enviroguide Consulting, 2022) that concludes:

> *The Proposed Development will not cause a deterioration in status of water bodies hydraulically connected with the Proposed Development Site including the Poddle Stream, Liffey Estuary Upper, Liffey Estuary Lower and Dublin Bay and Dublin GWB taking account of design avoidance and mitigation measures. The Proposed Development will not jeopardise objectives to achieve good surface water status or good ecological potential and the attainment of good surface water chemical status. The Proposed Development will not permanently exclude or compromise the achievement of the objectives of the WFD in other bodies of water within the same river basin district as the Site.*

Therefore, as identified in the WFD assessment provided in the HRA (Enviroguide Consulting, 2022) the potential impact on WFD status is 'negligible', 'neutral' and 'long term'. There is no significant adverse impact identified on the WFD status identified with the Proposed Development in the long-term

7.8 Residual Impacts

Residual Impacts are defined as 'effects that are predicted to remain after all assessments and mitigation measures. They are the remaining 'environmental costs' of a project and are the final or intended effects of a development after mitigation measures have been applied to avoid or reduce adverse impacts.

The predicted impacts of the Construction and Operational Phases are described in Section 7.5 and summarised in Table 7-11 in terms of quality, significance, extent, likelihood, and duration and the residual impacts which take account of the avoidance, remedial and mitigation measures.

There are no likely significant adverse residual impacts on hydrology and hydrogeology anticipated regarding this Proposed Development.

Table 7-11: Summary of Residual Impacts

Activity	Attribute	Predicted Impact	Quality	Significance	Duration	Type	Mitigation	Residual Impact
Construction Phase								
Construction of undercroft and subsurface infrastructure	Hydrogeological Flow Regime	Groundwater flow within the aquifer will not be impacted, large-scale dewatering will not be required	Negative	Imperceptible	Temporary	Direct	None	Imperceptible
Use of potentially hazardous materials cementitious materials.	Water Quality	Potential release of cementitious material during the construction of foundations, pavements and other structures.	Negative	Significant	Medium Term	Direct	The design will incorporate the use of pre-cast concrete structures where appropriate. The Contractor will carry out works in accordance with industry standards. Detailed design for piling to include methods to prevent impact water quality.	Imperceptible
Earthworks – release of suspended solids	Surface Water Quality	Potential for release of sediment to surface water	Negative	Moderate	Medium-term	Direct	Appropriate measures including silt fences and buffer zones to be used to prevent fugitive runoff including to adjoining roads	Imperceptible
Importation of aggregate and materials	Water quality	Importation of potentially contaminated materials resulting in leaching and	Negative	Significant	Long-term	Direct	All aggregates and fill material required are sourced from reputable	Imperceptible

Activity	Attribute	Predicted Impact	Quality	Significance	Duration	Type	Mitigation	Residual Impact
		runoff to the underlying groundwater bodies and receiving water course					suppliers operating in a sustainable manner and in accordance with industry conformity and compliance standards and statutory obligations.	
Earthworks – removal of surplus material and waste	Water quality	Potential for release of sediment to surface water	Negative	Moderate	Medium-Term	In-direct	All surplus material and waste material will be removed offsite in accordance with detailed procedures in strict accordance with all waste management legislation and the procedures outlined in the CDWMP to be prepared by the Contractor	Imperceptible
Accidental release of deleterious materials including fuel and other materials being used on-site.	Groundwater / Surface Water	Potential (albeit low) for uncontrolled release of deleterious materials including fuels and other materials being used on-site, through the failure of secondary and tertiary containment or a materials handling accident.	Negative	Significant	Medium-Term	Direct / Worst Case	Procedures for the use and handling of all potentially hazardous compounds to be included in the CEMP to be prepared by the Contractor.	Imperceptible
Piling Works	Introduce preferential pathway and impact on water quality	Potential for migration of contaminants during piling works via direct conduit to subsurface.	Negative	Moderate	Medium-Term	Direct	Detailed design piling and method will be prepared by the appointed contractor. Use of water-based, biodegradable	Imperceptible

Activity	Attribute	Predicted Impact	Quality	Significance	Duration	Type	Mitigation	Residual Impact
							non-hazardous substances to be used.	
Operational Phase								
Proposed Development	Hydrogeological Flow Regime	There is no identified impact on the overall hydrogeological flow regime of the Dublin GWB	Neutral	Imperceptible	Long-term	Direct	None	Imperceptible
Surface Water Drainage	Water Quality	All surface water drainage from paved areas, hardstanding areas and roadways will be collected via swales and filter drains and directed to the newly constructed surface water drainage system at the Site which ultimately discharges to the Poddle Stream	Negative	Moderate	Medium-term	Direct	Surface water drainage at the Proposed Development Site has been designed in accordance with SuDS and includes treatment by Class 1 oil interceptor therefore it is anticipated that water quality will not be impacted	Imperceptible
Proposed Development and Drainage	Flood Risk and surface water regime	There is no identified flood risk associated with the Proposed Development	None	Imperceptible	Long-term	Direct	Maintenance of the SuDS..	Imperceptible
Discharge to foul sewer	Receiving water at Ringsend WWTP	Discharges to sewer will only be permitted where authorised by Irish Water. Confirmation of Feasibility received from Irish Water (Irish Water, 2021; Reference CDS21000854)	Neutral	Imperceptible	Long-term	Indirect / Cumulative	None Required.	Imperceptible

7.9 Monitoring

7.9.1 Construction Phase

During the construction phase the following monitoring measures will be considered:

- The Contractor will carry out inspections and monitoring of general site conditions during excavations, piling and other groundworks to ensure that measures protective of water quality outlined in the EIAR, CEMP and CDWMP are fully implemented and effective;
- Groundwater monitoring will be undertaken by a competent person appointed by the Contractor prior to construction commencing and for the duration of the Construction Phase to verify that there is no impact on the groundwater beneath the Site and downgradient receptors; and
- Daily monitoring and inspections during refuelling, concrete works to ensure no impacts and compliance with ameliorative, remedial and reductive measures.
- Materials management and waste audits will be carried out at regular intervals by the appointed contractor.

There are no other specific monitoring or sampling requirements in relation to hydrology and hydrogeology during the Construction Phase of the Proposed Development.

7.9.2 Operational Phase

There are no monitoring requirements specifically in relation to hydrology and hydrogeology during the Construction Phase of the Proposed Development.

7.10 Interactions

7.10.1 Population and Human Health

No public health issues associated with the water (hydrology and hydrogeology) conditions at the Proposed Development Site have been identified for the Construction Phase or Operational Phase of the Proposed Development.

Appropriate industry standards and health and safety legislative requirements will be implemented during the construction phase that will be protective of site workers.

It is noted that specific issues relating to Public Heath associated with the Proposed Development are set out in Chapter 4 of this EIAR.

7.10.2 Material Assets - Water

Any discharges to the public foul sewer and abstractions from water supply from the Proposed Development will be under consent from Irish Water. An assessment of the potential impact of the Proposed Development on the Material Assets including built services, infrastructure, traffic, and waste management has been set out in Chapter 12 of this EIAR.

7.10.3 Land, Soil, Geology and Hydrogeology

An assessment of the potential impact of the Proposed Development on the existing land, soils and geological environment during the Operational Phase of the Proposed Development is set out in Chapter 6 Land, Soil and Geology.

7.10.4 Biodiversity

The Proposed Development will potentially impact ecological receptors via surface water runoff to road gullies and sewers and groundwater migration.

An assessment of the potential impacts of the Proposed Development on the Biodiversity of the Proposed Development Site, with emphasis on habitats, flora and fauna which may be impacted as a result of the Proposed Development is included in Chapter 5 of this EIAR. It also provides an assessment of the impacts of the Proposed Development on habitats and species, particularly those protected by national and international legislation or considered to be of particular conservation importance and proposes measures for the mitigation of these impacts.

7.11 Difficulties Encountered When Compiling

There were no difficulties encountered when compiling the Hydrology and Hydrogeology Chapter of this EIAR.

7.12 References

AECOM, 2022 (AECOM, 2022a), The Donore Project Part 10 Application Infrastructure Report.

AECOM, 2022 (AECOM, 2022b) The Donore Project Part 10 Application Flood Risk Assessment.

AECOM, 2022 (AECOM, 2022c) Construction & Demolition Waste Management Plan. Donore Project, Donore Avenue, Dublin 8.

AECOM, 2022. (AECOM, 2022d). Overall Proposed Drainage Layout (Sheet No.: STG-AEC-S1b-00-DR-C-0000500).

Council Directive 80/68/EEC, 1979. On the protection of groundwater against pollution caused by certain dangerous substances. Council of European Communities.

Council Directive 2006/118/EEC, 2006. On the protection of groundwater against pollution and deterioration. European Parliament and the Council of European Communities.

Construction Industry Research and Information Association, 2000. Environmental Handbook for Building and Civil Engineering Projects.

Construction Industry Research and Information Association, 2001. Control of Water Pollution from Construction Sites (CIRIA – C532).

Construction Industry Research and Information Association, 2011. Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors.

Construction Industry Research and Information Association, 2005. Environmental Good Practice on Site (CIRIA – C650).

Construction Industry Research and Information Association, 2007. The SuDS Manual (CIRIA – C697).

Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy with amendments 2455/2001/EC, 2008/32/EC and 2008/105/EC.

Enterprise Ireland. Best Practice Guide BPGCS005. Oil Storage Guidelines.

Enviroguide Consulting, 2022. Hydrological & Hydrogeological Risk Assessment Report for Proposed Development at Donore Project, Donore Avenue, Dublin 8.

Environmental Protection Agency, August 2017. Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2017).

Environmental Protection Agency, September 2015. Draft Advice Notes for preparing Environmental Impact Statements (EPA, 2015).

Environmental Protection Agency, 2004. IPC Guidance Note. Guidance Note on Storage and Transfer of Materials for Scheduled Activities.

Environmental Protection Agency, 2022. Catchments webmapping https://www.catchments.ie/maps/. Consulted on 27/07/2022.

Environmental Protection Agency, 2022. EPA HydroNet webmapping and databases. http://www.epa.ie/hydronet/#Water%20Levels. Consulted on 27/07/2022.

Environmental Protection Agency, 2022. EPA Envision Maps. https://gis.epa.ie/EPAMaps/. Consulted on 27/07/2022.

Dublin City Council, 2016. Dublin City Development Plan 2016-2022.

Dublin City Council, 2022. Dublin City Development Plan 2022-2028.

Geological Society of Ireland, 2022. GSI webmapping. https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aaac3c228. Consulted on 27/07/2022.

Geological Survey of Ireland, 2022. Groundwater Body Reports, Dublin GWB. https://secure.dccae.gov.ie/GSI_DOWNLOAD/Groundwater/Reports/GWB/DublinGWB.pdf. Consulted on Consulted on 27/07/2022.

Google Earth Pro, 2022. Consulted on 27/07/2022.

Ground Investigations Ireland, 2021. St Teresa's Gardens AECOM Waste Classification &GQRA Report. (Project No.: 10551-04-21)

Institute of Geologists of Ireland, 2013. Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements.

Met Éireann, 2012. Séamus Walsh, 'Long-term climate averages for Ireland 1981 - 2010', [IE_RR_8110_V1] (Walsh, 2012).

Metropolitan Workshop Ltd., 2022. Proposed Site Layout (Drawing No.: STG-MET-S1b-00-00-DR-A-1100002-S4-P1).

National Parks and Wildlife Services (NPWS) webmapping 2022. https://dahg.maps.arcgis.com/apps/webappviewer/index.html?id=8f7060450de3485fa1c1085536d477ba. Consulted on 27/07/2022.

National Roads Authority, 2009. Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes.

Ordnance Survey Ireland, 2022. Ordnance Survey Ireland webmapping http://map.geohive.ie/mapviewer.html. Consulted on 27/07/2022.

Office of Public Works, 2022. OPW Flood Risk webmapping. https://www.floodinfo.ie/map/floodmaps/. Consulted on 27/07/2022.

Water Framework Directive, 2022. Water Framework Directive web mapping - http://watermaps.wfdireland.ie/NsShare_Web/. Consulted on 27/07/2022.

8 AIR QUALITY, CLIMATE AND MICROCLIMATE

8.1 Air Quality and Climate

8.1.1 Introduction

This Chapter will describe and assess the likely significant effects on air quality and climate associated with the Proposed Development at the former St. Teresa's Gardens, Donore Avenue, Dublin 8. This Chapter was prepared by Laura Griffin (BA Hons English and Geography, MSc Climate Change), Environmental Consultants, Enviroguide Consulting. Laura has experience working on a number of EIARs and EIA Screening Reports for projects of a similar scale to the Proposed Development.

In accordance with Ambient Air Quality Standards, the baseline air quality will be examined along with the potential for release of emissions to the atmosphere and associated effects prior to and following mitigation measures. This Chapter will also describe and assess the potential impacts on micro and macro-climate as a result of the Proposed Development. Attention will be focused on Ireland's obligations under the Kyoto Protocol in the context of the overall climatic impact of the presence and absence of the Proposed Development.

8.1.1.1 Ambient Air Quality Standards

For the protection of health and ecosystems, EU directives apply air quality standards in Ireland and other EU member states for a range of pollutants. These Directives include requirements for monitoring, assessment and management of ambient air quality. The first major instrument in tackling air pollution was the Air Quality Framework Directive 96/62/EC and its four daughter Directives. Each of these instruments was repealed with the introduction of Directive 2008/50/EC on ambient air quality and cleaner air for Europe in 2008 (as amended by Decision 2011/850/EU and Directive 2015/1480/EC) (the CAFE Directive), save for the "Fourth Daughter Directive" (Directive 2004/107/EC relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air).

The CAFE Directive lays down measures aimed at:

1. Defining and establishing objectives for ambient air quality designed to avoid, prevent or reduce harmful effects on human health and the environment as a whole;
2. Assessing the ambient air quality in member states on the basis of common methods and criteria and, in particular, assessing concentrations in ambient air of certain pollutants;
3. Providing information on ambient air quality in order to help combat pollution and nuisance and to monitor long-term trends and improvements resulting from national and community measures;
4. Ensuring that such information on ambient air quality is made available to the public;
5. Maintaining air quality where it is good and improve it in other cases;
6. Promoting increased cooperation between the member states in reducing air pollution.

Ambient air quality monitoring and assessment in Ireland is carried out in accordance with the requirements of the CAFE Directive. The CAFE Directive has been transposed into Irish legislation by the Air Quality Standards Regulations (S.I. No. 180 of 2011). The CAFE Directive requires EU member states to designate 'Zones' reflective of population density for the purpose of managing air quality. Four zones were defined in the Air Quality Standards Regulations (2011) and subsequently amended in 2013 to account for 2011 census population counts and to align with coal restricted areas in the Air Pollution Act (Marketing, Sale, Distribution and Burning of Specified Fuels) Regulations 2012. (S.I. No. 326 of 2012) (the 2012 Regulations).

The main areas defined in each zone are:

- **Zone A:** Dublin Conurbation
- **Zone B:** Cork Conurbation
- **Zone C:** Other cities and large towns comprising Limerick, Galway, Waterford, Drogheda, Dundalk, Bray, Navan, Ennis, Tralee, Kilkenny, Carlow, Naas, Sligo, Newbridge, Mullingar, Wexford, Letterkenny, Athlone, Celbridge, Clonmel, Balbriggan, Greystones, Leixlip and Portlaoise.
- **Zone D:** Rural Ireland, i.e., the remainder of the State excluding Zones A, B and C.

The site of the Proposed Development is located at a on the former St. Teresa's Gardens, Donore Avenue, Dublin 8 and falls under the 'Zone A' category based on the EPA designation under the CAFE Directive.

The CAFE Directive outlines certain limit or target values specified by the five published directives that apply limits to specific air pollutants. These limits, outlined in Table 8-1, will be referred to as part of the Proposed Development assessment with respect to air quality.

Table 8-1: Limit Values of Cleaner Air for Europe (CAFE) Directive 2008/50/EC (Source: EPA, 2020)

Pollutant	Limit Value Objective	Averaging Period	Limit Value µg/m3	Limit Value ppb	Basis of Application of the Limit Value	Limit Value Attainment Date
SO_2	Protection of Human Health	1 hour	350	132	Not to be exceeded more than 24 times in a calendar year	1 Jan 2005
SO_2		24 hours	125	47	Not to be exceeded more than 3 times in a calendar year	1 Jan 2005
SO_2	Protection of vegetation	Calendar year	20	7.5	Annual mean	19 July 2001
SO_2		1 Oct to 31 Mar	20	7.5	Winter mean	19 July 2001
NO_2	Protection of human health	1 hour	200	105	Not to be exceeded more than 18 times in a calendar year	1 Jan 2010
NO_2		Calendar year	40	21	Annual mean	1 Jan 2010
NO + NO_2	Protection of ecosystems	Calendar year	30	16	Annual mean	19 July 2001
PM10	Protection of human health	24 hours	50	-	Not to be exceeded more than 35 times in a calendar year	1 Jan 2005
PM10		Calendar year	40	-	Annual mean	1 Jan 2005
PM2.5 - Stage 1		Calendar year	25	-	Annual mean	1 Jan 2015
PM2.5 - Stage 2		Calendar year	20	-	Annual mean	1 Jan 2020
Lead		Calendar year	0.5	-	Annual mean	1 Jan 2005
Carbon Monoxide		8 hours	10,000	8,620	Not to be exceeded	1 Jan 2005
Benzene		Calendar year	5	1.5	Annual mean	1 Jan 2010

The EPA is the competent authority for the purpose of the CAFE Directive and is required to send an annual report to the Minister for Environment and the European Commission. The regulations further provide for the distribution of public information. This includes information on any exceedances of target values, the reasons for exceedances, the area(s) in which they

occurred, and the relevant information regarding effects on human health and environmental impacts.

8.1.1.2 Climate Agreements

Climate change is recognised as one of the most serious global environmental problems and arguably the greatest challenge facing humanity today. While natural variations in climate over time are normal, anthropogenic activities have interfered greatly with the global atmospheric system by emitting substantial amounts of greenhouse gases (GHGs). This has caused a discernible effect on our global climate system, with continued change expected due to current and predicted trends of GHG emissions. In Ireland this is demonstrated by rising sea levels, changes in the ecosystem, and extreme weather events.

In March 1994, the United Nations Framework Convention on Climate Change (UNFCCC) was established as an intergovernmental effort to tackle the challenges posed by climate change. The Convention membership is almost universal, with 197 countries having ratified. Under the Convention, governments gather and share information on GHG emissions, national policies, and best practices. This information is then utilised to launch national strategies and international agreements to address GHG emissions. Following the formation of the UNFCCC, two major international climate change agreements were adopted: The Kyoto Protocol, and the Paris Agreement.

In April 1994, Ireland ratified the United Nations Framework Convention on Climate Change (UNFCCC) and subsequently signed the Kyoto Protocol in 1997. The Kyoto Protocol is an international agreement linked to the UNFCCC which commits its parties to legally binding emission reduction targets. In order to ensure compliance with the protocol, the Intergovernmental Panel on Climate Change (IPCC) has outlined detailed guidelines on compiling National Greenhouse Gas Inventories. These are designed to estimate and report on national inventories of anthropogenic GHG emissions and removals. Under Article 4 of the Kyoto Protocol, Ireland agreed to limit the net anthropogenic growth of the six named GHGs to 13% above the 1990 level, during the period 2008 to 2012.

The second commitment period of the Kyoto Protocol was established by the Doha amendment which was adopted *in extremis* on the 8th of December 2012, to impose quantified emission limitation and reduction commitments (QELRCs) to Annex I (developed country) Parties during a commitment period from 2013 to 2020. 38 developed countries, inclusive of the EU and its 28 member states, are participating. Under the Doha amendment, participating countries have committed to an 18% reduction in emissions from 1990 levels. The EU has committed to reducing emissions in this period to 20% below 1990 levels. Ireland's QELRCs for the period 2013 to 2020 is 80% of its base year emissions. Ireland's compliance with the Doha amendment will be assessed based on the GHG inventory submission in 2022 for 1990-2020 data. As of October 2020, the Doha Amendment has received the required number of ratifications to enter into force. Once in force, the emission reduction commitments of participating developed countries and economies in transition (EITs) become legally binding.

In December 2015, the Paris Climate Change Conference (COP21) took place and was an important milestone in terms of international climate change agreements. The Paris Agreement sets out a global action plan to put the world on track to mitigate dangerous climate change by setting a global warming limit not to exceed 2°C above pre-industrial levels, with

efforts to limit this to 1.5°C. As a contribution to the objectives of the agreement, countries have submitted comprehensive national climate action plans (nationally determined contributions, NDCs). Under this agreement, governments agreed to come together every 5 years to assess the collective progress towards the long-term goals and inform Parties in updating and enhancing their nationally determined contributions. Ireland will contribute to the Agreement through the NDC tabled by the EU on behalf of Member States in 2020, which commits to a 55% reduction in EU-wide emissions by 2030 compared to 1990. This is considered to be the current NDC maintained by the EU and its Member States under Article 4 of the Paris Agreement.

The EU has set itself targets for reducing its GHG emissions progressively up to 2050, these are outlined in the 2020 climate and energy package and the 2030 climate and energy policy framework. These targets are defined to assist the EU in transitioning to a low-carbon economy, as detailed in the 2050 low carbon roadmap (this target has now been revised to net zero under the European Climate Law). The 2020 package is a set of binding legislation to ensure that the EU meets its climate and energy targets for the year 2020. There are three key targets outlined in the package which were set by the EU in 2007 and enacted in legislation in 2009:

- 20% reduction in GHG emissions from 1990 levels;
- 20% of EU energy to be from renewable sources;
- 20% improvement in energy efficiency.

The 2030 climate and energy framework builds on the 2020 climate energy package and was adopted by EU leaders in October 2014. The framework sets three key targets for the year 2030:

- At least 40% cuts in GHG emissions from 1990 levels;
- At least 32% share for renewable energy;
- At least 32.5% improvement in energy efficiency.

The EU has acted in several areas in order to meet these targets, including the introduction of the Emissions Trading System (ETS). The ETS is the key tool used by the EU in cutting GHG emissions from large-scale facilities in the power, industrial, and aviation sectors. Around 45% of the EU's GHG emissions are covered by the ETS.

As part of the European Green Deal, the Commission proposed in September 2020 to raise the 2030 greenhouse gas emission reduction target, including emissions and removals, to at least 55% compared to 1990. The European Climate Law came into force in July 2021 and writes into law the goal set out in the European Green Deal for Europe's economy and society to become climate-neutral by 2050. The law also sets the intermediate target of reducing net greenhouse gas emissions by at least 55% by 2030, compared to 1990 levels.

8.1.1.2.1 National Policy Position in Ireland

National climate policy in Ireland recognises the threat of climate change to humanity and supports mobilisation of a comprehensive international response to climate change, and global transition to a low-carbon future.

The Climate Action and Low Carbon Development (Amendment) Act 2021 was enacted in 2021 and sets Ireland on a legally binding path to net-Zero emissions no later than 2050, and

to a 51% reduction in emissions by the end of this decade. The Act provides the framework for Ireland to meet its international and EU climate commitments and to become a leader in addressing climate change.

The Irish Government published its Climate Action Plan (2021) and the accompanying Annex of Actions which provides a detailed plan for taking decisive action to achieve a 51% reduction in overall greenhouse gas emissions by 2030 (compared to 2018) levels which is in line with the EU ambitions, and a longer-term goal to achieving net-zero emissions no later than 2050. The plan lists actions needed to deliver on our climate targets (and had set indicative ranges of emissions reductions for each sector of the economy, before the Sectoral Emissions Ceilings had been finalised). It will be updated annually to ensure alignment with Ireland's legally binding economy-wide Carbon Budgets and Sectoral Emissions Ceilings. The next Climate Action Plan is due to be published by the end of 2022.

Ireland's latest greenhouse gas (GHG) emissions 1990-2021 are provisional figures based on the SEAI's final energy balance released in June 2022 (EPA, 2022). In 2021, Ireland's GHG emissions are estimated to be 61.53 million tonnes carbon dioxide equivalent (Mt CO_2eq), which is 4.7% higher (or 2.76 Mt CO_2eq) than emissions in 2020 (58.77 Mt CO_2eq). There was a decrease of 3.4% in emissions reported for 2020 compared to 2019. Emissions are over 1% higher than pre-pandemic 2019 figures.

In 2021, national total emissions excluding Land Use, Land Use Change and Forestry (LULUCF) increased by 4.7%, emissions in the stationary ETS sector increased by 15.2% and emissions under the ESR (Effort Sharing Regulation) increased by 1.6%. When LULUCF is included, total national emissions increased by 5.5%. The energy industries, transport and agriculture sectors accounted for 71.9% of total GHG emissions. Agriculture is the single largest contributor to the overall emissions, at 37.5%. Transport, energy industries and the residential sector are the next largest contributors, at 17.7%, 16.7% and 11.4%, respectively (EPA, 2022).

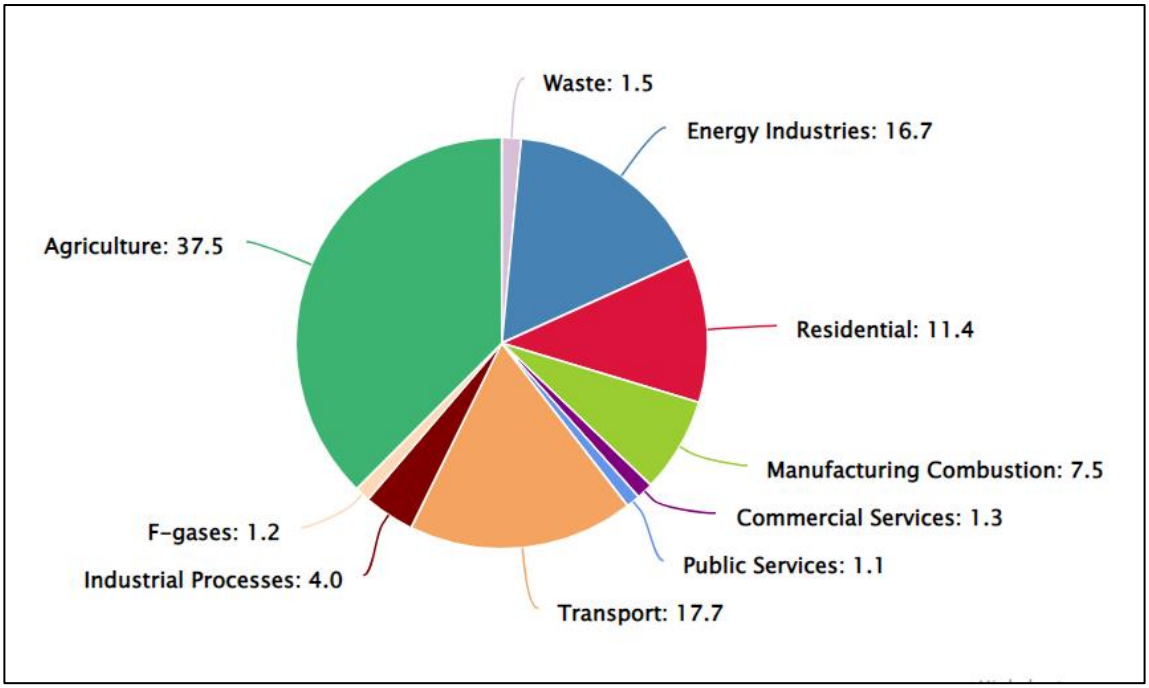


Figure 8-1: Ireland's Greenhouse Gas Emissions by Sector for 2021 (Source: EPA, 2022)

8.1.2 Study Methodology

The study methodology is best practice and understood approach. Taking into account Ambient Air Quality Standards, the baseline air quality of the site will be examined using EPA monitoring data. Air quality impacts from the Proposed Development will then be determined by a qualitative assessment of the nature and scale of dust generating activities associated with the construction phase of the project in accordance with relevant guidance (Transport Infrastructure Ireland (TII) 2011 Appendix 8; Institute of Air Quality Management (IAQM) 2014).

In order to account for a worst-case scenario, the Proposed Development can be considered major in scale due to the size of the site and the duration of construction activities. Therefore, it can be assumed that there is potential for significant dust soiling 100m from the site as per Table 8-5. In light of this, sensitive receptors within 100m of the site boundary have been selected. Impacts from the Construction Phase traffic has been assessed using information from the Traffic Chapter and following the relevant guidance (TII, 2011; HA, 2007; EPA; UK DEFRA; IAQM).

Operational Phase traffic impact assessment will involve air dispersion modelling using the UK Design Manual for Roads and Bridges Screening Model (DMRB, UK Highways Agency 2007) (Version 1.03c), the NO_x to NO_2 Conversion Spreadsheet (UK Department for Environment, Food and Rural Affairs, 2017), and following all relevant guidance (TII, 2011; HA, 2007; EPA; UK DEFRA; IAQM). This Chapter has been carried out in accordance with the Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA 2022) and European Comission Guidance.

A desktop study involving various national and international documents on climate change and analysis of synoptic meteorological data from the nearest Met Eireann station (Dublin

Airport Synoptic Station) was also carried out in order to compile this chapter. Attention will be focused on Ireland's obligations under the Kyoto Protocol (including the Doha Amendment) and the Paris Agreement in the context of the overall climatic impact of the presence and absence of the Proposed Development.

8.1.3 The Existing and Receiving Environment (Baseline Situation)

The Proposed Development is located on the former St. Teresa's Gardens, Donore Avenue, Dublin 8. The site is bound by Donore Avenue to the north-east, Margaret Kennedy Road to the north-west, The Coombe Women and Infants University Hospital to the west, the former Bailey Gibson factory buildings to the south-west, and the former Player Wills factory to the south-east. The Proposed Development will consist of the construction of a residential scheme of 543 no. apartments on an overall site of 3.26 ha. with a net development area of 2.05 ha. The landholding comprises the site of the former St. Teresa's Gardens Flat Complex, which have since been demolished save for two blocks closest to Donore Avenue.

8.1.3.1 Air Quality

According to the 2012 Regulations (S.I. No. 326 of 2012) the proposed site falls into 'Zone A' of Ireland which is described by the EPA as 'Dublin Conurbation'. It is expected that existing ambient air quality in the vicinity of the site is characteristic of a suburban location with the primary source of air emissions such as particulate matter, NO_2, and hydrocarbons likely to be of traffic and domestic fuel burning.

In conjunction with individual local authorities, the EPA undertakes ambient air quality monitoring at specific locations throughout the country in the urban and rural environment; an Air Quality Report based on data from 30 monitoring stations and a number of mobile air quality units is developed on an annual basis. The EPA's most recent publication 'Air Quality in Ireland, 2021' reports the quality of the air in Ireland based on the data from the National Ambient Air Quality Monitoring Network throughout the year 2020.

When assessing air quality, the EPA focuses on two main pollutants: particulate matter and nitrogen oxides. Measured concentrations of NO_2 for the years 2020 and 2021 are presented in Table 8-2 for Zone A monitoring stations. These results show that current levels of NO_2 are well below the annual mean and 1-hour maximum limit values. In the year 2020, annual mean concentrations of NO_2 ranged from 11 - 30 ug/m^3 across all Zone A stations, with no exceedance of the maximum hourly limit (EPA, 2021). In the year 2021, annual mean concentrations of NO_2 ranged from 11.4 – 36.1 ug/m^3 across all Zone A stations, with no exceedance of the maximum hourly limit (EPA, 2022).

The Winetavern St. monitoring station is the closest station to the site (ca. 1.5km) which continuously monitors for concentrations of nitrogen oxides (NO_2). Concentrations of NO_2 are also well below the threshold limits contained within the regulations at Winetavern St. monitoring station, with an annual mean of 15 ug/m^3 and 18 ug/m^3 measured in 2020 and 2021, respectively (EPA, 2021, 2022).

During 2020, the restriction of movement in Ireland due to the COVID-19 Pandemic had an impact on air quality nationally with a large-scale reduction in vehicular traffic. It is noted that the decrease in NO_2 levels during that year is a direct result of the restrictions placed on movements and construction due to COVID-19.

Based on the EPA monitoring data and taking account of the site's environs and surrounding land-use, along with changes in vehicular and construction activity, a conservative estimate of current background NO_2 concentrations in the vicinity of the site is 16.5 ug/m^3.

Table 8-2: Concentrations of NO_2 at Zone A Monitoring Stations

Station	Objective	Concentration (µg/m^3)		Limit or Threshold Value (ug/m^3)	Number of values >200µg/m^3
		2020	2021		
Winetavern St	Annual Mean NO_2	15	18	40	N/A
	Hourly Max NO_2	121.5	88.6	200	0
Davitt Road	Annual Mean NO_2	14	15.2	40	N/A
	Hourly Max NO_2	108.3	84.8	200	0
DAA	Annual Mean NO_2	23	19	40	N/A
	Hourly Max NO_2	88.8	96.1	200	0
St. Johns Road	Annual Mean NO_2	30	33.2	40	N/A
	Hourly Max NO_2	130.1	124	200	0
Rathmines	Annual Mean NO_2	13	14.4	40	N/A
	Hourly Max NO_2	170	143.4	200	0
Dun Laoghaire	Annual Mean NO_2	14	15.5	40	N/A
	Hourly Max NO_2	92.1	92.6	200	0
Ballyfermot	Annual Mean NO_2	12	13.2	40	N/A
	Hourly Max NO_2	107.7	90	200	0
Blanchardstown	Annual Mean NO_2	12	30.6	40	N/A

Station	Objective	Concentration (µg/m^3)		Limit or Threshold Value (ug/m^3)	Number of values >200µg/m^3
		2020	2021		
	Hourly Max NO_2	164.6	130.3	200	0
Swords	Annual Mean NO_2	11	11.4	40	N/A
	Hourly Max NO_2	83.7	78.5	200	0
Dublin Port	Annual Mean NO_2	23	26.9	40	N/A
	Hourly Max NO_2	117.3	121.5	200	0
Pearse St	Annual Mean NO_2	27	36.1	40	N/A
	Hourly Max NO_2	142.3	165.6	200	0
Tallaght	Annual Mean NO_2	14	12.6	40	N/A
	Hourly Max NO_2	100.8	93.6	200	0
Ringsend	Annual Mean NO_2	18	19.2	40	N/A
	Hourly Max NO_2	123.8	87.1	200	0

Measured concentrations of PM_{10} for the years 2020 and 2021 are presented in Table 8-3 for Zone A monitoring stations. As is evident from these results, current levels of PM_{10} are well below the annual mean limit value. In the year 2020, annual mean concentrations of PM_{10} ranged from 10 – 20 ug/m^3 across all Zone A stations, with no exceedance of short-term limit values (EPA, 2021). In the year 2021, annual mean concentrations of PM_{10} ranged from 9.6 – 20 ug/m^3 across all Zone A stations, with no exceedance of short-term limit values (EPA, 2022).

Winetavern St. monitoring station continuously monitors for concentrations of PM_{10}. Concentrations of PM_{10} at St. Winetarvern St. monitoring station are well below their respective limit values in 2020 and 2021, with an annual mean of 13 ug/m^3 and 12.4 ug/m^3, respectively, and with no exceedances of the PM_{10} daily limit for the protection of human health (EPA, 2021, 2022).

Based on the EPA data, a conservative estimate of the current background PM_{10} concentration in the region of the Proposed Development is 12.7 µg/m^3.

Table 8-3: Concentrations of PM_{10} at Zone A Monitoring Stations

Station	Objective	Concentration (µg/m^3)		Limit or Threshold Value
		2020	2021	
Winetavern St	Annual Mean PM_{10}	13	12.4	40 µg/m^3
	Days >50µg/m^3	0	0	35 days
Rathmines	Annual Mean PM_{10}	11	12.4	40 µg/m^3
	Days >50µg/m^3	2	0	35 days
Phoenix Park	Annual Mean PM_{10}	10	9.6	40 µg/m^3
	Days >50µg/m^3	0	0	35 days
Blanchardstown	Annual Mean PM_{10}	15	11.8	40 µg/m^3
	Days >50µg/m^3	2	1	35 days
Dun Laoghaire	Annual Mean PM_{10}	12	11.3	40 µg/m^3
	Days >50µg/m^3	0	0	35 days
Ballyfermot	Annual Mean PM_{10}	12	11.8	40 µg/m^3
	Days >50µg/m^3	2	0	35 days
Tallaght	Annual Mean PM_{10}	10	9.8	40 µg/m^3
	Days >50µg/m^3	0	0	35 days
Ringsend	Annual Mean PM_{10}	17	15.7	40 µg/m^3
	Days >50µg/m^3	8	6	35 days
St. John's Road	Annual Mean PM_{10}	13	13	40 µg/m^3
	Days >50µg/m^3	0	0	35 days
St Annes Park	Annual Mean PM_{10}	11	10.8	40 µg/m^3
	Days >50µg/m^3	0	0	35 days
Dublin Airport	Annual Mean PM_{10}	13	11.2	40 µg/m^3
	Days >50µg/m^3	0	0	35 days

Station	Objective	Concentration (µg/m^3)		Limit or Threshold Value
		2020	2021	
Davitt Road	Annual Mean PM_{10}	15	14	40 µg/m^3
	Days >50µg/m^3	4	2	35 days
Dublin Port	Annual Mean PM_{10}	20	20	40 µg/m^3
	Days >50µg/m^3	7	9	35 days
Finglas	Annual Mean PM_{10}	12	11.8	40 µg/m^3
	Days >50µg/m^3	0	0	35 days
Marino	Annual Mean PM_{10}	13	12.2	40 µg/m^3
	Days >50µg/m^3	0	0	35 days
Clonskeagh	Annual Mean PM_{10}	-	10.7	40 µg/m^3
	Days >50µg/m^3	-	0	35 days

8.1.3.2 Macroclimate

Ireland has a typical maritime climate, largely due to its proximity to the Atlantic Ocean and the presence of the Gulf Stream. Due to the moderating effects of the Gulf Stream, Ireland does not suffer the temperature extremes that are experienced by many other countries at a similar latitude. Mean annual temperatures generally range between 9°C and 10°C. Winters tend to be cool and windy while summers are mostly mild and less windy. The prevailing wind direction is between the south and west with average annual wind speeds ranging between 6 knots in parts of south Leinster to over 15 knots in the extreme north. Rainfall in Ireland occurs throughout the year with reasonable frequency. The highest rainfall occurs in the western half of the country and on high ground, and generally decreases towards the northeast. As the prevailing winds are from the west-southwest, the west of Ireland experiences the largest number of wet days. The area of least precipitation is along the eastern seaboard of the country.

8.1.3.3 Microclimate

The synoptic meteorological station at Dublin Airport is located approximately 6km northwest of the Proposed Development; and for the purposes of this Chapter, weather data collected here may be considered similar to that which is experienced in the area of the Proposed Development site.

The weather in the area of the Proposed Development site is generally dominated by cool oceanic air masses, with cool winters, mild humid summers, and a lack of temperature extremes. Based on meteorological data at Dublin Airport over the last 3 years, the mean January temperature is 5.3°C, while the mean July temperature is 15.4°C. The prevailing wind

direction is from a quadrant centred on the southwest. These are moderately warm winds from the Atlantic and they habitually bring rain. The expected annual rainfall for the eastern half of the country ranges between 750 and 1000mm. Easterly winds are less frequent, weaker, and tend to bring cooler weather from the northeast in spring and warmer weather from the southeast in summer.

8.1.3.3.1 Rainfall

Rainfall is a key indicator of changes in climate, as measurements of rainfall are fundamental to assessing the effects of climate change on the water cycle and water balance. Table 8-4 illustrates the monthly and annual rainfall data collected over a 3-year period (2019-2021) at Dublin Airport Weather Station. The annual rates of precipitation ranged from 666.6 in 2021 to 886.1mm in 2019 with distribution of the highest monthly rainfall values falling mainly in the autumn and winter months. This is broadly within the expected range of the eastern half of the country.

Table 8-4: Monthly Rainfall Values (mm) for Dublin Airport Weather Station from January 2018 to December 2021 (Source: Met Eireann)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2021	115.1	55.0	32.1	10.8	83.5	12.6	72.9	65.3	42.0	79.8	11.7	85.8	**666.6**
2020	36.0	130.4	31.8	12.8	9.3	69.6	98.9	87.3	60.9	80.6	48.1	83.1	**748.8**
2019	26.8	30.5	92.5	74.6	33.4	82.9	41.0	91.9	104.6	77.2	173.0	57.7	**886.1**
LTA[2]	62.6	48.8	52.6	54.1	59.5	66.7	56.2	73.3	59.5	79.0	72.9	72.7	**757.9**

8.1.3.3.2 Wind

Wind at a particular location can be influenced by a number of factors, such as obstructions by trees or buildings, the nature of the terrain, and deflection by nearby mountains or hills. Wind blows most frequently from the south and west for open sites while winds from the northeast and north occur less often. The analysis of hourly weather data from Dublin Airport synoptic weather station over a period of 5 years (2016-2020) suggests that the predominant wind direction blows from the southwest, with windspeeds of between 7 and 10 knots occurring most frequently.

Figure 8-2 provides a wind speed frequency distribution which represents wind speed classes and the frequency at which they occur (% of time) at Dublin Airport weather station over a period of 5 years. Wind speeds of 8 knots have the highest frequency, occurring approximately 8.6% of the time.

[2] The 'LTA' is average for the climatological long-term-average (LTA) reference period 1981-2010

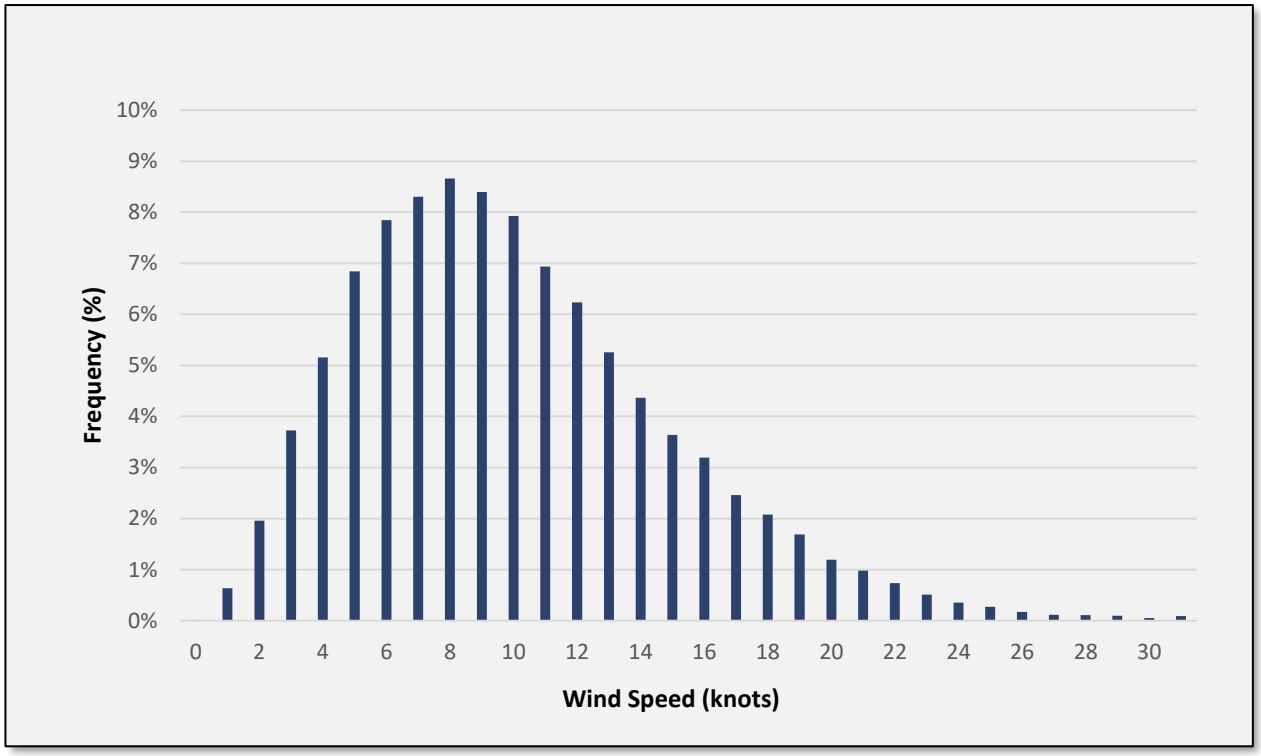


Figure 8-2: Wind Speed Frequency Distribution at Dublin Airport Synoptic Weather Station over 5 years (2016-2020)

Figure 8-3 provides a wind rose of the predominant wind directions and associated wind speeds at Dublin Airport. As is visible from Figure 8-3, the prevailing wind is from a south-westerly direction with an annual incidence of 33% for winds between 200 and 250 degrees. The most frequent wind speed associated with this wind direction is between 11 and 16 knots which is considered a 'moderate breeze' in terms of the Beaufort scale, this wind direction and wind speed occurs in combination approximately 11.39% of the time. The overall most common windspeed is between 7 and 10 knots, occurring in 33.28% of incidences, and wind speeds of between 11 and 16 knots occurring in 29.63% of incidences.

The lowest frequency is for winds blowing from the northern quadrant at approximately 2.81% of the time. The incidence of wind between 1 and 6 knots is about 26.16% of the year with wind speeds of above 17 knots (8.7 m/s) occurring in just 10.92% of incidences. The influence of topography can be seen in the low frequency of winds from a southerly direction at Dublin Airport, which occur at 4.24% of the year; this is due to the sheltering effect of the mountains to the south. This windrose is broadly representative of the prevailing conditions experienced at the Proposed Development site.

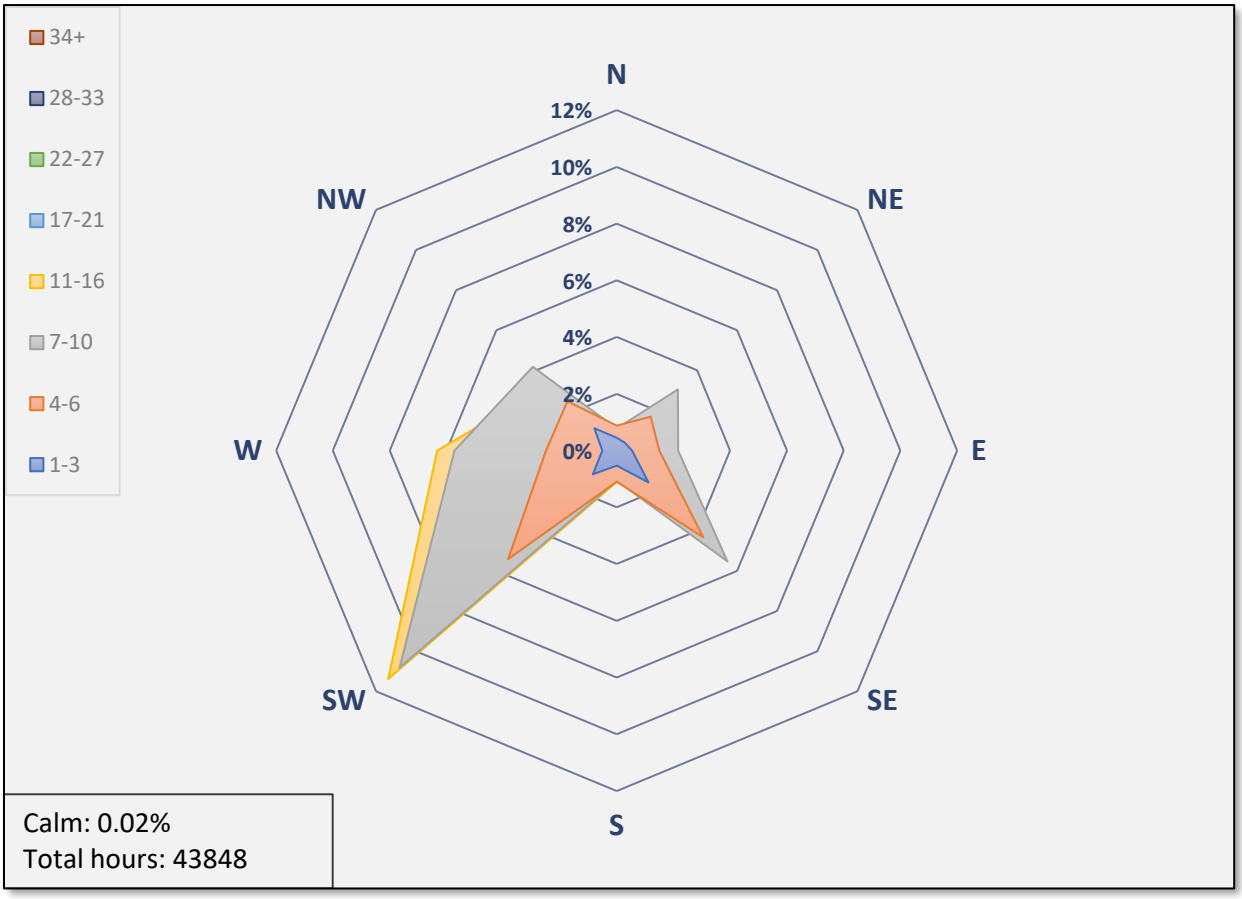


Figure 8-3: 5-year Windrose at Dublin Airport Synoptic Weather Station 2016-2020 (Developed using Met Eireann Hourly Data)

8.1.4 Characteristics of the Proposed Development

The Proposed Development will consist of the construction of a residential scheme of 543 no. apartments on an overall site of 3.26 ha (GFA of c. 53,227 sqm) containing the following mix of apartments:

- 225 No. 1 bedroom apartments (36 no. 1-person & 189 no. 2-person)
- 274 No. 2 bedroom apartments (including 52 No. 2 bed 3 person apartments and 222 No. 2 bed 4 person apartments)
- 44 No. 3 bedroom 5-person apartments
- A retail/café unit (168 sq.m.), mobility hub (52 sq.m.) and 952 sq.m. of community, artist workspace, arts and cultural space, including a creche, set out in 4 No. blocks.

The breakdown of each block will contain the following apartments:

- Block DCC1 comprises 111 No. apartments in a block of 6-7 storeys;
- Block DCC 3 comprises 247 No. apartments in a block of 6-15 storeys;
- Block DCC5 comprises 132 No. apartments in a block of 2-7 storeys;
- Block DCC6 comprises 53 No. apartments in a block of 7 storeys;

The Proposed Development will also provide for public open space of 3,408 sqm, communal amenity space of 4,417 sqm and an outdoor play space associated with the creche. Provision

of private open space in the form of balconies or terraces is provided to all individual apartments.

The Proposed Development will provide 906 no. residential bicycle parking spaces which are located within secure bicycle stores. 5% of these are over-sized spaces which are for large bicycles, cargo bicycles and other non-standard bicycles. In addition, 138 spaces for visitors are distributed throughout the site.

A total of 79 no. car parking spaces are provided at undercroft level. Six of these are mobility impaired spaces (2 in each of DCC1, DCC3 & DCC5). 50% of standard spaces will be EV fitted. Up to 30 of the spaces will be reserved for car sharing (resident use only). A further 15 no. on-street spaces are proposed consisting of:

- 1 no. accessible bay (between DCC5 & DCC6)
- 1 no. short stay bay (between DCC5 & DCC6)
- 1 no. crèche set-down / loading bay (between DCC5 & DCC6)
- 1 no. set-down / loading bay (northern side of DCC5)
- 1 no. set-down/loading bay (northern side of DCC 3)
- 10 no. short stay spaces (north-east of DCC1)

In addition, 4 no. motorcycle spaces are also to be provided.

Vehicular, pedestrian and cyclist access routes are provided from a new entrance to the north-west from Margaret Kennedy Road. Provision for further vehicular, pedestrian and cyclist access points have been made to facilitate connections to the planned residential schemes on the Bailey Gibson & Player Wills sites for which there are extant permissions (Ref. No.'s ABP-307221-20 & ABP-308917-20).

The development will also provide for all associated ancillary site development infrastructure including site clearance & demolition of boundary wall along Margaret Kennedy Road and playing pitch on eastern side of site and associated fencing/lighting, the construction of foundations, ESB substations, switch room, water tank rooms, storage room, meter room, sprinkler tank room, comms room, bin storage, bicycle stores, green roofs, hard and soft landscaping, play equipment, boundary walls, attenuation area and all associated works and infrastructure to facilitate the development including connection to foul and surface water drainage and water supply.

8.1.5 Potential Impact of the Proposed Development

8.1.5.1 Potential Impacts on Air Quality

8.1.5.1.1 Construction Phase

The Construction Phase for the Proposed Development will take place over a 35 month period, which will include site clearance and construction activities. Construction activities will take place in two main phases.

There is potential for construction related air emissions to impact on local air quality as a result of the Proposed Development. Potential impacts are expected to be short-term and of a temporary nature. The main air quality impacts that may arise during construction activities are:

- Dust deposition;
- Elevated particulate matter concentrations (PM_{10} and $PM_{2.5}$) as a result of dust generating activities on site; and
- An increase in concentrations of airborne particles, volatile organic compounds, nitrogen oxides, and sulphur oxides due to exhaust emissions from diesel powered vehicles and equipment on site (non-road mobile machinery) and vehicles accessing the site.

The greatest potential impact on air quality during this phase is from construction dust emissions and the potential for nuisance dust. The dust emissions from a construction site that may result in air quality impacts generally depend on:

- Site activities and duration;
- The size of the site;
- The meteorological conditions;
- The proximity of receptors to the activities;
- The adequacy of applied mitigation measures; and
- The sensitivity of receptors to dust.

The primary sources of dust identified include soil excavation works, demolition, bulk material transportation, loading and unloading, stockpiling materials, cutting and filling, and vehicular movements (HGVs and on-site machinery).

According to Transport Infrastructure Ireland guidelines (TII, 2011), it is difficult to accurately quantify dust emissions arising from construction activities. Therefore, it is not possible to easily predict changes to dust soiling rates or PM_{10} concentrations. TII recommend a semi-quantitative approach to determine the likelihood of significant impact in this instance. This should also be combined with an assessment of the proposed mitigation measures. Table 8-5 outlines the distance criteria which is recommended for use in assisting a semi-quantitative assessment:

Table 8-5: Assessment Criteria for the Impact of Dust Emissions from Construction Activities, with Standard Mitigation in Place

Source		**Potential Distance for Significant Effects (Distance from source)**		
Scale	Description	Soiling	PM10	Vegetation effects
Major	Large construction sites, with high use of haul routes	100m	25m	25m
Moderate	Moderate sized construction sites, with moderate use of haul routes	50m	15m	15m
Minor	Minor construction sites, with limited use of haul routes	25m	10m	10m

In order to account for a worst-case scenario, the Proposed Development can be considered major in scale due to the size of the site and the duration of construction activities. Therefore, it can be assumed that there is potential for significant dust soiling 100m from the site.

There are a number of high-sensitivity receptors located within 100m of the site boundary; these have been identified as health buildings, residential dwellings, a sports building, a parochial house, and a church.

Table 8-6: Sensitive Receptors

Name	Type	Coordinates		Orientation Relative to Site Boundary
		X	Y	
The Coombe Women and Infants University Hospital	Health Building	53.33495	-6.288534	West
Margaret Kennedy Road	New Residential	53.335679	-6.285933	North
Margaret Kennedy Road	New Residential	53.335267	-6.287108	North
Eugene Street	Residential	53.335701	-6.287161	North
Eugene Street	Residential	53.336155	-6.286008	North
Fingal Street	Residential	53.335786	-6.287329	North
Maxwell Street	Residential	53.336289	-6.286152	North
Cork Street Clinic	Health Building	53.336808	-6.284795	Northeast
Brú Chaoimhín	Health Building	53.336737	-6.284015	Northeast
Brown Street South	Residential	53.3361223	-6.283567	East
Harman Street South	Residential	53.335809	-6.283315	East
Donore Boxing Club	Sports Building	53.335339	-6.283964	East
Ebenezer Terrace	Residential	53.335474	-6.283056	East
Hamilton Street	Residential	53.334989	-6.282993	East
Donore Avenue	Residential	53.334709	-6.283087	East
Church House, Donore Avenue	Family Support Service	53.334366	-6.284491	South
St. Teresa's Presbytery	Church	53.334390	-6.283995	South
St. Teresa's Church	Church	53.3340001	-6.283428	South
South Circular Road	Residential	53.3327731	-6.286376	South

According to IAQM Guidance (2016), the primary factor influencing the Pathway is the distance between the sensitive receptor and the dust sources. However, other factors can cause a higher or a lower category to be assigned than would be the case based on distance alone. These factors include:

- Orientation of receptors relative to the prevailing wind direction; and
- Topography, terrain and physical features.

Meteorological conditions greatly affect the level of dust emissions and subsequent deposition downwind of the source; the most predominant being rainfall and wind speed. Adverse

impacts can occur in any direction from a site; however, they are more likely to occur downwind of the prevailing wind direction and/or close to the site. Relatively high levels of moisture in the surrounding air, soils, and precipitation helps to suppress dust due to the cohesive properties of water between dust particles. The least favourable meteorological conditions for dust generation would typically be warm days with strong winds and low precipitation. Due to the variability of weather, it is impossible to predict the conditions that will occur during the Construction Phase of the development. However, wind direction is most likely to prevail from the southwest.

Table 8-7 outlines the hourly percentage distribution of wind speed and direction at Dublin Airport synoptic weather station over a 5-year period (2016-2020). This data is consistent with Figure 8-3 of this Chapter and shows that the most frequent wind direction prevails from the southwest (33.89% frequency). The corresponding most frequent wind speed is between 7 and 10 knots which is considered a 'gentle breeze' in terms of the Beaufort scale; this wind direction and wind speed occurs in combination approximately 12.28% of the time.

Table 8-7: Percentage Distribution of Wind Speeds and Direction at Dublin Airport (2016-2020)

Wind speed (Knots)		<1	1 - 3	4 - 6	7 - 10	11-16	17-21	22-27	28-33	34+	% Dry Days
Wind Direction	Degrees										
North	350 - 10	0.03	0.54	0.91	0.61	0.61	0.11	0.01	0.00	0.00	40%
North-east	20 - 70		0.54	2.15	3.89	2.78	0.98	0.05	0.00	0.00	
East	80 - 100		0.94	1.92	2.22	1.2	0.23	0.00	0.00	0.00	
South-east	110 - 150		1.48	3.01	4.87	2.31	0.54	0.06	0.00	0.00	
South	170 - 190		0.64	0.98	1.35	1.33	0.36	0.07	0.00	0.00	
South-west	200 - 250		0.98	5.89	12.28	12.14	2.29	0.32	0.00	0.00	
West	260 - 280		0.59	2.69	5.57	5.73	1.79	0.3	0.00	0.00	
North-west	290 - 340		1.13	2.37	4.38	3.61	1.09	0.15	0.00	0.00	

As the Proposed Development site is situated within a close proximity to a high volume of sensitive receptors, there is the potential for dust related impacts to occur during the Construction Phase. Therefore, appropriate mitigation measures have been recommended and will be implemented at the site in order to minimise the risk of dust emissions during the Construction Phase. These mitigation measures have been outlined in Section 8.1.6 and and are outlined in the CEMP which will be provided to the Contractor on appointment. The Contractor will be contractually obliged to ensure that the mitigation measures will be adhered to for the entire duration of the Construction Phase.

Furthermore, the monitoring of construction dust during the Construction Phase of the Proposed Development will be carried out to ensure that impacts are not experienced beyond the site boundary. Monitoring of dust will be carried out by using the Bergerhoff Method. This involves placing Bergerhoff Dust Deposit Gauges at strategic locations along the site boundaries for a period of 30 +/- 2 days. The selection of sampling point locations will be carried out in consideration of the requirements of VDI 2119 with respect to the location of the samplers relative to buildings and other obstructions, height above ground, and sample collection and analysis procedures. After the exposure period is complete, the Gauges will be removed from the site; the dust deposits in each Gauge will then be determined gravimetrically and expressed as a dust deposition rate in mg/m2/day in accordance with the relevant standard. In the event of high dust levels, operations giving rise to such emissions will be ceased or curtailed.

Construction vehicles and machinery during this phase will temporarily and intermittently generate exhaust fumes and consequently potential emissions of volatile organic compounds, nitrogen oxides, sulphur oxides, and particulate matter (dust). Dust emissions associated with vehicular movements are largely due to the resuspension of particulate materials from ground disturbance. According to the IAQM (2014), experience from the assessment of exhaust emissions from on-site machinery and site traffic suggests that they are unlikely to cause a significant effect on local air quality, and in the vast majority of cases they will not need to be quantitatively assessed. Air pollutants may increase marginally due to construction-related traffic and machinery from the Proposed Development. However, any such increase is not considered significant and will be well within relevant ambient air quality standards. According to TII (2011), the significance of impacts due to vehicle emissions during the Construction Phase will be dependent on the number of additional vehicle movements, the proportion of HGVs and the proximity of sensitive receptors to site access routes. If construction traffic would lead to a significant change (> 10%) in Annual Average Daily Traffic (AADT) flows near to sensitive receptors, then concentrations of nitrogen dioxide, PM_{10} and $PM_{2.5}$ should be predicted in line with the methodology as outlined within TII guidance. Construction traffic is not expected to result in a significant change (> 10%) in AADT flows near to sensitive receptors. According to Chapter 12.1, Traffic, the average peak hour HGV traffic would equate to an increase of 4% which suggests that the construction traffic will not have a significant effect on the immediate local road network. Therefore, a detailed air quality assessment is not required.

8.1.5.1.2 Operational Phase

The greatest potential effect on air quality during the Operational Phase of the Proposed Development is from traffic-related air emissions.

Operational traffic will use regional and local roads to access the facility with potential increases of traffic flow on some roads and subsequent associated emissions of VOCs, nitrogen oxides, sulphur dioxides and increased particulate matter concentrations.

In terms of associated impacts on air quality, Table 8-8 outlines the criteria that are prerequisite for an air quality assessment:

Table 8-8: Indicative Criteria for Requiring an Air Quality Assessment (Source: IAQM, 2017)

Potential Change resulting from Proposed Development	Indicative Criteria to Proceed to an Air Quality Assessment
Cause a significant change in Light Duty Vehicle (LDV) traffic flows on local roads with relevant receptors	A change of LDV flows of more than 1000 Annual Average Daily Traffic (AADT)
Cause a significant change in Heavy Duty Vehicle (HGV) flows on local roads with relevant receptors	A change of HGV flows of more than 100 Annual Average Daily Traffic (AADT)
Realign roads, i.e., changing the proximity of receptors to traffic lanes	Where the change is 5m or more
Cause a change in Daily Average Speed (DAS)	Where the DAS will change by 10 km/h or more
Cause a change in peak hour speed	Where the peak hour speed will change by 20km/h or more.

As per the Traffic and Transport Assessment which has been detailed in Chapter 12, Section 12.1, the criteria presented in Table 8-8 have not been met by the Proposed Development; it is therefore considered unlikely for significant air quality impacts to occur as a result of increased traffic flow, and an associated air quality assessment is not required.

8.1.5.2 Potential Impacts on Climate

8.1.5.2.1 Construction Phase

There is the potential for combustion emissions from onsite machinery and traffic derived pollutants of CO_2 and N_2O to be emitted during the construction phase of the development. However, due to the size and duration of the construction phase, and the mitigation measures proposed, the effect on national GHG emissions will be insignificant in terms of Ireland's obligations under the Kyoto Protocol and the Paris Agreement and therefore will have no significant effect on climate. Overall, climatic impacts are considered to be short-term and imperceptible.

8.1.5.2.2 Operational Phase

8.1.5.2.2.1 Flood Risk

There is growing scientific consensus that the warming of the climate is expected to increase the risk of floods. Rising sea levels and more frequent and sever coastal storms will increase the risk of coastal and estuarial flooding as well as coastal erosion. According to the Planning System and Flood Risk Management (DECLG & OPW, 2009), where the floodplain or coastal plain is well defined, climate change is expected to change the probability of flooding and the depth for a particular event with little change in spatial extent. Only where extensive areas of land rise gently from the river or the sea is climate change expected to significantly increase the area affected by flooding.

There is a great deal of uncertainty in relation to the potential effects of climate change; therefore, a precautionary approach should be adopted, where necessary, to reflect uncertainties in flooding datasets and the ability to predict the future climate. Development should be designed with careful consideration to possible future changes in flood risk, including the effects of climate change so that future occupants are not subject to unacceptable risk (OPW, 2009).

A Flood Risk Assessment (FRA) was undertaken by AECOM Ireland Limited on behalf of The Land Development Agency for the Proposed Development. This assessment identifies the risk of flooding at the site from various sources and sets out possible mitigation measures against the potential risks of flooding. Sources of possible flooding include coastal, fluvial, pluvial/surface water flooding and groundwater flooding (direct heavy rain), groundwater. This report provides an assessment of the Proposed Development site for flood risk purposes only.

The FRA concluded that based on the available CFRAM mapping published in 2016, which it noted is based on outdated and no longer relevant topography, approx. 90% of the site is located within Flood Zone C, 10% within Flood Zone B and <1% situated within Flood Zone A. However, by assessing the current topographical information, the FRA concluded that it is apparent that the flood routes are now different to what was modelled as part of CFRAM, and the site would not receive flood waters given the topography following the demolition of the St. Teresa's Gardens flats.

Sewers identified to be flooding as part of the GDSDS (Greater Dublin Strategic Drainage Study) will be diverted and a new proposed surface water network will be constructed, ensuring that no flooding would occur on site and reducing the volume of runoff entering the sewers predicted to flood.

Nevertheless, it is noted that the water level for the fluvial node SO14324909 from the CFRAM flooding model is 18.49m OD, for which it would be prudent to set all Finished Floor Level's (FFL) within the site to minimum 19.00 to allow a 500 mm freeboard above the 0.1% AEP (1 in 1000-year return period) storm event. The lowest proposed FFL is 19.1 m. The full FRA Report can be found in Appendix J of this EIAR).

8.1.5.2.2.2 GHG Emissions

8.1.5.2.2.2.1 Traffic

Increased LDV and HGV traffic flow as a result of the Proposed Development is likely to contribute to increases in GHG emissions such as CO_2 and N_2O. However, these contributions are likely to be marginal in terms of overall national GHG emission estimates and Ireland's obligations under the Kyoto Protocol and the Paris Agreement, and therefore unlikely to have a significant effect on climate. Furthermore, it is widely anticipated that CO_2 emissions for the passenger car fleet will reduce substantially in future years due to the increasing prevalence of electric or hybrid vehicle use.

8.1.5.3 Potential Cumulative Impacts

Cumulative Impacts can be defined as "*impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project*". Effects which are caused by the interaction of effects, or by associated or off-site projects, are classed as indirect effects. Cumulative effects are often indirect, arising from the accumulation of

different effects that are individually minor. Such effects are not caused or controlled by the project developer.

A review of other off-site developments and proposed developments was completed as part of this assessment. The following projects and plans were reviewed and considered for possible cumulative effects with the Proposed Development.

Relatively large-scale projects with either a significant planning footprint and/or within close proximity to the site were reviewed and assessed for potential cumulative impacts with the Proposed Development and outlined in Table 8-9.

Table 8-9: Potential Cumulative Impacts

Planning Ref No.	Applicant Name	Summary of Development
3537/21	Coombe Lying-in Hospital	Planning permission for development at the Coombe Women and Infants University Hospital, Dolphin's Barn Street, Dublin 8, D08 XW7X on a 0.15 hectare site to the south-east of the hospital site, such site also including the existing Colposcopy building. The development for which planning permission is sought comprises of the development of a new dedicated Colposcopy/Women's Health Unit building of 3 no. storeys plus rooftop plant room which will be attached to the existing Colposcopy building to the west by way of glazed link. The development will include the partial demolition of the eastern meeting room and lobby area wing to the existing Colposcopy building to facilitate the connection to the new building. The proposed building comprises of a 988 sq.m gross floor area building. The building will comprise of: (i) at ground floor level; a waiting area, 2 wc's (1 accessible), 1 plant room, 1 meeting room, 3 gynaecology examination rooms (with associated changing rooms), 1 utility room, a waste room, an early pregnancy assessment unit with dedicated entrance, 2 assessment rooms, reflection room, 1 wc, and an office/reception; (ii) at first floor; a waiting area, a check in room, a supplies store, 2 wc's (1 accessible), 4 colposcopy examination rooms and with associated changing and consultation areas, a utility and a waste room; (iii) at second floor; a meeting room, 2 staff changing rooms (1 accessible with shower and wc), a wc, a staff canteen, a photocopier room and 4 staff office rooms. The proposed Colposcopy building will involve the loss of 10 existing parking spaces, at the south- eastern corner of the hospital site. 2 number accessible car parking spaces will be provided to the south of the proposed extension. Planning permission is also sought for site drainage, a glazed link to the existing Colposcopy building, site landscaping works, and all other associated and ancillary works. Access is via the main hospital campus which is accessed from Dolphin's Barn Street. Grant Permission 25 Apr 2022

Planning Ref No.	Applicant Name	Summary of Development
SHD0031/20 ABP 308917- 20	DBTR-SCR1 Fund, a Sub-Fund of the CWTC Multi Family ICAV,	Demolition of all buildings excluding the original fabric of the former Player Wills Factory, construction of 492 no. Build to Rent apartments, 240 no. Build to Rent shared accommodation along, creche and associated site works. Grant Permission 15 Apr 2021
ABP-307221-20 (BG1)	DBTR-SCR1 Fund aSub-Fund of the CWTC Multi Family ICAV	Demolition of all structures, construction of 416 no. residential units (4 no. houses, 412 no. apartments) and associated site works. Planning Permission Granted with Conditions 14/09/2020
4049/19	The Coombe Women & Infant's University Hospital	The development will consist of a new four storey laboratory building (1340m^2) within the existing Coombe site with the provision of rooftop plant and 2 no. rear extensions to the existing adjacent laboratory building to include a new link, office and store (68m2) with all associated site works. This application site is in S.D.R.A. no.12, St. Teresa's Gardens and Environs Strategic Development and Regeneration Area. Grant Permission 11 Feb 2020
2475/18	D.C.C Housing Development	Proposal: Pursuant to the requirements of the above, notice is hereby given of the intention to amend the previously permitted development comprising 50 no. units (16 no. apartments, 24 no. 3 bedroom terraced houses and 10 no. 2 bedroom terraced units - Planning ref 2033/14) to allow for the construction of an additional 4 no. terraced residential units and associated works; amendments to the design of 12 no. previously permitted units; development of a temporary grass multisport pitch in addition to the previously permitted park development (Phase A); demolition of 2 no. existing flat blocks to facilitate the future provision of a landmark park (Phase B) with full size multisport pitch and associated works at St. Teresa's Gardens, Donore Avenue, Dublin 8 as follows: Additional residential units: 4 no. 3 bedroom terraced units - as an extension of the previously permitted 3 storey terrace. Total proposed residential development of 54 no. units (including the additional 4 no. units) comprising 16 no. apartments, 28 no. 3 bedroom terraced units and 10 no. 2 bedroom terraced units. Amendments to 12 no. previously permitted residential units: 6 no. 2 bedroom 3 storey terrace units (type E1 and F1) to be amended to 6 no. 2 bedroom 3 storey terraced units (B1 to B6). 4 no. 2 bedroom 2 storey terrace units (type D1) to be amended to 4 no. 2 bedroom two storey terraced units (D1 to D4). 2 no. 3 bedroom 3 storey units (type A) to be amended to 2 no. 3 bedroom 3 storey units (C1 and C2). Demolition of 2 no. four storey flat blocks comprising:

Planning Ref No.	Applicant Name	Summary of Development
		56 no. residential units (35 no. 1 bedroom units, 14 no. 2 bedroom units, 7 no. 3 bedroom units), a football club premises, boxing club premises/changing facility and a shop premises to facilitate the future development (Phase B) of an enlarged park and multisport playing pitch in accordance with the 2017 Development Framework for the SDRA 12 lands. Development of a temporary grass multisport pitch and associated works (in addition to the previously approved park - Phase A).
ABP-314171-22 (BG2)	CWTC Multi Family ICAV acting solely in respect of its sub fund DBTR SCR1 Fund	Demolition of buildings, construction of 345 no. residential units (292 no. Build to Rent apartments, 49 no. Build to Sell apartments, 4 no. Build to Sell Houses) creche and associated site works. Case is due to be decided by 14/11/2022 www.bgscr1shd2.ie

The cumulative effects on the air quality and climate of the current Proposed Development and other permitted or existing developments have been considered, in particular through the generation of air pollutants and GHG emissions.

Environmental Impact Assessment reports have been prepared for the following planning applications: ABP-307221-20 and ABP 308917-20 in which mitigation measures have been detailed which will reduce the occurrence of any likely significant impacts. Due to the size and nature of the applications Ref. 3537/21 and Ref. 4049/19, there was no requirement for an Environmental Impact Assessment. As such there is no likelihood of significant effects on the environment as a result of the permitted development and therefore there will be no cumulative impacts as a result of the permitted developments at the Coombe Women and Infants University Hospital.

Ref. 2475/18 at St. Teresa's Gardens is an amendment to permitted development Ref. 2033/14. An Environmental Impact Assessment (EIA) Screening was carried out for the original development (2033/14) which concluded "*it is considered unlikely that the proposal which result in a net gain of 44 no. dwellings would not have significant effects on the environment. As such it is considered that EIA is not required*" (Dublin City Council, 2014). Due to the size and nature of the applications above in St. Teresa's Gardens, there was no requirement for an environmental impact assessment. As such there is no likelihood of significant effects on the environment as a result of the permitted development.

Based on the above, there will be no cumulative impacts as a result of the permitted developments at St. Teresa's Gardens (Ref. 2475/18 and Ref. 2033/14).

Therefore, in terms of dust, no significant effects are predicted; good construction practice, which incorporates the implementation of the identified mitigation measures and dust monitoring, will be employed at the Proposed Development site. Due to the implementation of good construction practices at the site of the Proposed Development and these offsite

permitted and proposed developments, it is not anticipated that significant cumulative effects will occur.

Assessment of operational stage impacts on air quality involved traffic data which is inclusive of traffic associated with other existing, proposed and permitted developments on the road networks surrounding the site both in current and future years. Therefore, cumulative impacts have been assessed in this regard and the impact on ambient air quality has been determined as insignificant.

8.1.5.4 'Do Nothing" Impact

The Do-Nothing impact has been assessed in terms of air quality in this chapter. If the Proposed Development did not proceed, the Proposed Development site would remain as an unutilised brownfield site. The existing ambient air quality would remain unchanged onsite and at nearby sensitive receptors.

Greenhouse gas emissions as a result of the Proposed Development are also likely to be marginal in terms of overall national GHG emission estimates and Ireland's obligations under the Kyoto Protocol and the Paris Agreement when compared to a Do-Nothing scenario.

8.1.6 Avoidance, Remedial & Mitigation Measures

8.1.6.1 Air Quality

8.1.6.1.1 Construction Phase

It is not expected that adverse air quality impacts are likely to occur at sensitive receptors as a result of the Proposed Development. However, the following appropriate mitigation measures along with the measures as outlined within the CEMP, will be employed as necessary to further prevent such impacts occurring:

- Vehicle and wheel washing facilities will be provided at site exit where practicable. If necessary, vehicles are to be washed down before exiting the site.
- Netting is to be provided to enclose scaffolding to mitigate escape of air borne dust from the existing buildings.
- Shroud piling machinery as shown below when operating near to boundaries.
- Engines and exhaust systems will be maintained so that exhaust emissions do not breach stationary emission limits set for the vehicle / equipment type and mode of operation.
- Dust emission over the site boundary will be minimised using static sprinklers or other watering methods as necessary.
- No burning of materials to be permitted on site.
- Water sprays for dust suppression will be affixed to mechanical excavators/munchers involved in demolition works.
- Demolition waste will be removed from site as quickly as possible to minimise risk of dust generation and any fine material will be covered with a tarpaulin or similar material and tied down.
- Water sprays and cannons will be used where possible during cutting, with protective measures applied to retained finishes local to the cutting.

- Prior to commencement, the Main Contractor will identify the construction operations which are likely to generate dust and to draw up action plans to minimise emissions.
- In areas of poor natural ventilation, dust capture/extraction methods will be employed by the Main Contractor.
- The Main Contractor will allocate suitably qualified and experienced personnel to be responsible for ensuring the generation of dust is minimised and effectively controlled.
- The Main Contractor will be required to appoint a senior member of its site management team to act as the liaison with third parties in respect of complaints regarding dust and or site activities.
- Monitoring of dust deposition will be undertaken at nominated boundary locations to ensure that dust levels comply with the TA Lift limit value of 350mg/(m²/day) based on a 30-day average using Bergerhoff gauges (Limits to be agreed with local authority).

8.1.6.1.2 Operational Phase

It has been determined that the Operational Phase air quality impact is negligible and therefore no site-specific mitigation measures are proposed.

8.1.6.2 Climate

As negative climatic impacts associated with the Construction and Operational Phases of the Proposed Development are negligible, no mitigation measures are proposed. Best practice measures will be implemented to minimise exhaust emissions from construction and operational vehicles and machinery by avoidance of engines running unnecessarily, as idle engines will not be permitted for excessive periods. Furthermore, all proposals for development will seek to achieve the greatest standards of sustainable construction and design and will have regard to sustainable building design criteria.

8.1.6.3 "Worst Case" Scenario

A worst-case scenario has been applied to the Construction Phase air quality assessment in terms of the scale of the source and potential dust nuisances. It is expected that adequate mitigation measures, as outlined in Section 8.6.1.1, will assist in preventing nuisance dust from resulting in any significant effects. In the event of a failure of such measures, it is not considered that significant dust related effects will occur.

A worst-case scenario has been applied to the Operational Phase air quality assessment in terms of traffic volumes experienced on the surrounding road network. Associated impacts have been determined as insignificant in this case.

8.1.7 Residual Impacts

Residual Impacts are defined *as 'effects that are predicted to remain after all assessments and mitigation measures'*. They are the remaining 'environmental costs' of a project and are the final or intended effects of a development after mitigation measures have been applied to avoid or reduce adverse impacts. Potential residual impacts from the Proposed Development were considered as part of this environmental assessment.

The Proposed Development is likely to result in a long-term increase in traffic on the roads surrounding the Proposed Development site; however, this increase in traffic has been determined to have negligible impacts in terms of local air quality. Furthermore, the increase

in traffic has been determined as marginal with regard to climatic impacts. Therefore, no significant residual effects are anticipated from the proposed scheme in the context of air quality and climate after the application.

8.1.8 Monitoring

The monitoring of construction dust during the Construction Phase of the Proposed Development will be carried out to ensure that impacts are not experienced beyond the site boundary. Monitoring of dust will be carried out by using the Bergerhoff Method. This involves placing Bergerhoff Dust Deposit Gauges at strategic locations along the site boundaries for a period of 30 +/- 2 days. The selection of sampling point locations should be carried out in consideration of the requirements of *VDI 2119* with respect to the location of the samplers relative to buildings and other obstructions, height above ground, and sample collection and analysis procedures. After the exposure period is complete, the Gauges should be removed from the site; the dust deposits in each Gauge will then be determined gravimetrically and expressed as a dust deposition rate in mg/m^2/day in accordance with the relevant standard.

Due to the negligible impact on air quality and climate from the Operational Phase of the Proposed Development, no specific monitoring is recommended.

8.1.9 Interactions

Interactions between Air Quality and Climate and other aspects of this Environmental Impact Assessment Report have been considered and are detailed below.

8.1.9.1 Population and Human Health

Interactions between Air Quality and Population and Human Health have been considered as the Proposed Development has the potential to cause health issues as a result of impacts on air quality from dust nuisances and potential traffic derived pollutants. However, the mitigation measures employed at the Proposed Development will ensure that all impacts are compliant with ambient air quality standards and human health will not be affected. Furthermore, traffic-related pollutants have been assessed and determined as negligible, therefore air quality impacts from the Proposed Development are not expected to have a significant effect on population and human health.

8.1.9.2 Biodiversity

Interactions between Air Quality and Biodiversity have been considered as the Construction Phase has the potential to interact with flora and fauna in adjacent habitats and designated sites due to dust emissions arising from the construction works. However, the mitigation measures employed at the Proposed Development will ensure that the impacts to flora and fauna are not significant.

8.1.9.3 Traffic

There can be a significant interaction between air quality, climate and traffic. This is due to traffic-related pollutants that may arise. In the current assessment, traffic derived pollutants which may affect Air Quality and Climate have been deemed as negligible. Therefore, the impact of the interaction between air quality and climate is insignificant.

8.1.10 Difficulties Encountered When Compiling

No difficulties have been encountered while compiling this chapter.

8.1.11 References

Air Pollution Act 2012 (S.I. No. 326 of 2012) Irish Statute Book.

Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011) Irish Statute Book.

Air Quality, Clean Air for Europe Directive (2008/50/EC) EUR-Lex.

Department of Communications, Climate Action and Environment (DCCAE) (2017) National Mitigation Plan

Department of Communications, Climate Action and Environment (DCCAE) (2018) National Adaptation Framework

Department of the Environment, Transport and the Regions, 1995. The Environmental Effects of Dust from Surface Mineral Workings- Volume 2. Technical Report.

Environmental Protection Agency (2018) Ireland's Final Greenhouse Gas Emissions 1990 – 2020.

Environmental Protection Agency (2019) Irelands National Inventory Submission 2022

Environmental Protection Agency (2019) Irelands Provisional Greenhouse Gas Emissions 1990-2021

Environmental Protection Agency (2020) Air Dispersion Modelling from Industrial Installations Guidance Note (AG4).

Environmental Protection Agency (2020) Air Quality in Ireland 2019 Annual Report on Air Quality in Ireland from the Environmental Protection Agency.

Environmental Protection Agency (2021) Air Quality in Ireland 2020 Annual Report on Air Quality in Ireland from the Environmental Protection Agency.

Environmental Protection Agency (2022) Air Quality in Ireland 2021 Annual Report on Air Quality in Ireland from the Environmental Protection Agency.

European Commission (2007) 2020 Climate & Energy Package.

European Commission (2011) A Roadmap for Moving to a Competitive Low Carbon Economy in 2050.

European Commission (2014) 2030 Climate & Energy Framework.

First General Administrative Regulation Pertaining the Federal Immission Control Act (Technical Instructions on Air Quality Control – TA Luft)(2002)

Government of Ireland (2015) Climate Action and Low Carbon Development Act 2015 as amended. Government of Ireland (2021) Climate Action Plan 2021.

Institute of Air Quality Management (2014) Guidance on the Assessment of Dust from Demolition and Construction.

Institute of Air Quality Management (2016) Guidance on the Assessment of Mineral Dust Impacts for Planning.

Institute of Air Quality Management (2017) Land-Use Planning & Development Control: Planning for Air Quality.

Intergovernmental Panel on Climate Change (2006) IPCC Guidelines for National Greenhouse Gas Inventories.

Intergovernmental Panel on Climate Change (2019) Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories.

Met Eireann (2021) Daily Meteorological Data for Dublin Airport Synoptic Weather Station.

Met Eireann (2021) Hourly Meteorological Data for Dublin Airport Synoptic Weather Station.

Met Eireann (2021) Monthly Meteorological Data for Dublin Airport Synoptic Weather Station.

Transport Infrastructure Ireland (2011) Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes.

UK Department for Environment, Food and Rural Affairs (2020) NO_x to NO_2 Conversion Spreadsheet (Version 8.1).

UK Department for Environment, Food and Rural Affairs (2008) Analysis of the relationship between annual mean nitrogen dioxide concentration and exceedances of the 1-hour mean AQS Objective.

UK Highways Agency (2019) UK Design Manual for Roads and Bridges (DMRB), Volume 11, Environmental Assessment, Section 3 Environmental Assessment Techniques, Part 1 LA 105 Air Quality.

United Nations Framework Convention on Climate Change (1998) Kyoto Protocol to the UNFCCC.

United Nations Framework Convention on Climate Change (2012) The Doha Amendment to the Kyoto Protocol.

United Nations Framework Convention on Climate Change (2015) The Paris Agreement.

8.2 Wind Microclimate

8.2.1 Introduction

A B-Fluid Limited has been commissioned by 'AECOM' to perform a Wind Microclimate Study for the St. Teresa's Gardens Development in Donore Ave, Dublin 8.

The Proposed Development site is bound by Donore Avenue to the north-east, Margaret Kennedy Road to the north-west, The Coombe Women & Infants University Hospital to the west, the former Bailey Gibson factory buildings to the south-west, and the former Player Wills factory to the south-east. The Proposed Development will consist of the construction of a residential scheme of 543 no. apartments on an overall site of 3.26 ha.

Figure 8-4 shows a plan view of the Proposed Development in the existing urban context.

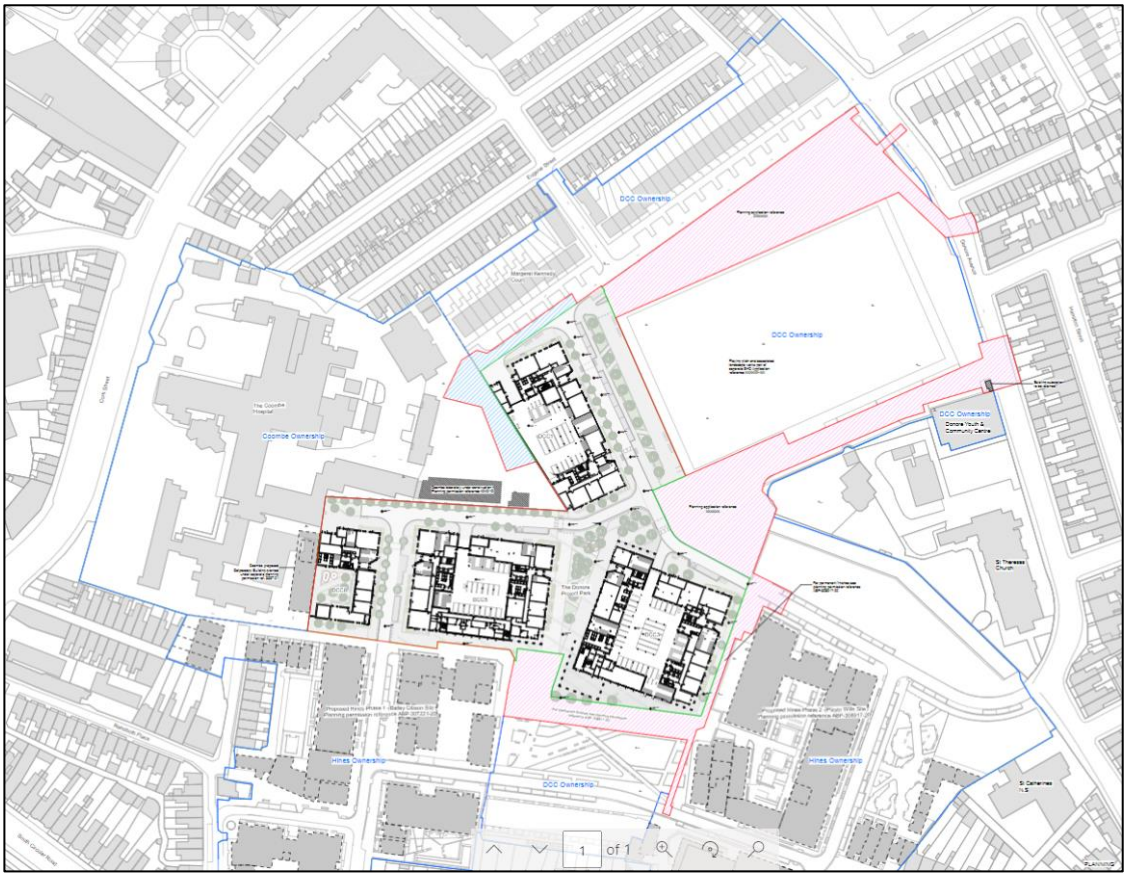


Figure 8-4: Proposed St. Teresa's Gardens Development and site location

A wind microclimate study considers the possible wind patterns formed under both mean and peak wind conditions typically occurring on the site area, accounting for a scenario where the Proposed Development is assessed in combination with the existing developments in the existing environment (this scenario is defined as "potential impact") and, furthermore, for a scenario where the Proposed Development is assessed in combination with the existing developments in the existing environment and together with any consented and planned proposed project (this scenario is defined as the "cumulative impact"). The potential receptors include those areas, in the surrounding of the development, which

can be exposed to potential risks generated by the elevated wind speed or building massing wind effects. In particular:

- Amenity areas (pedestrian level), areas likely to be utilised for leisure purposes and as such should be comfortable surroundings.
- Pedestrian routes and seating areas – to determine if locations are comfortable for leisure activities.
- Entrance to the buildings – to determine if there is potential for pressure related issues for entrances or lobbies.
- Landscaped areas – where there are sheltered areas.
- Impact to existing or adjoining developments – where the proposed buildings will cause discomfort conditions through proximity related issues.

The acceptance criteria which define the acceptable wind velocities in relation to the perception of comfort level experienced while carrying out a specific pedestrian activity is known as the “Lawson Criteria for Pedestrian Comfort and Distress”. A wind microclimate study analyses the wind flow in an urban context (considering the wind conditions typically occurring on the site during a typical year) to develop the so called “Lawson Comfort and Distress Map”; the map identifies where a specific pedestrian activity can be carried out comfortably during most of the time.

The assessment can be performed by physical testing in wind tunnels or by performing “virtual wind tunnel testing” through numerical simulation using Computational Fluid Dynamics (CFD),), as done for this project. The scope of the numerical study is to simulate the wind around the development in order to identify suitable level of pedestrian comfort (i.e. walking, strolling, sitting) within the area of interest.

The following sections details the methodology, acceptance criteria, CFD wind simulations and the impact of the Proposed Development on the local wind microclimate in accordance with best practice guidelines for pedestrian comfort and safety.

8.2.1.1 Urban Wind Effects

Buildings and topography affect the speed and direction of wind flows. Wind speed increases with increasing height above the ground, assuming a parabolic profile.

Flow near the ground level encounters obstacles represented by terrain roughness/buildings that reduce the wind speed and introduce random vertical and horizontal velocity components. This turbulence causes vertical mixing between the air moving horizontally at one level, and the air at those levels immediately above and below it. For this reason, the wind velocity profile is given by a fluctuating velocity along a mean velocity value. Figure 8-5 shows the wind velocity profile, as described above.

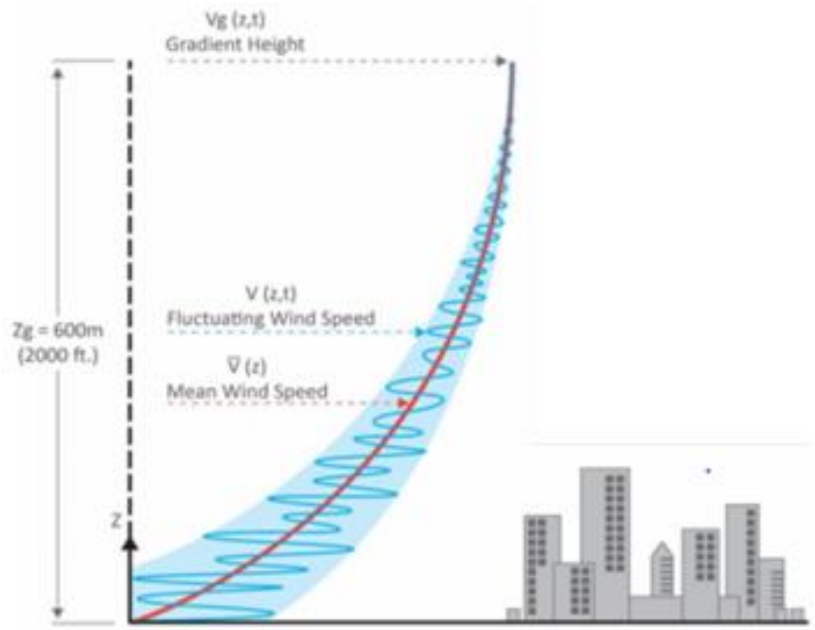


Figure 8-5: Wind parabolic velocity profile

In an urban context, wind speeds at pedestrian level are generally low compared with upper-level wind speeds, however, the wind can create adverse patterns when flowing in between buildings which can cause local wind accelerations or re-circulations. This wind patterns effect pedestrian safety and comfort. In general, the wind effects to be avoided/mitigated in an urban context include the following:

- **Funnelling Effects**: The wind can accelerate significantly when flowing through a narrow passage between building structures. The highest speeds are experienced at the point where the restriction of the area is the greatest.
- **Downwash Effects**: The air stream when striking a tall building can flow around it, over it and a part can deflected towards the ground. This downward component is called downwash effect and its intensity depends on the pressure difference driving the wind. The higher the building, the higher this pressure difference can be.
- **Corner Effects**: Wind can accelerate around the corners of the buildings. Pedestrians can experience higher wind speeds as well as more sudden changes in wind speeds. The reason for this is that there are narrow transition zones between the accelerated flows and the adjacent quiescent regions. This effect is linked to the downwash effect as the downward stream component subsequently flows around the corners towards the leeward side of the building.
- **Wake Effect**: Excessive turbulence can occur in the leeward side of the building. This can cause sudden changes in wind velocity and can raise dust or lead to accumulation of debris. This effect is also dependent on the height of the building.

The anticipation of the likely wind conditions resulting from new developments are important considerations in the context of pedestrian comfort and the safe use of the public realm. While it is not always practical to design out all the risks associated with the wind environment, it is possible to provide local mitigation to minimise risk or discomfort where required.

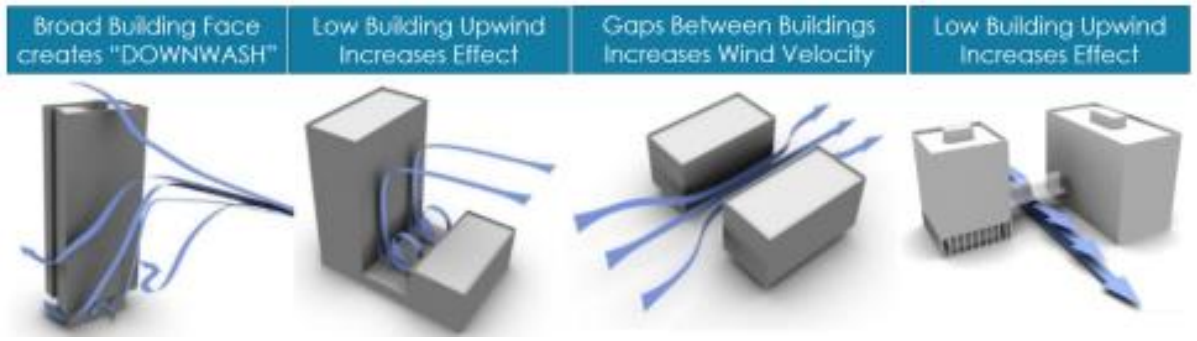


Figure 8-6: Typical urban wind effects

8.2.1.2 Guidance and Legislation for Wind Microclimate

According to the 'Urban Development and Building Heights, Guidelines for Planning Authorities (Government of Ireland, December 2020)' document, 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.

The Plan was prepared to transpose the objectives of the Dublin City Development Plan into a planning framework, which could guide development in the area. While the Development Framework is a non statutory plan, it was formally adopted by the City Council following an extensive public consultation process. It therefore should be seen as a guidance document in the context of planning applications for developments within the area covered by the Framework. In particular, in relation to building height for the area the following must be noted:

- *For the purposes of estimating potential unit numbers building heights range from 2 storey houses up to eight storey apartment blocks for the lands generally with the potential for up to 15 storeys in defined zones / areas. These heights generally are indicative in nature and may vary from the benchmark height in specific instances in the context of proper planning and development / Development Plan guidelines.*

The Proposed Development will range in height from 2 no.– 15 no. storeys. The proposed building heights have been designed to take cognisance of both the existing surrounding residential development, the extant permissions for developments on the adjoining sites and the Urban Development and Building Height Guidelines which allow for increased height in appropriate locations.

The recommended approach to wind microclimate studies is outlined in the "Wind Microclimate Guidelines for Developments in the City of London '(August 2019) and in the guidelines and recommendations contained in BRE Digest (DG) 520, "Wind Microclimate Around Buildings" (BRE, 2011). The Lawson Criteria of Comfort and Distress is used to benchmark the pedestrian wind microclimate. In addition, the guideline indicates how to use Computational fluid dynamics (CFD) to assess wind microclimate conditions and how to generate high quality outputs to provide a good understanding of the fundamental flow features around an urban context. Usually, the recommended approach to wind microclimate studies is based on the building height, as presented in Figure 8-7.

Building Height	Recommended Approach to Wind Microclimate Studies
Similar or lower than the average height of surrounding buildings **Up to 25m**	Wind studies are not required, unless sensitive pedestrian activities are intended (e.g. around hospitals, transport hubs, etc.) or the project is located on an exposed location
Up to double the average height of surrounding buildings **25m to 50m**	Computational (CFD) Simulations **OR** Wind Tunnel Testing
Up to 4 times the average height of surrounding buildings **50m to 100m**	Computational (CFD) Simulations **AND** Wind Tunnel Testing
High Rise **Above 100m**	**Early Stage Massing Optimization:** Wind Tunnel Testing OR Computational (CFD) Simulations **Detailed Design:** Wind Tunnel Testing **AND** Computational (CFD) Simulations to demonstrate the performance of the final building design

Figure 8-7: Recommended Approach to Wind Microclimate Studies based on Building Height, as prescribed by the Wind Microclimate Guidelines for Developments in the City of London (August 2019)

8.2.1.3 Quality Assurance and Competence

This Chapter is completed by Dr. Cristina Paduano, Dr. Chino Uzoka and Dr. Arman Safdar.

Dr. Cristina Paduano is a Chartered Engineer (CEng) and member of Engineers Ireland who specialises in computational fluid dynamics applications for urban environment and the construction industry with over 18 years' experience. She holds a PhD in Mechanical Engineering from Trinity College Dublin, with M.Eng and B.Eng in Aerospace Engineering.

Dr. Chino Uzoka is a CFD Specialist Engineer who specialises in computational fluid dynamics applications with 8 years' experience. He holds a PhD in Mechanical Engineering and MSc in Engineering Management from the University of Huddersfield.

Dr. Arman Safdari is a CFD Modelling Engineer who specialises in computational fluid dynamics applications. He is an expert in airflow modelling, heat and mass transfer and multi-phase flow simulations with over 10 years' experience. He holds a PhD in Mechanical Engineering from Pusan National University, a M.Sc. and B.Sc. in Mechanical Engineering.

Some of the wind and microclimate assessment projects recently delivered by B-Fluid, in Ireland, are listed below:

- Wind Assessment for pedestrian comfort Claremont Project, Howth, Fingal for Marlet Property Group.
- Wind and Microclimate Assessment for Lime Street Development, Dublin 2 for Marlet Property Group.

- Wind and Microclimate Assessment of the new proposed development of Grand Canal Harbour, Dublin 8 for Marlet Property Group.
- Wind and Microclimate Assessment for City Block 3, Dublin 1 Docklands for KSN.
- Wind and Microclimate Assessment for Sandyford Central, Dublin 18 for Richmond Homes.
- Wind and Microclimate Assessment (High level) of the new proposed development for Blackrock which will occupy the former "Daughters of Charity" land at St. Teresa's, Temple Road for Oval Target Limited.
- Wind and Microclimate Assessment for College/Apollo House Development, Dublin 2 for Marlet Property Group.

Furthermore, the wind analysis of this chapter employs OpenFoam Software Code, which is based on a volume averaging method of discretization and uses the post-processing visualisation toolkit Paraview version 5.5.

OpenFoam is a CFD software code released and developed primarily by OpenCFD Ltd, since 2004. It has a large user base across most areas of engineering and science, from both commercial and academic organisations.

OpenFOAM CFD code has capabilities of utilizing a Reynolds Averaged Navier-Stokes (RANS) approach, Unsteady Reynolds Averaged Navier-Stokes (URANS) approach, Detached Eddy Simulation (DES) approach, Large Eddy Simulation (LES) approach or the Direct Numerical Simulation (DNS) approach, which are all used to solve anything from complex fluid flows involving chemical reactions, turbulence and heat transfer, to acoustics, solid mechanics and electromagnetics.

Quality assurance is based on rigorous testing. The process of code evaluation, verification and validation includes several hundred daily unit tests, a medium-sized test battery run on a weekly basis, and large industry-based test battery run prior to new version releases. Tests are designed to assess regression behaviour, memory usage, code performance and scalability.

The OpenFOAM solver algorithm directly solves the mass and momentum equations for the large eddies that comprise most of the fluid's energy. By solving the large eddies directly no error is introduced into the calculation.

To reduce computational time and associated costs the small eddies within the flow have been solved using the widely used and recognised Smagorinsky Sub-Grid Scale (SGS) model. The small eddies only comprise a small proportion of the fluids energy therefore the approximation errors introduced through the modelling of this component are minimal.

8.2.2 Study Methodology

The method for the study of wind microclimate combines the use of Computational Fluid Dynamics (CFD) to predict wind velocities and wind flow patterns, with the use of wind data from suitable meteorological station and the recommended comfort and safety standards (Lawson Criteria). The effect of the geometry, height and massing of the Proposed Development and existing surroundings including topography, ground roughness and

landscaping of the site, on local wind speed and direction is considered as well as the pedestrian activity to be expected (sitting, standing, strolling and fast walking). The results of the assessment are presented in the form of contours of the Lawson criteria at pedestrian level.

The assessment has comprised the following scenarios:

- **Baseline Existing Scenario**: this consists of the existing wind microclimate at the site.
- **Proposed Development in the Existing Scenario**: this consists of the assessment of the wind microclimate of the site with the Proposed Development surrounded by existing buildings.
- **Cumulative Scenario**: this consists of the assessment of the wind microclimate of the site with the Proposed Development surrounded by existing, permitted, and proposed buildings.

In accordance with the guideline cited in Section 8.2.1.2, the wind microclimate study should consider the effect of the Proposed Development together with buildings (existing, permitted and proposed) that are within 400m from the centre of the site. Other taller buildings outside of this zone that could have an influence on wind conditions within the Proposed Development site should be included for wind directions where they are upwind of the Proposed Development site.

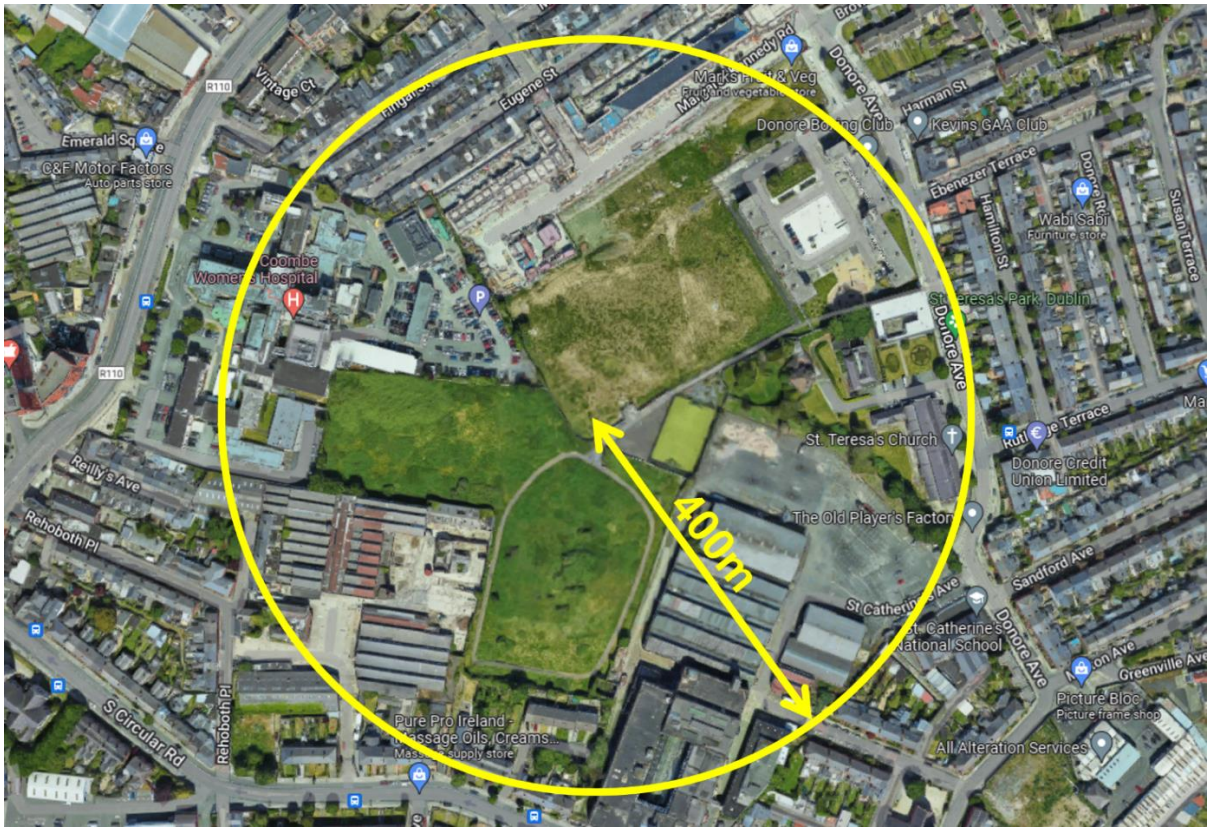


Figure 8-8: Area of interest for the wind microclimate analysis

In particular, the following has been undertaken:

- Topography of the site with buildings (proposed and adjacent existing/permitted).
- Developments massing, depending on the scenario assessed “baseline, proposed or
  cumulative”) have been modelled using OpenFOAM Software.
- Suitable wind conditions have been determined based on historic wind data. Criteria
  and selected wind scenarios included means and peaks wind conditions that need to
  be assessed in relation to the Lawson Criteria.
- Computational Fluid Dynamics (CFD) has been used to simulate the local wind environment for the required scenarios (‘baseline, proposed, cumulative”).
- The impact of the Proposed Development massing on the local wind environment has
  been determined (showing the wind flows obtained at pedestrian level). Potential receptors (pedestrian areas) have been assessed through review of external
  amenity/public areas (generating the Lawson Comfort and Distress Map).
- Potential mitigation strategies for any building related discomfort conditions (where necessary) have been explored and their effect introduced in the CFD model produced.

8.2.2.1 Assessment criteria for pedestrian comfort and Distress

“Lawson Comfort and Distress Criteria” has been developed for wind microclimate studies as a means of assessing the long-term suitability of urban areas for walking or sitting, accounting for both microclimatic wind effects (i.e. site location and prevailing winds) and microclimatic air movement associated with wind forces influenced by the localised built environment forms and landscaping effects.

The Lawson scale assesses pedestrian wind comfort in absolute terms and defines the reaction of an average person to the wind.

For the distress (safety) criterion, only gust winds are considered. These are usually rare events but deserve special attention in city planning and building design due to their potential impact on pedestrian safety. Gusts cause most cases of annoyance and distress and are assessed in addition to average wind speeds. Gust speeds should be divided by 1.85 and these “Gust Equivalent Mean” (GEM) speeds are compared to the same criteria as for the mean hourly wind speeds. This avoids the need for different criteria for mean and gust wind speeds.

The following criteria are widely accepted by local authorities as well as the international building design and city planning community:

<u>COMFORT CRITERIA</u>: Relates to the activity of the individual.

Onset of discomfort:

- Depends on the activity in which the individual is engaged and is defined in terms of a mean hourly wind speed (or GEM) which is exceeded for 5% of the time.

DISTRESS CRITERIA: Relates to the physical well-being of the individual.

Onset of distress:

- 'Frail Person or Cyclist': equivalent to an hourly mean speed of 15 m/s and a gust speed of 28 m/s (62 mph) to be exceeded less often than once a year (0.022% of the times). This is intended to identify wind conditions which less able individuals or cyclists may find physically difficult. Conditions in excess of this limit may be acceptable for optional routes and routes which less physically able individuals are unlikely to use.

- 'General Public': A mean speed of 20 m/s and a gust speed of 37 m/s (83 mph) to be exceeded less often than once a year. Beyond this gust speed, aerodynamic forces approach body weight and it rapidly becomes impossible for anyone to remain standing. Where wind speeds exceed these values, pedestrian access should be discouraged (Ref. CFD simulation for pedestrian wind comfort and wind safety in urban areas - 2012).

Table 8-10: Comfort categories for wind in accordance with Lawson criteria

Pedestrian Comfort Category (Lawson Scale)	Mean and Gem wind speed not to be exceeded more than 5% of the time	Description
Long-Term Sitting	4m/s	Acceptable for frequent outdoor sitting use, i.e., restaurant /café
Standing	6m/s	Acceptable for occasional outdoor sitting use, i.e., public outdoor spaces
Walking/Strolling	8m/s	Acceptable for entrances/bus stops /covered walkaways
Business Walking	10m/s	Acceptable for external pavements, walkways
Unacceptable/Distress	>10m/s	Start of not comfortable/distress level for pedestrian access

Table 8-11: Safety categories for wind in accordance with Lawson criteria

Pedestrian Safety Category (Lawson Scale)	Mean and Gem wind speed not to be exceeded more than 0.0022% of the time	Description
Unsafe for public	>20m/s	Distress/safety concern for pedestrian
Unsafe for cyclists or frail person	>15m/s	Distress/safety concern for cyclist/frail person

These criteria for wind forces represent average wind tolerances. They are subjective and variable depending on thermal conditions, age, health, clothing, etc. which can all affect a person's perception of a local microclimate. Moreover, pedestrian activity alters between winter and summer months. The criteria assume that people will be suitably dressed for the time of year and individual activity. It is reasonable to assume, for instance, that areas designated for outdoor seating will not be used on the windiest days of the year. Weather data measured are used to calculate how often a given wind speed will occur each year over a specified area.

Pedestrian comfort and distress criteria are assessed at 1.5 m above ground level as required by the guideline cited in Section 8.2.1.2. If the predicted wind conditions exceed the threshold, then conditions are unacceptable for the type of pedestrian activity and mitigation measures should be implemented into the design.

8.2.2.2 Significance Criteria

The significance of on-site measurement locations is defined by comparing the wind comfort/safety levels with the intended pedestrian activity at each location, using the table provided by the Lawson Comfort and Distress Criteria.

Table 8-12 Significance criteria for on-site receptors

Significance	Trigger	Mitigation required?
Major Adverse	Conditions are "unsafe"	Yes
Moderate Adverse	Conditions are "unsuitable" (in terms of comfort) for the intended pedestrian use.	Yes
Negligible	Conditions are "suitable" for the intended pedestrian use.	No
Moderate Beneficial	Conditions are calmer than required for the intended pedestrian use (by at least one comfort category).	No

The significance of off-site measurement locations is defined by comparing the wind comfort/safety levels with the intended pedestrian activity at each location, prior and after the introduction of the Proposed Development.

Table 8-13 significance criteria for off-site receptors

Significance	Trigger	Mitigation required?
Major Adverse	Conditions that were "safe" in the baseline scenario became "unsafe" as a result of the Proposed Development. *OR* Conditions that were "suitable" in terms of comfort in the baseline scenario became "unsuitable" because of the Proposed Development. *OR* Conditions that were "unsafe" in the baseline scenario are made worse because of the Proposed Development.	Yes
Moderate Adverse	Conditions that were "suitable" in terms of comfort in the baseline scenario are made windier (by at least one comfort category) as a result of the Proposed Development but remain "suitable" for the intended pedestrian activity.	No
Negligible	Conditions remain the same as in the baseline scenario.	No
Major Beneficial	Conditions that were "unsafe" in the baseline scenario became "safe" because of the Proposed Development.	No
Moderate Beneficial Potential Receptors	Conditions that were "unsuitable" in terms of comfort in the baseline scenario became "suitable" because of the Proposed Development. *OR* Conditions that were "unsafe" in the baseline scenario are made better as a result of the Proposed Development (but not so as to make them "safe".	No

8.2.2.3 *CFD Modelling Method*

The wind microclimate study is conducted through Computational Fluid Dynamics (CFD). This is a numerical technique to simulate fluid flow, heat and mass transfer, chemical reaction and combustion, multiphase flow, and other phenomena related to fluid flows. Wind flow is described by Navier-Stokes equations which are solved within the CFD analysis using a finite volume algorithm based on the volumetric mesh/grid in which the geometry is divided.

CFD modelling includes three main stages: pre-processing, simulation, and post-processing as described in Figure 8-9.

8.2.2.3.1 CFD Model Details of the Wind Microclimate Study

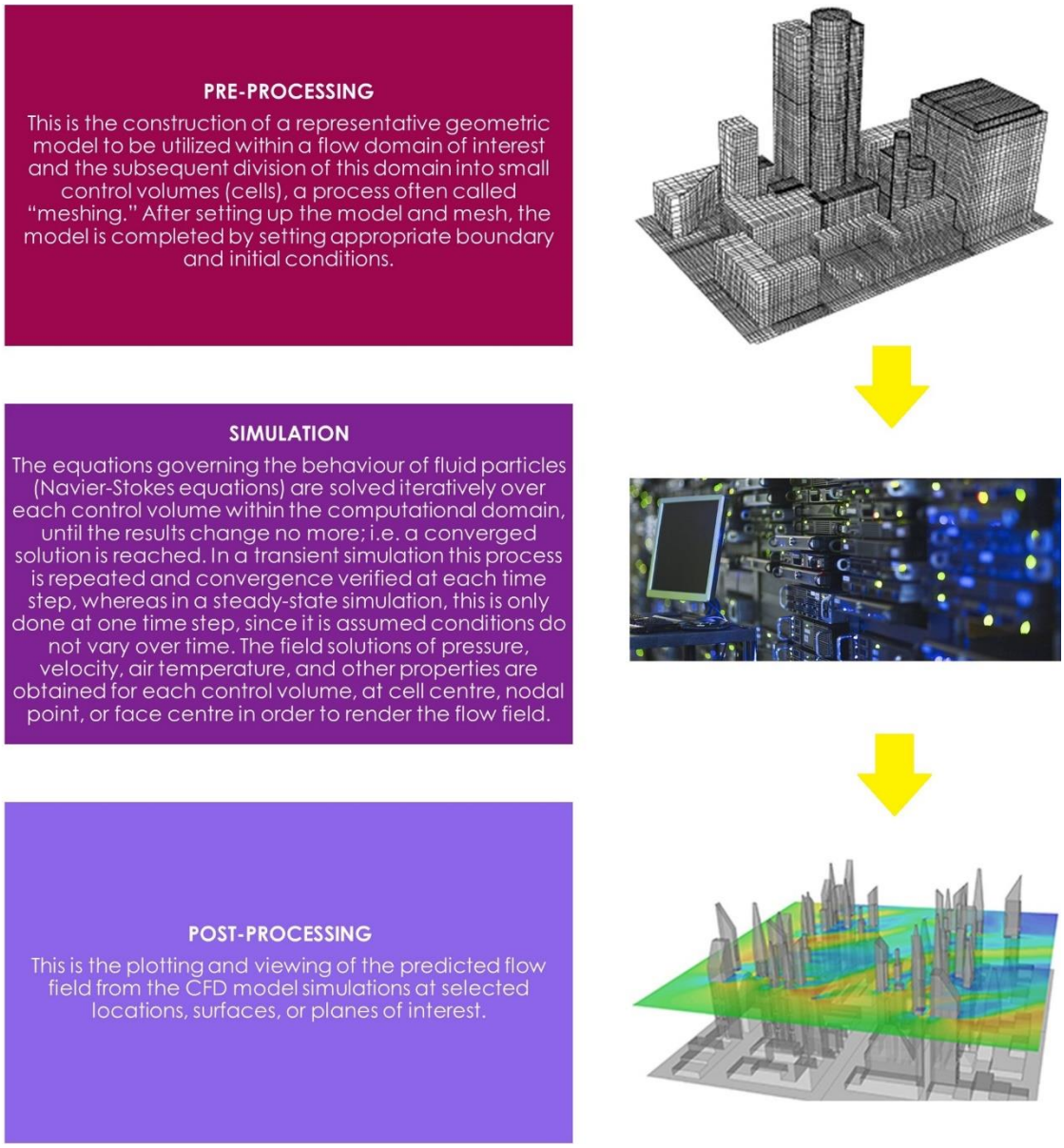


Figure 8-9: CFD Modelling procedure phases-schematic

This subsection describes all features included in the geometrical and physical representation of the Proposed Development CFD model. Any object which may have significant impact on wind movement and circulation are represented within the model.

To be accurate, the structural layout of the building being modelled should include only the obstacles, blockages, openings and closures which can impact the wind around the building. It is important to remember that a CFD simulation approximates reality, so providing more details of the geometry within the model will not necessarily increase the understanding of the bulk flows in the real environment.

8.2.2.3.2 Modelled Geometry and Computational Mesh

In accordance with the guideline cited in Section 8.2.1.2, when a wind study is carried out using CFD modelling the modelled area must include a detailed three-dimensional representation of the Proposed Development and the mesh resolution should be fine enough to capture the important physical phenomena like shear layer and vortices. Therefore, sufficient mesh cells are used between buildings with a minimum of 10 cells across a street canyon. However, the cell size at far fields can be relatively coarse to allow for wind modelling efficiency. (Computational Fluid Dynamics for Urban Physics - 2015).

To represent reality and consider the actual wind impacting on the Proposed Development site, the modelled area for the wind modelling study comprises a wider urban area, this to include the recommended dimensions (400m radius from the site centre) as outlined in Section 8.2.2.

Table 8-14 Computational Modelling details

CFD Model Details	Modelled CFD Environment Dimensions		
	Width	Length	Height
CFD Mesh Domain	1600m approx.	1600m approx	160m approx

8.2.2.3.3 Boundary Conditions for The CFD Model

A rectangular computational domain was used for the analysis. The wind directions were altered without changing the computational mesh. For each simulation scenario, an initial wind velocity was set according to the statistical weather data collected in order to consider the worst-case scenario. Building surfaces within the model are specified as ‘no slip’ boundary conditions. This condition ensures that flow moving parallel to a surface is brought to rest at the point where it meets the surface. Air flow inlet boundaries possess the ‘Inlet’ wind profile velocity patch boundary condition with its appropriate inflow turbulence intensity and dissipation rates. Air exits the domain at the ‘pressure outlet’ boundary condition. (Ref. Best Practice Guidelines for the CFD Simulation of Flows -2007).

Due to aerodynamic drag, there is a wind gradient in the wind flow just a few hundred meters above the Earth’s surface – “the surface layer of the planetary boundary layer”.

Wind speed increases with increasing height above the ground, starting from zero, due to the no-slip condition. In particular, the wind velocity profile used for the analysis is parabolic. Flow near the surface encounters obstacles that reduce the wind speed and introduce random vertical and horizontal velocity components. This turbulence causes vertical mixing between the air moving horizontally at one level, and the air at those levels immediately above and below it. For this reason, the velocity profile is given by a fluctuating velocity along a mean velocity value which are both numerically simulated by mean of inlet velocity profile and turbulence intensity values assigned to the model.

The equation used for the wind velocity profile within the model, as described above, is shown below.

where:

- v_1 = wind speed measured at the reference height h_1
- h_1 = reference height to measure v_1
- h_2 = height of the wind speed v_2 calculated for the wind profile
- z_0 = 0.4 [m] roughness length selected

8.2.2.3.4 Computational Mesh

The level of accuracy of the CFD results are determined by the level of refinement of the computational mesh. Details of parameters used to calculate the computational mesh are presented in *Table 8-15*. Figure 8-10 shows the mesh utilised in the simulations.

The grid follows the principles of the 'Finite Volume Method', which implies that the solution of the model equations is calculated at discrete points (nodes) on a three-dimensional grid, which includes all the flow volume of interest. The mathematical solution for the flow is calculated at the centre of each of these cells and then an interpolation function is used by the software to provide the results in the entire domain.

$$v_2 = v_1 \cdot \frac{ln\frac{h_2}{z_0}}{ln\frac{h_1}{z_0}}$$

Table 8-15 Parameter to Calculate Computational Mesh

Parameters To Calculate Computational Mesh	
Air Density ρ	$1.2 kg/m^3$
Ambient Temperature (T)	$288K$ (*approx.* $15C^{\circ}$) isothermal analysis
Gravity Acceleration (g)	$9.8 m/s^2$
dx	0.3 m at the building 1m in the surroundings 2m elsewhere
Mesh cells size	0.1 m (ratio 1:1)
Total mesh size	Approx. cells number = 20 millions

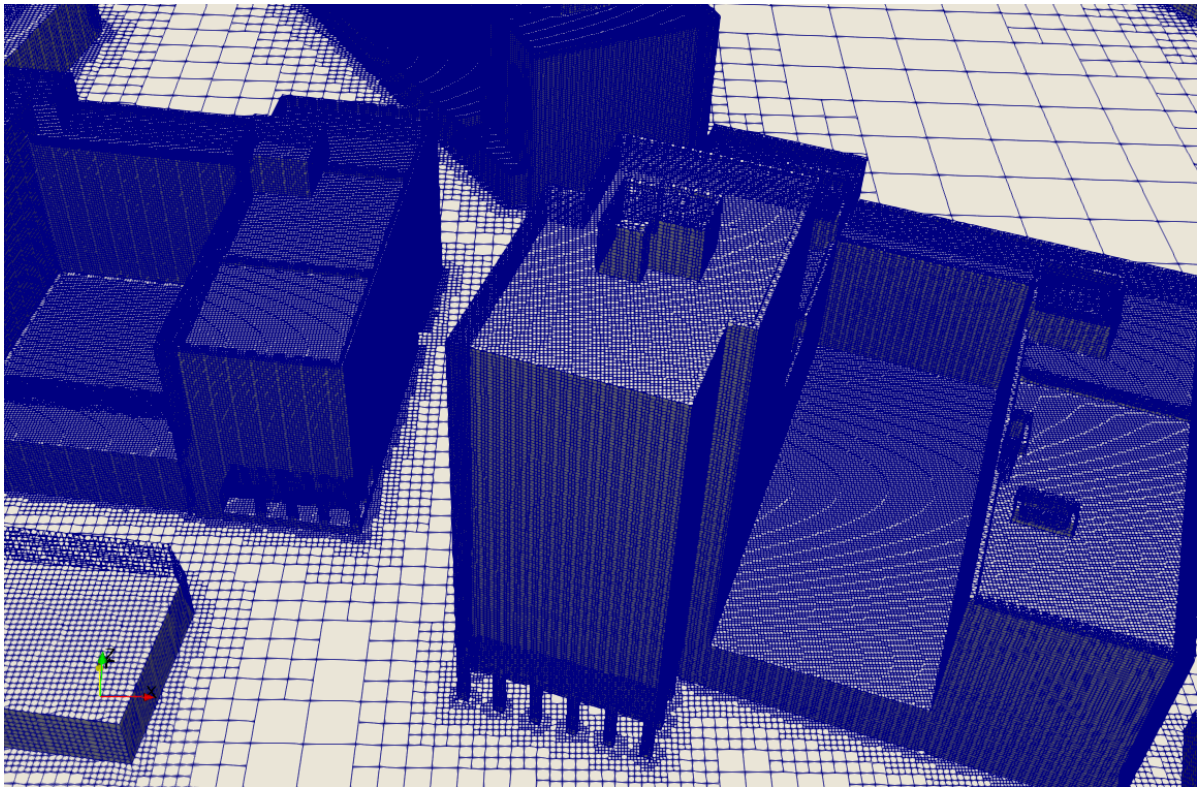


Figure 8-10: Computational mesh used for the CFD wind modelling and simulation

8.2.3 The Existing and Receiving Environment (Baseline Situation)

The baseline environment consists of the area to be developed as shown in Figure 8-11 and its surroundings. The wind microclimate of the baseline environment is defined by the wind patterns that develop on the existing site under the local wind conditions shown in Section 8.2.3.1.

Figure 8-11: Existing environment around the proposed site

The existing context is analysed, and Lawson criteria is applied considering that pedestrian activities (walking, strolling) are taking place on the existing area.

8.2.3.1 Local Wind Climate

A statistical analysis of 30 years historical wind data has been carried out to characterise the existing wind climate in terms of wind speeds, frequency, and directions.

The existing wind conditions are obtained using the annual average of meteorology data collected at Dublin Airport Weather Station. Figure 8-12 shows on the map the position of the Proposed Development site and the position of Dublin Airport.

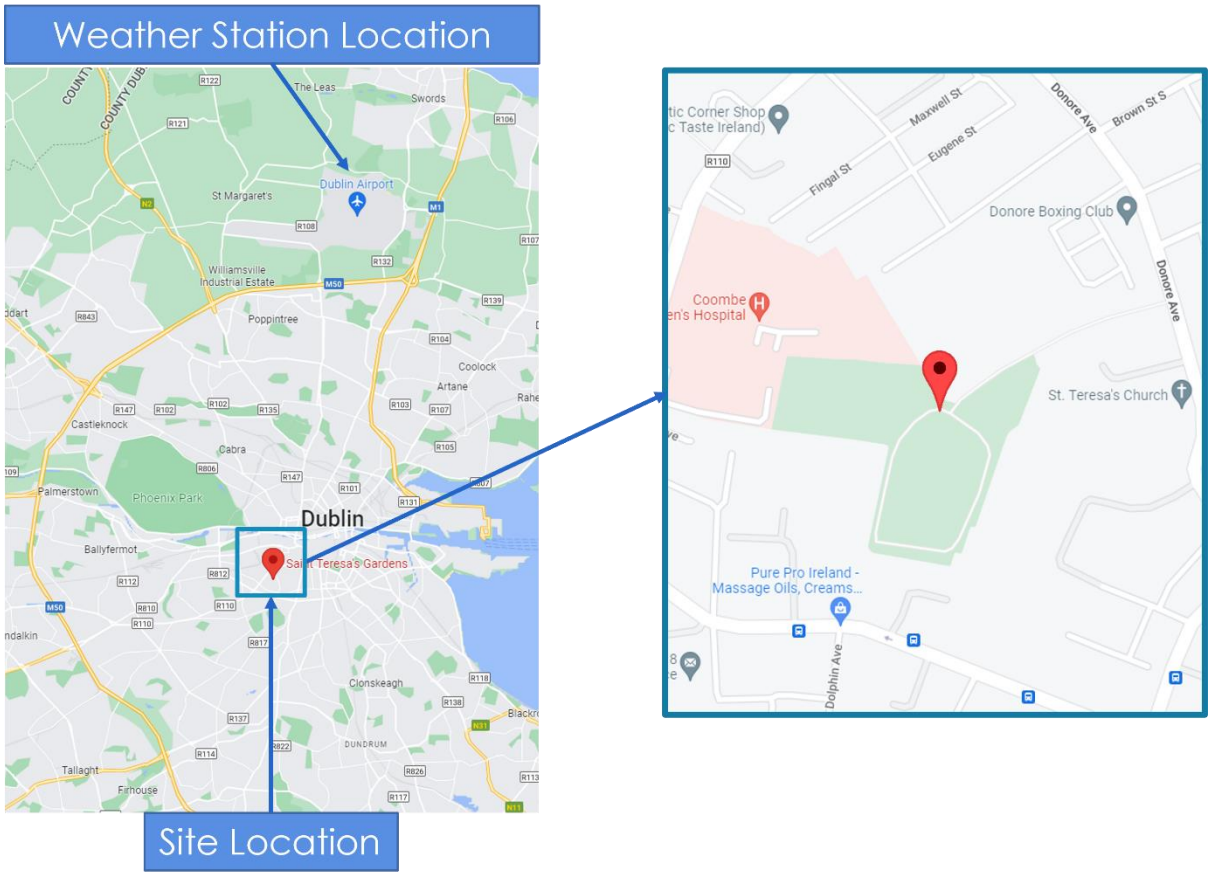


Figure 8-12: Proposed Development Site location and weather station location at Dublin airport

Regarding the transferability of the available wind data from the Dublin Airport Weather Wind station to the Proposed Development site location, the following considerations have been made:

- **Terrain**: The meteorological station is located on the flat open terrain of the airport, whereas the development site is in an urban area with dense built-in structure with buildings of more than 10-20 m height in average and with some buildings even taller.
- **Mean Wind Speeds**: Due to the different terrain environment, the ground-near wind speeds (at pedestrian level) will be lower at the proposed site compared to the meteorological station at the airport.
- **Wind Directions**: The landscape around the development site can principally be characterised as flat terrain. Isolated small elevations in the near area of the development should have no influence on the wind speed and wind directions. With respect to the general wind climate, no significant influence is expected.

As stated above, the local wind climate is determined from historical meteorological data recorded at Dublin Airport. The data set analyzed for this assessment is based on the meteorological data associated with the maximum daily wind speeds recorded over a 30-years period between 1990 and 2021 at a weather station at the airport, which is located 10m above ground.

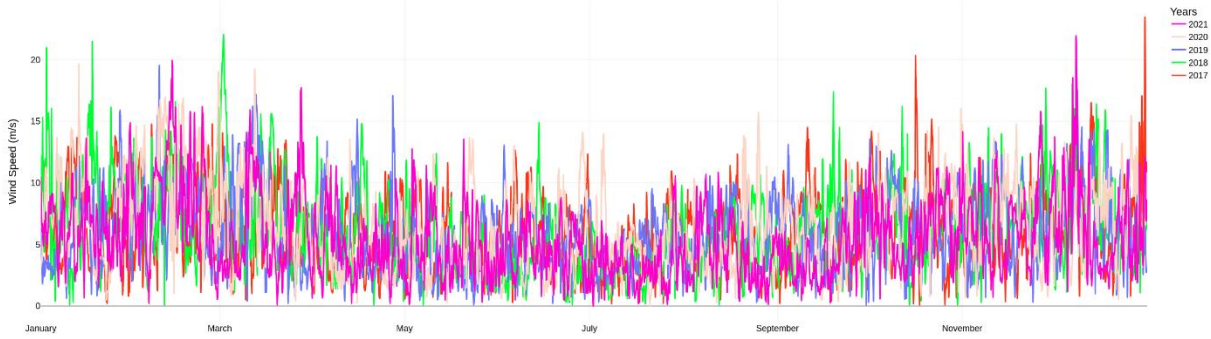


Figure 8-13: Local Wind Conditions - Wind Speed (Mean Values per Months)- historic data 1990-2021- (Data Source www.meteoblue.com)

Furthermore, a Weibull distribution was fitted to the wind data for each wind direction simulated through the adoption of an appropriate dispersion parameter, c, and a shape parameter, k. In house-based 'Python script' applies the factors to the simulation input wind conditions directly. The local data from Dublin Airport was transposed to the Proposed Development site using the ESDU (Engineering Sciences Data Unit) methodology.

8.2.3.2 Local Wind for the Assessment of Pedestrian Comfort and Distress

The predominant wind directions on the baseline environment identifies from which direction the wind is blowing on the Proposed Development site for most of the time during a typical year.

In accordance with Lawson Criteria, if the proposed site is exposed to a wind from a specific direction for more than 5% of the times, then the microclimate analysis should consider the impact of this wind (accounting for its direction and most frequent speed) on the local microclimate.

A statistical analysis was carried out based one 2 historical wind data sources:

- Meteoblue (over 40 years historical data – since 1979) – Dublin Airport
- Openweather (over 40 years historical data – since 1979) – Dublin Airport and Site location

To understand and correctly validate the weather conditions at the Proposed Development site, a comparison was carried out between the historical data provided by both sources (Meteoblue and Openweather) at the weather station (Dublin Airport).

Data analysis and data visualization were obtained with an in-house program which is coded based on Python language. The speed and frequency of wind per each direction were considered, and, seasonal changes were analysed in order to indicate the prevailing wind directions (as shown in the following Figures).

Furthermore, statistical analysis of the number of hours and magnitudes of wind for 36 angles (10° increments) is performed to produce the Lawson plots. Each of the 36 wind directions were interpolated to calculate the probability that a velocity threshold will be exceeded.

Figure 8-14 presents the wind speed diagram for Dublin, the diagram shows how often (how many days per month) the wind blows with a specific speed.

Figure 8-15 shows the wind rose for Dublin and details how often (how many hours per year in this case) the wind blows from a specific direction, these data highlights that the predominant wind directions for the Proposed Development site are West-South-West, West, and South-West.

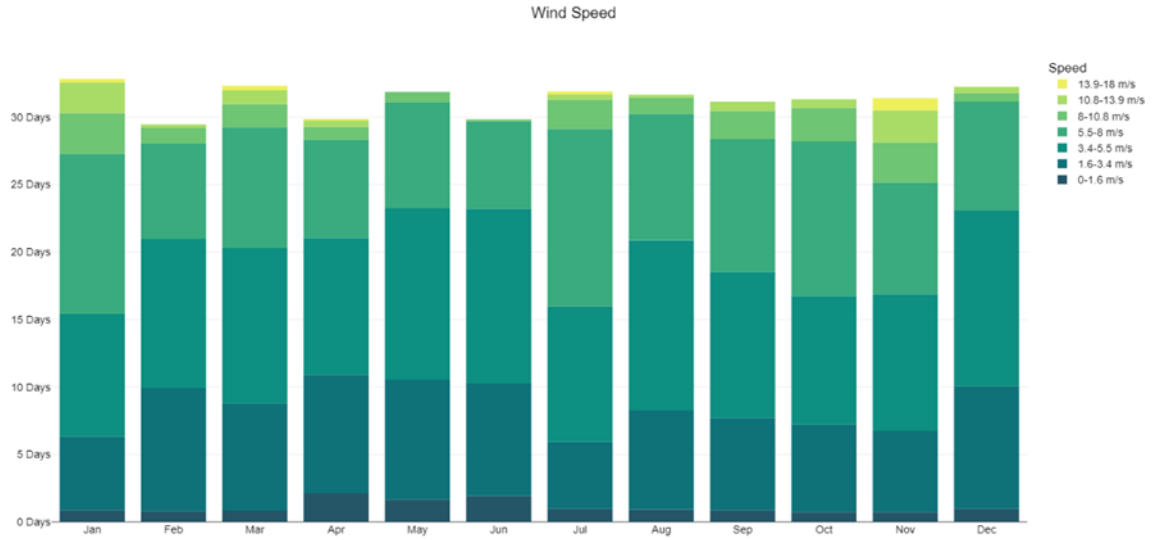


Figure 8-14: Annual Wind speed diagram -Dublin (Data Source www.Meteoblue.com)

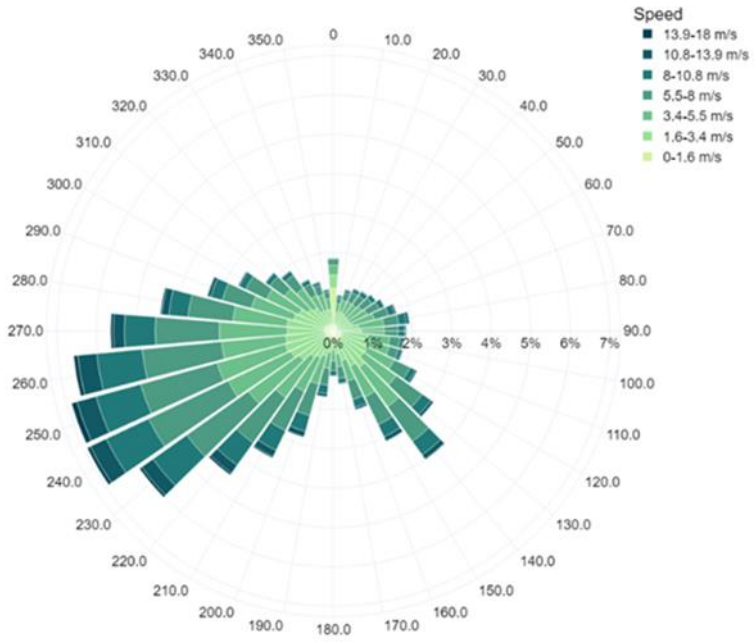


Figure 8-15: Wind rose of Dublin, speeds, frequency and directions (Data Source www.Meteoblue.com)

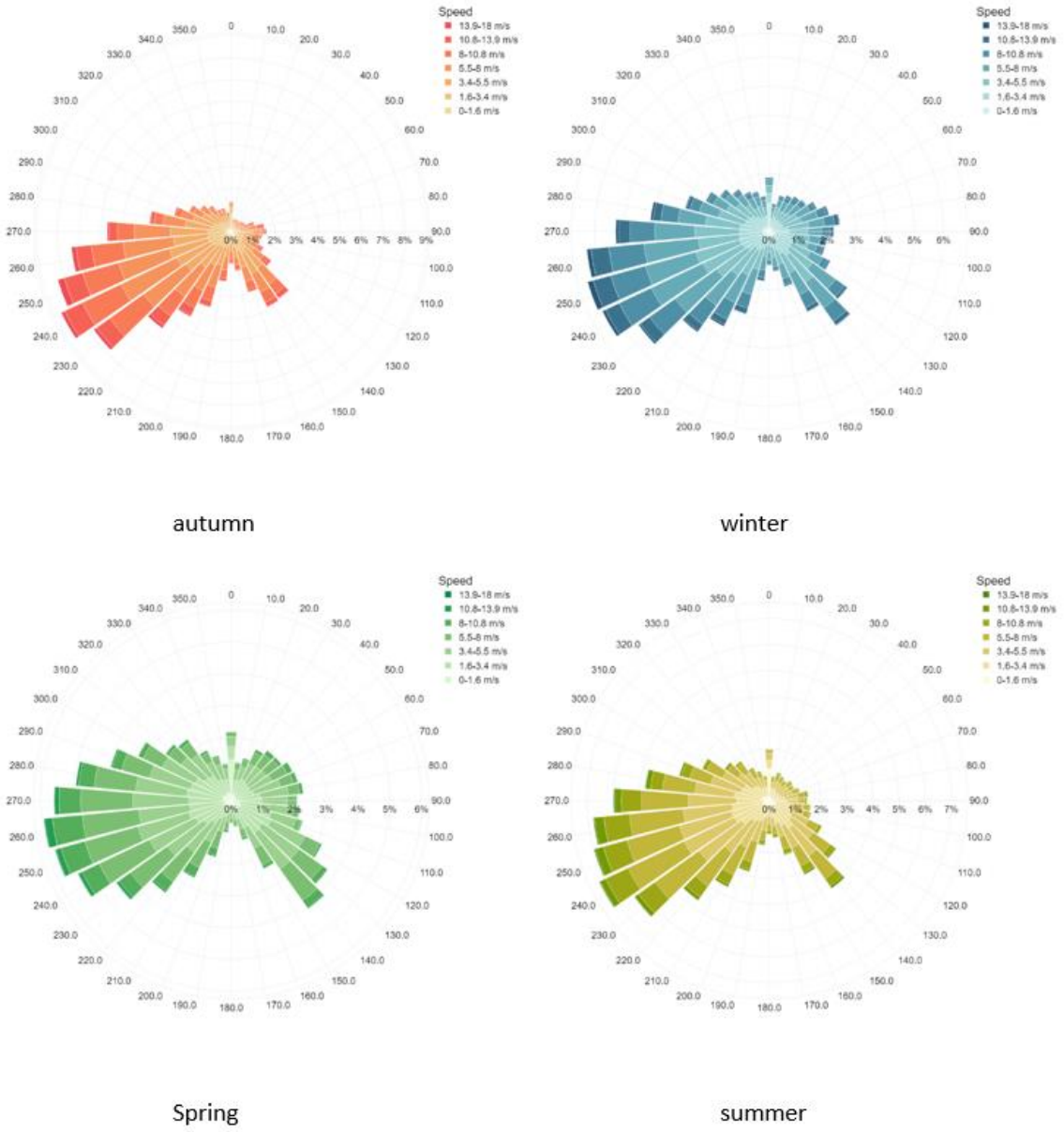


Figure 8-16: Wind speeds and wind directions at different seasons in Ireland (Data Source www.Meteoblue.com)

The table that follows reports all the wind directions and their correspondent velocity, displayed in order of frequency of occurrence with those most frequent on the top.

As it can be noted, the wind at the Proposed Development site is mostly blowing (higher frequency of occurrence) from the South-West (225deg) direction with a wind velocity of approximately 5m/s. A similar wind speed is blowing also from the South-South-West direction (213deg), however the frequency of occurrence of this wind is less than 5% (only 3.288% of the times, as indicated in the table) therefore, this wind is not relevant for the scope of performing the pedestrian comfort and distress analysis as per Lawson Criteria. For assessing the wind microclimate for the Proposed Development, the study has considered the site exposed to all the wind directions which exceed the 5% of frequency, as required for the Lawson Criteria and some additional high-speed winds, which are occurring less often (below 5% of the times) but that can cause distress conditions because of their speed.

Table 8-16 Summary of the wind speeds at the Proposed Development site with the indicated magnitude, directions, and frequency of occurrence.

BASELINE WIND SPEEDS, DIRECTIONS AND FREQUENCY OF OCCURENCE		
Velocity (m/s)	**Direction (deg11)**	**Frequency (%)**
5.601	225	11.233 (> 5%)
4.626	135	6.849 (> 5%)
5.847	236.25	6.792 (> 5%)
6.049	258.75	6.747 (> 5%)
6.034	247.5	6.689 (> 5%)
5.888	270	5.662 (> 5%)
4.994	315	4.338
5.503	281.25	3.904
4.974	292.5	3.436
5.357	213.75	3.288
4.736	123.75	3.105
4.406	146.25	2.751
5.101	303.75	2.648
5.246	112.5	2.500
4.121	157.5	2.386
4.581	101.25	2.340
4.169	45	2.180
3.558	90	2.135

Note: Table cells highlighted in grey indicate the top 8 higher frequency which exceed the 5% frequency and are fundamental for the wind microclimate analysis.

8.2.3.3 Baseline Scenario

The wind microclimate of the baseline scenario is defined by the wind patterns that develop on the site and it's the surroundings (existing buildings and topography) under the local wind conditions relevant for the assessment of the Pedestrian Comfort and Distress.

In this scenario the assessment has considered the impact of wind on the existing area. Results of wind microclimate at pedestrian level (1.5m height - flow speeds) are collected throughout the modelled site. These flow velocities identify if locally, wind speeds at pedestrian-level are accelerated or decelerated in relation to the undisturbed reference wind speed due to the presence of the existing baseline environment.

The impact of these speeds is then combined with their specific frequency of occurrence and presented in the maps that show the area of comfort and distress in accordance with Lawson Criteria, these maps are produced at pedestrian level on the ground and identify the suitability of each areas to its prescribed level of usage and activity.

Figure 8-17: Baseline scenario- CFD Model for wind analysis

8.2.3.3.1 Wind speeds at pedestrian level

Results of wind speeds and their circulations at pedestrian level of 1.5m above the development ground are presented in the following images in order to assess wind flows at ground floor level of the Subject Site.

Wind flow speeds are shown to be within tenable conditions. Higher velocity and recirculation effects are found in the existing site.

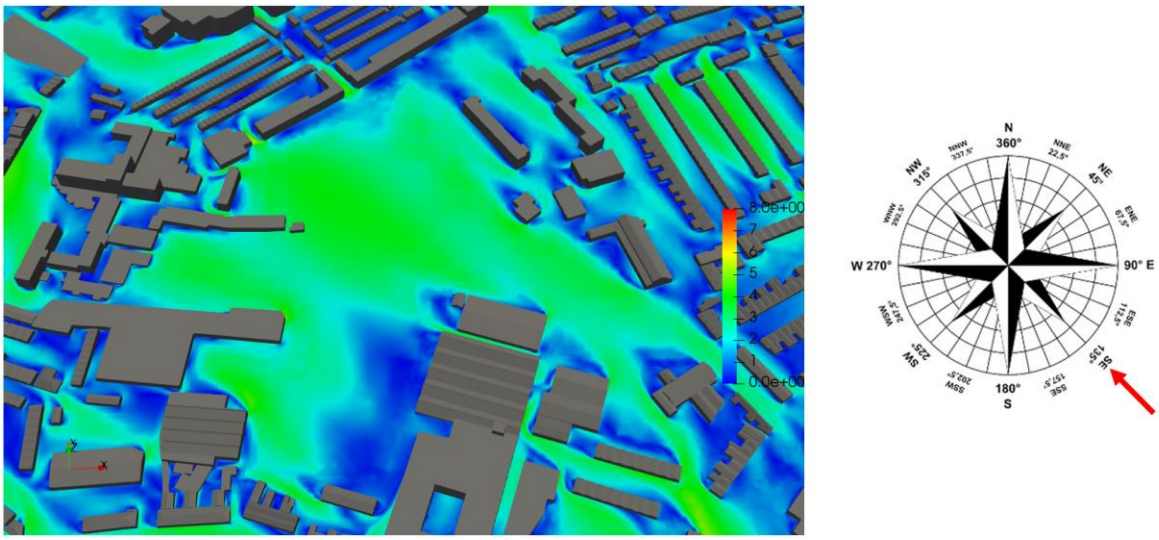


Figure 8-18: Wind at pedestrian level – Baseline Scenario -direction SE

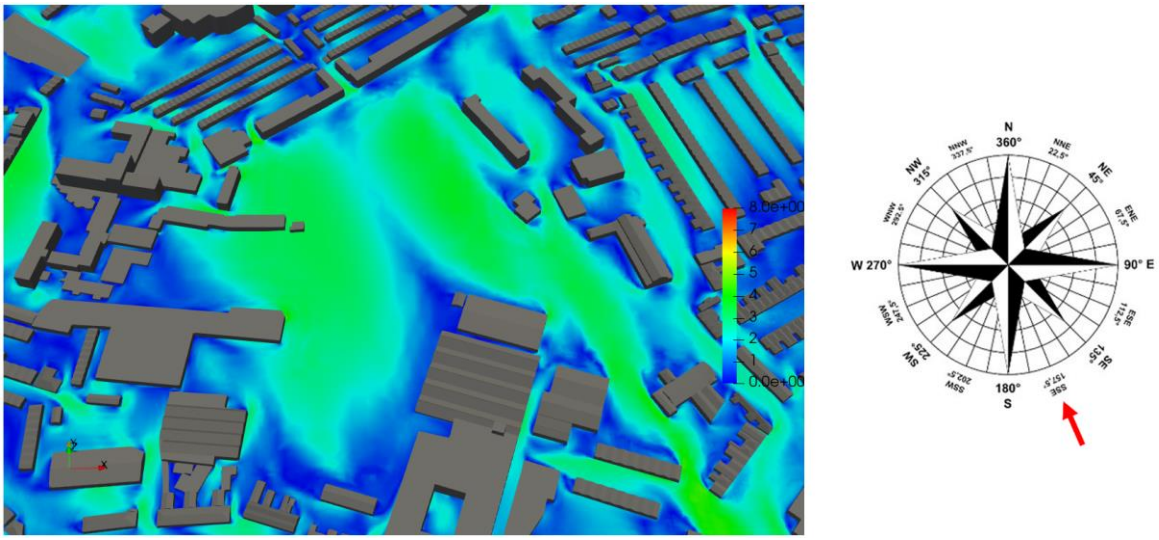


Figure 8-19: Wind at pedestrian level – Baseline Scenario -direction SSE

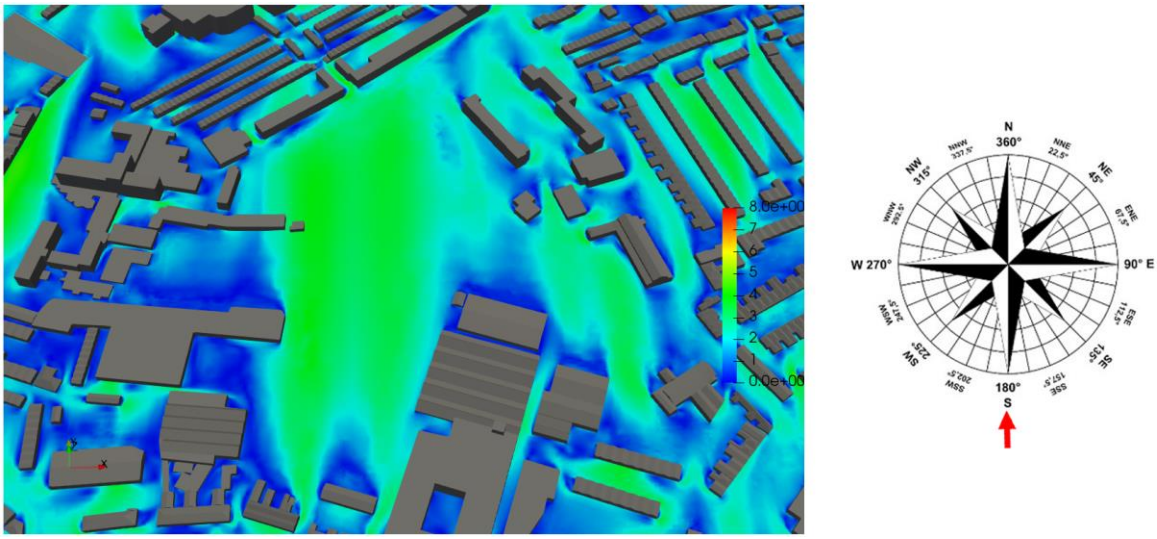


Figure 8-20: Wind at pedestrian level – Baseline Scenario -direction S

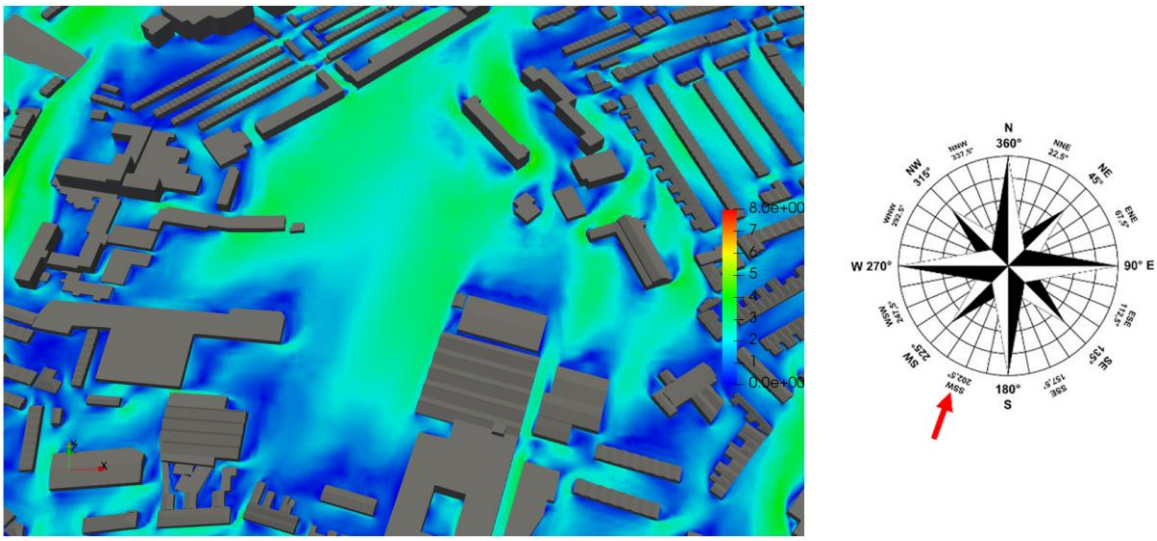


Figure 8-21: Wind at pedestrian level – Baseline Scenario -direction SSW

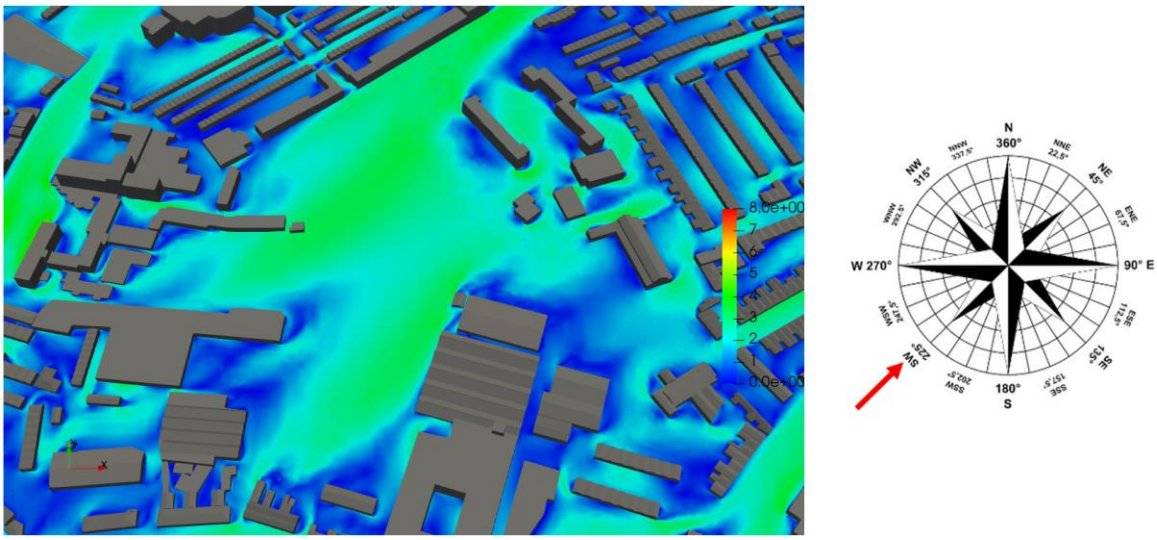


Figure 8-22: Wind at pedestrian level – Baseline Scenario -direction SW

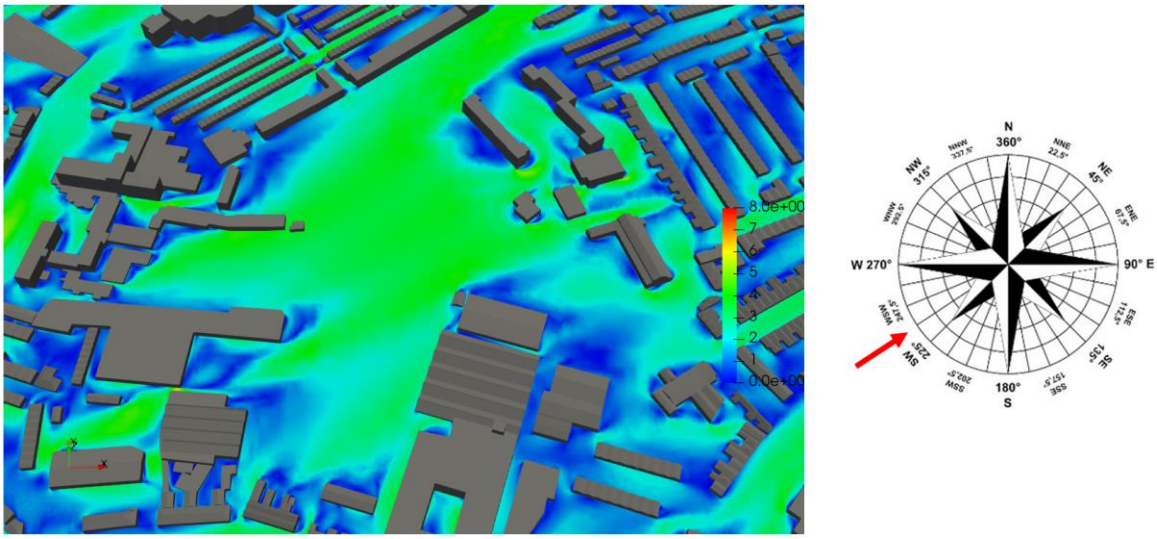


Figure 8-23: Wind at pedestrian level – Baseline Scenario -direction SWW

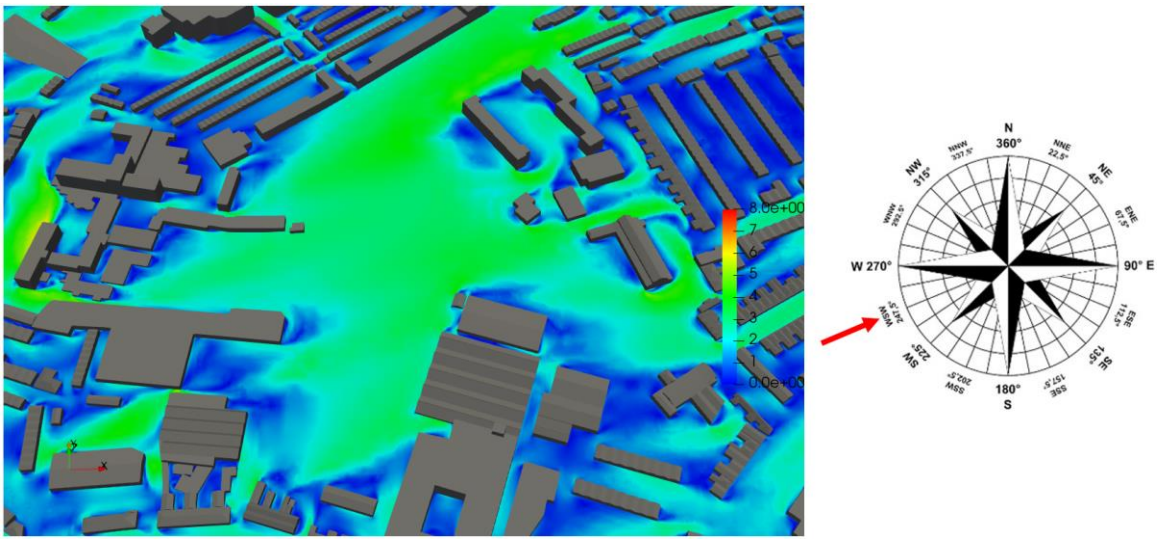


Figure 8-24: Wind at pedestrian level – Baseline Scenario -direction WSW

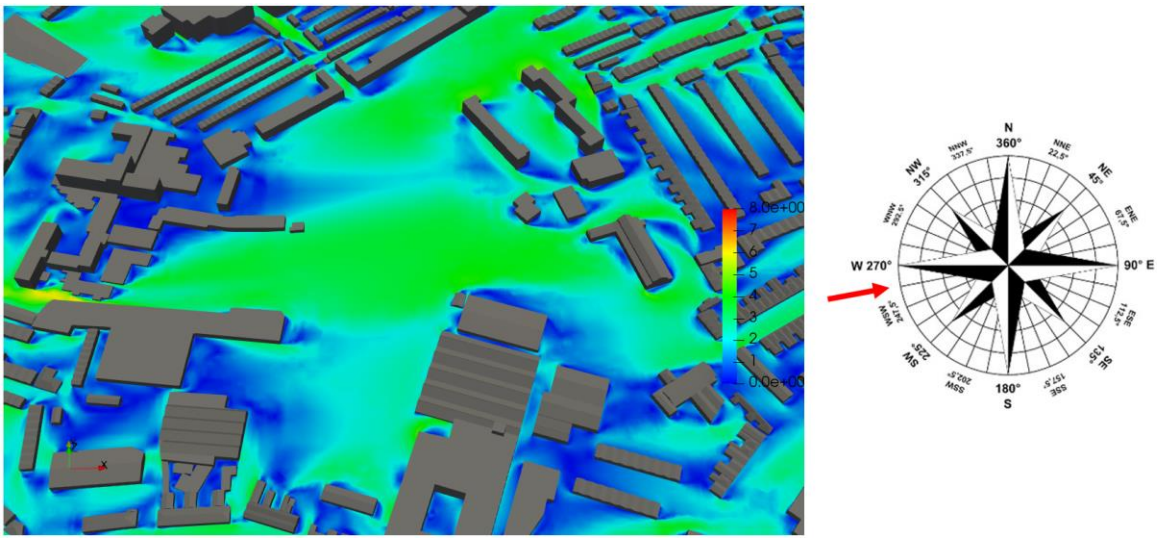


Figure 8-25: Wind at pedestrian level – Baseline Scenario -direction WSWW

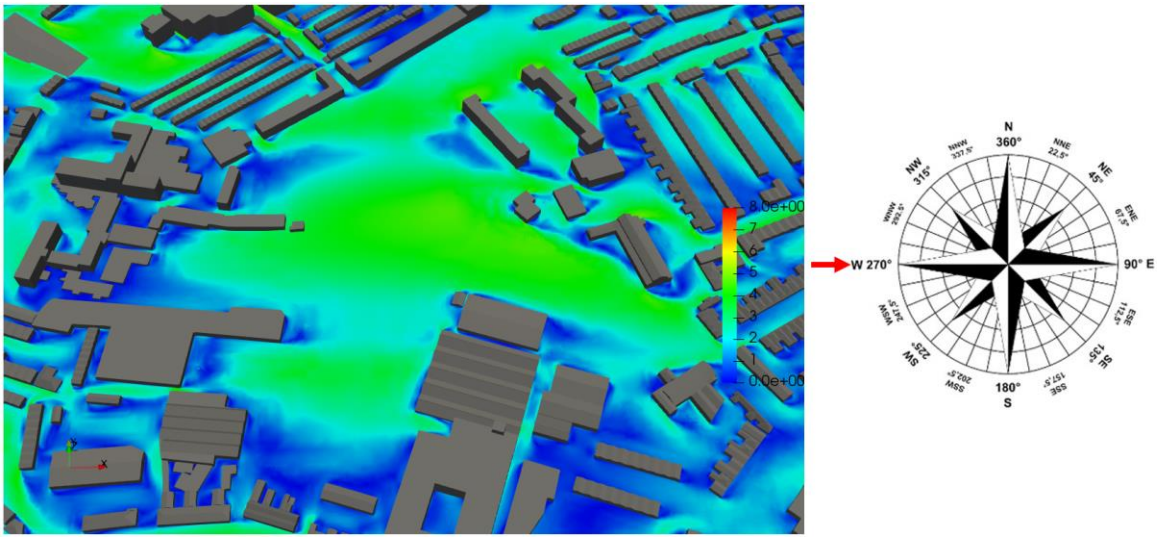


Figure 8-26: Wind at pedestrian level – Baseline Scenario -direction W

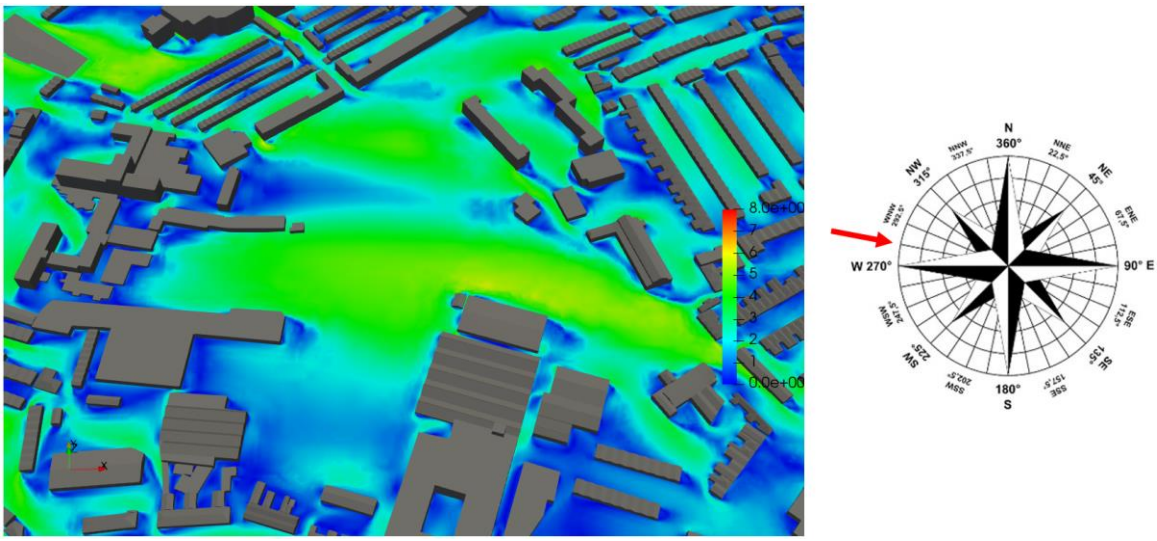


Figure 8-27: Wind at pedestrian level – Baseline Scenario -direction WWNW

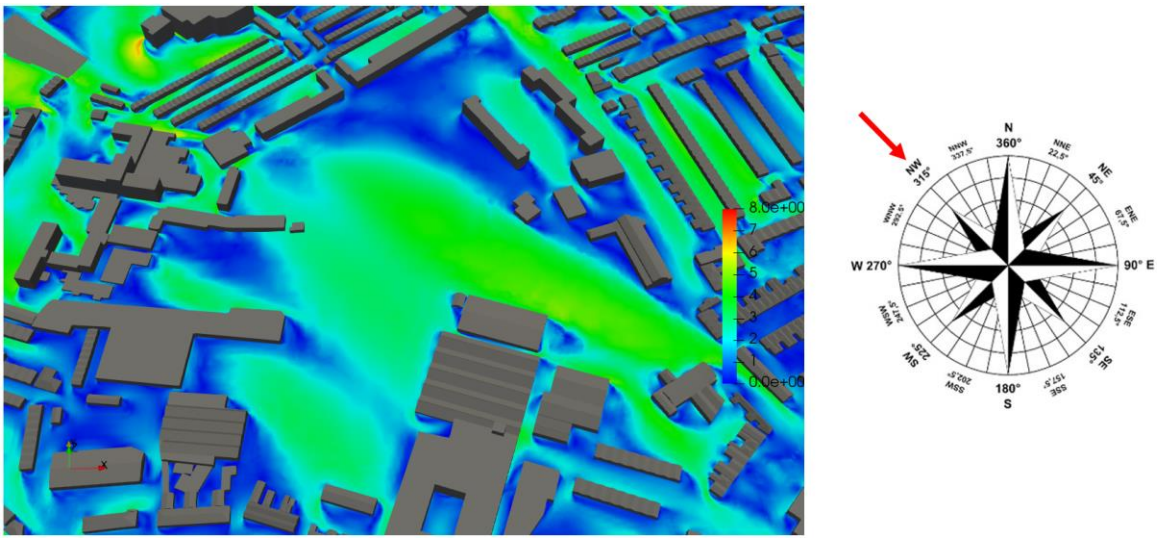


Figure 8-28: Wind at pedestrian level – Baseline Scenario -direction NW

8.2.3.3.2 Baseline Wind Microclimate

The wind flow results obtained simulating the different direction and wind speeds, are combined with wind frequencies of occurrence to obtain comfort ratings at pedestrian level in all areas included within the model. The comparison of comfort ratings with intended pedestrian activities is shown in the Lawson Comfort and Distress Map that follows. The comfort/distress conditions are presented using a colour coded diagram (Figure 8-29) formulated in accordance with the Lawson Criteria.

Figure 8-29: Lawson criteria scale

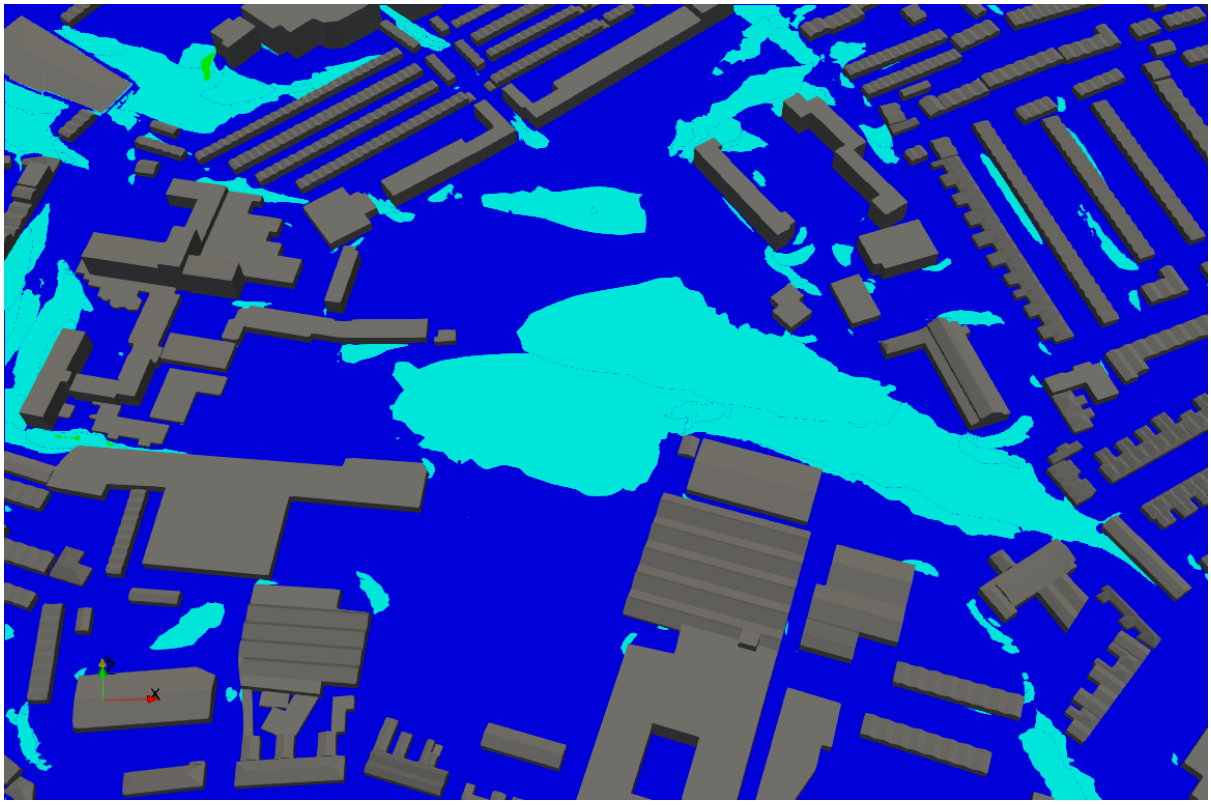


Figure 8-30: Wind comfort-distress map (Lawson Map) - Baseline scenario

From the simulation results the following observations are pointed out:

- The assessment of the baseline scenario has shown that no area is unsafe within the analysed study area and no conditions of distress are created in the existing environment under the local wind climate.
- The area where the proposed site is going to be constructed, is usable for walking and short-term sitting, the roads in the surrounding of the Proposed Development are usable for their intended scope (walking).
- Now there is no designated area, on the site of the Proposed Development, for public long-term sitting, however the site presents comfortable conditions for this activity.

8.2.4 Characteristics of the Proposed Development

The development (GFA of c. 53,234 sqm) contains the following mix of apartments: 225 No. 1 bedroom apartments (36 no. 1-person & 189 no. 2-person), 274 No. 2 bedroom apartments (including 52 No. 2 bed 3 person apartments and 222 No. 2 bed 4 person apartments), 44 No. 3 bedroom 5-person apartments, together with retail/café unit (168 sq.m.), mobility hub (52 sq.m.) and 952 sq.m. of community, artist workspace, arts and cultural space, including a creche, set out in 4 No. blocks

The breakdown of each block will contain the following apartments:

- Block DCC1 comprises 111 No. apartments in a block of 6-7 storeys;
- Block DCC3 comprises 247 No. apartments in a block of 6-15 storeys;
- Block DCC5 comprises 132 No. apartments in a block of 2-7 storeys;
- Block DCC6 comprises 53 No. apartments in a block of 7 storeys;

The Proposed Development will also provide for public open space of 3,408 sqm, communal amenity space of 4,417 sqm and a creche (c.851 sqm) with associated play space. Provision of private open space in the form of balconies or terraces is provided to all individual apartments.

The Proposed Development will provide 906 no. residential bicycle parking spaces which are located within secure bicycle stores. 5% of these are over-sized spaces which are for large bicycles, cargo bicycles and other non-standard bicycles. In addition, 138 spaces for visitors are distributed throughout the site.

A total of 79 no. car parking spaces are provided at undercroft level. Six of these are mobility impaired spaces (2 in each of DCC1, DCC3 & DCC5). 50% of standard spaces will be EV fitted. Up to 30 of the spaces will be reserved for car sharing (resident use only). A further 15 no. on-street spaces are proposed consisting of:

- 1 no. accessible bay (between DCC5 & DCC6)
- 1 no. short stay bay (between DCC5 & DCC6)
- 1 no. crèche set-down/ loading bay (between DCC5 & DCC6)

- 1 no. set-down / loading bay (northern side of DCC5)
- 1 no. set-down/loading bay (northern side of DCC 3)
- 10 no. short stay spaces (north-east of DCC1)

In addition, 4 no. motorcycle spaces are also to be provided.

Vehicular, pedestrian and cyclist access routes are provided from a new entrance to the north-west from Margaret Kennedy Road. Provision for further vehicular, pedestrian and cyclist access points have been made to facilitate connections to the planned residential schemes on the Bailey Gibson & Player Wills sites for which there are extant permissions (Ref. No.'s ABP-307221-20 & ABP-308917-20).

The development will also provide for all associated ancillary site development infrastructure including site clearance and demolition of boundary wall along Margaret Kennedy Road and playing pitch and associated fencing/lighting, the construction of foundations, ESB substations, switch room, water tank rooms, storage room, meter room, sprinkler tank room, comms room, bin storage, bicycle stores, green roofs, photovoltaic panels, hard and soft landscaping, play equipment, boundary walls, attenuation area and all associated works and infrastructure to facilitate the development including connection to foul and surface water drainage and water supply.

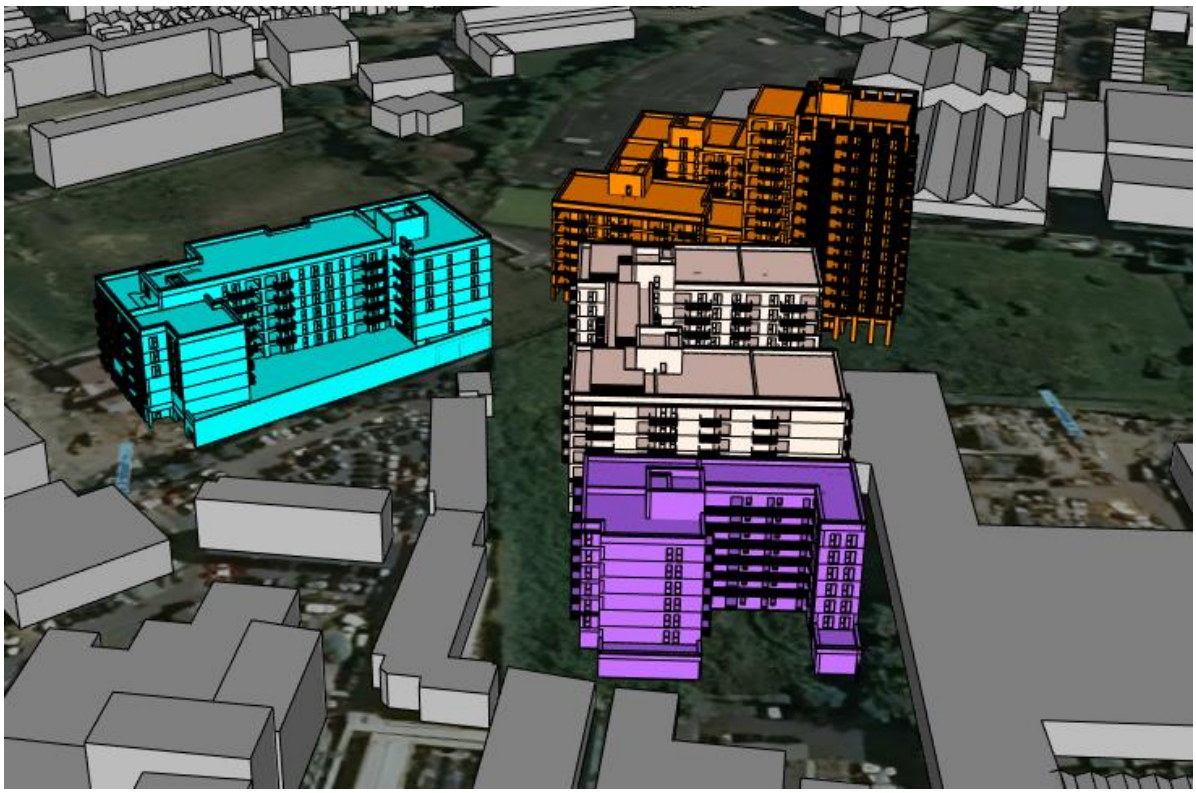


Figure 8-31: View of the 3D CFD model of the Proposed Development blocks DCC1, DCC3, DCC5, DCC6 (coloured blocks) in the existing context

Figure 8-32: View of the 3D CFD model of the Proposed Development (coloured blocks) in the existing context

Figure 8-33: View of Proposed Development within the existing context

Figure 8-34: View of Proposed Development within the existing context

8.2.4.1 Sensitive Receptors

Potential receptors for the wind assessment are all pedestrian circulation routes, building entrances and leisure open areas within the Proposed Development site and in neighbouring adjacent areas. The pedestrian level is considered at 1.5m above ground.

In addition to the roads and entrances, some sensitive receptors such as courtyard and terraces for this assessment are discussed below, these areas are designed for public use activities such as for long term sittings and need to be particularly comfortable/safe. Figure 8-35 shows the main pedestrian activity area at ground level (green colour) which is considered a sensitive potential receptor for the wind microclimate.

Figure 8-35: Sensitive receptors at ground level (in green color)

8.2.5 Potential Impact of the Proposed Development

This section assessed the potential impact of the Proposed Development on the already existing environment, and the suitability of the Proposed Development to create and maintain a suitable and comfortable environment for different pedestrian activities.

8.2.5.1 Construction Phase

As the finalization of the development proceeds, the wind setting at the site would progressively conform to those of the completed development. Due to the fact that windier conditions are acceptable within a construction area (not accessible to the public), and the Proposed Development would not be the reason for critical wind conditions on-Site (and are slightly calmer when the development is in site), the effects evaluated on-Site are considered to be insignificant. Thus, the predicted impacts during construction phase are identified as not significant or negligible.

In summary, as construction of Donore Project progresses, the wind conditions at the site would gradually adjust to those of the completed development. During the construction phase, predicted impacts are classified as negligible.

8.2.5.2 Operational Phase

This section shows CFD results of wind microclimate assessment carried out considering the “Operational Phase” of Donore Project. In this case the assessment has considered the impact of wind on the existing area including the proposed St. Teresa’s Gardens Development. Wind simulations have been carried out on all the various directions

for which the development could show critical areas in terms of pedestrian comfort and safety.
Results of wind microclimate at pedestrian level (1.5m height – flow speeds) are collected throughout the modelled site and on the roof terraces (potential receptors). These flow velocities identify if locally, wind speeds at pedestrian-level are accelerated or decelerated in relation to the undisturbed reference wind speed due to the presence of the existing baseline environment.
The impact of these speeds are then combined with their specific frequency of occurrence and presented in the maps that show the area of comfort and distress in accordance with Lawson Criteria, these maps are produced at pedestrian level on the ground and on the roof terraces and identify the suitability of each areas to its prescribed level of usage and activity

8.2.5.2.1 Wind speeds at pedestrian level

Results of wind speeds and their circulations at pedestrian level of 1.5m above the development ground are presented in the following images in order to assess wind flows at ground floor level of Donore Project.

Wind flow speeds are shown to be within tenable conditions. Higher velocity and recirculation effects are found in the existing site.

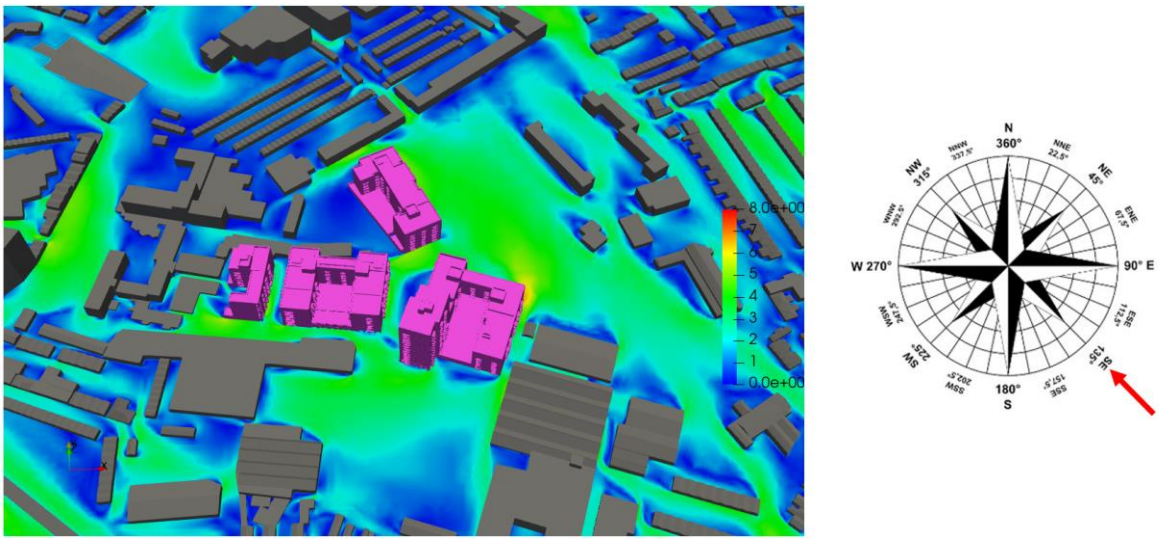


Figure 8-36: Wind at pedestrian level – Proposed Scenario -direction SE

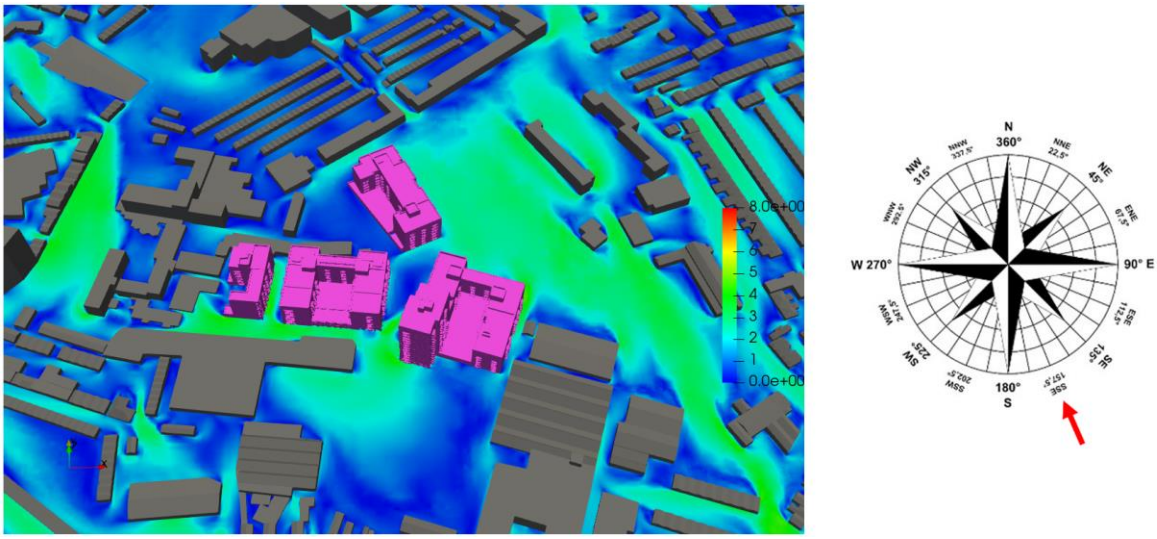


Figure 8-37: Wind at pedestrian level – Proposed Scenario -direction SSE

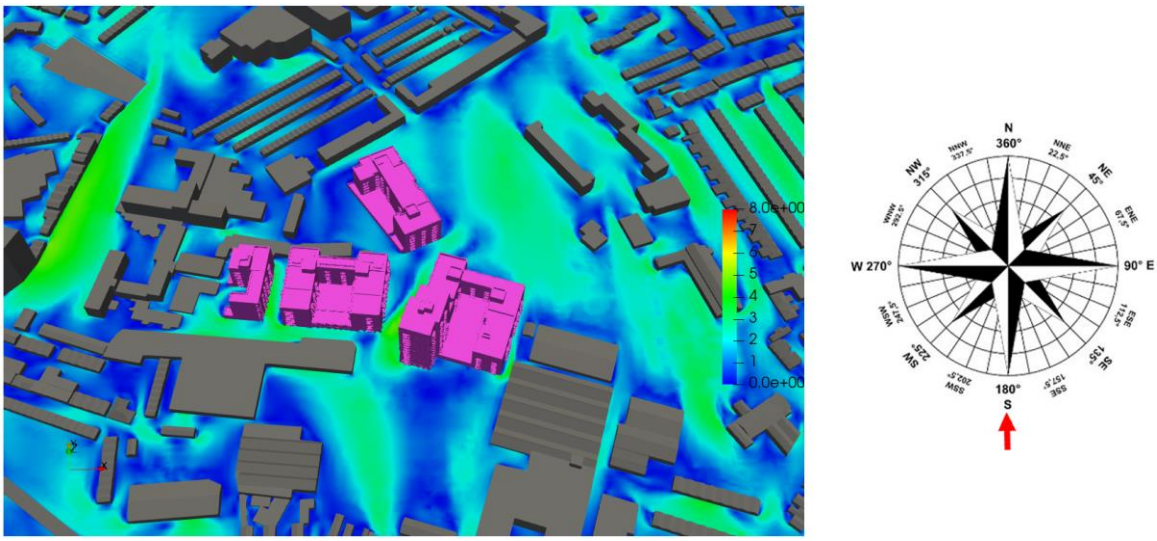


Figure 8-38: Wind at pedestrian level – Proposed Scenario -direction S

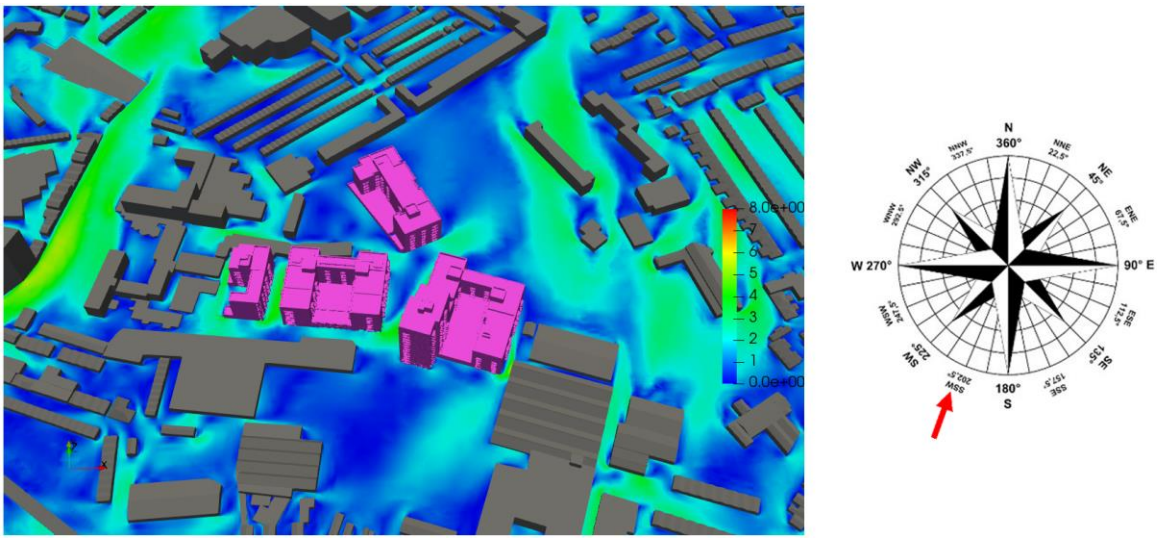


Figure 8-39: Wind at pedestrian level – Proposed Scenario -direction SSW

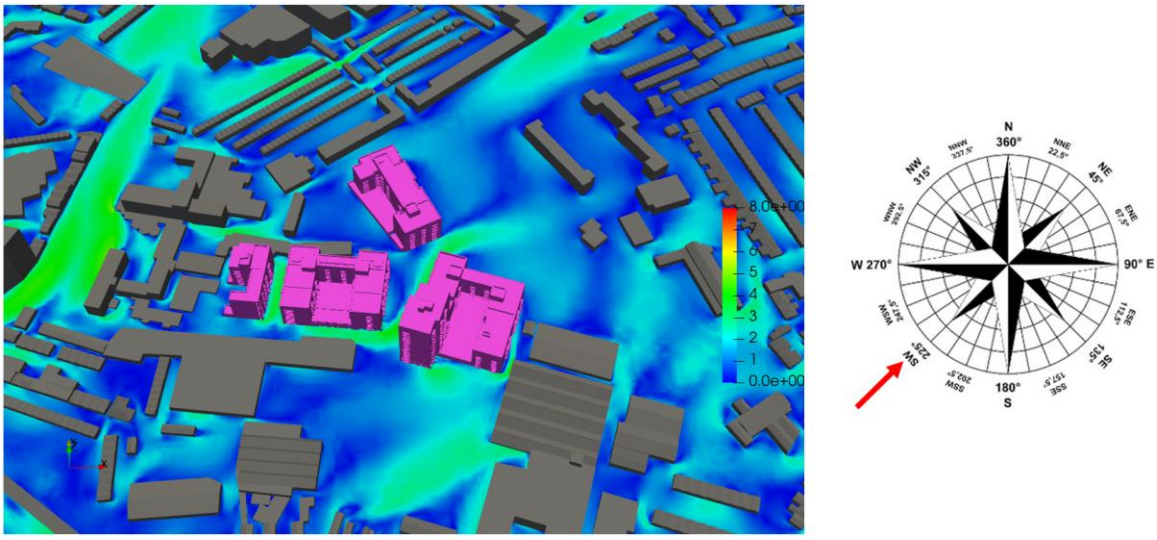


Figure 8-40: Wind at pedestrian level – Proposed Scenario -direction SW

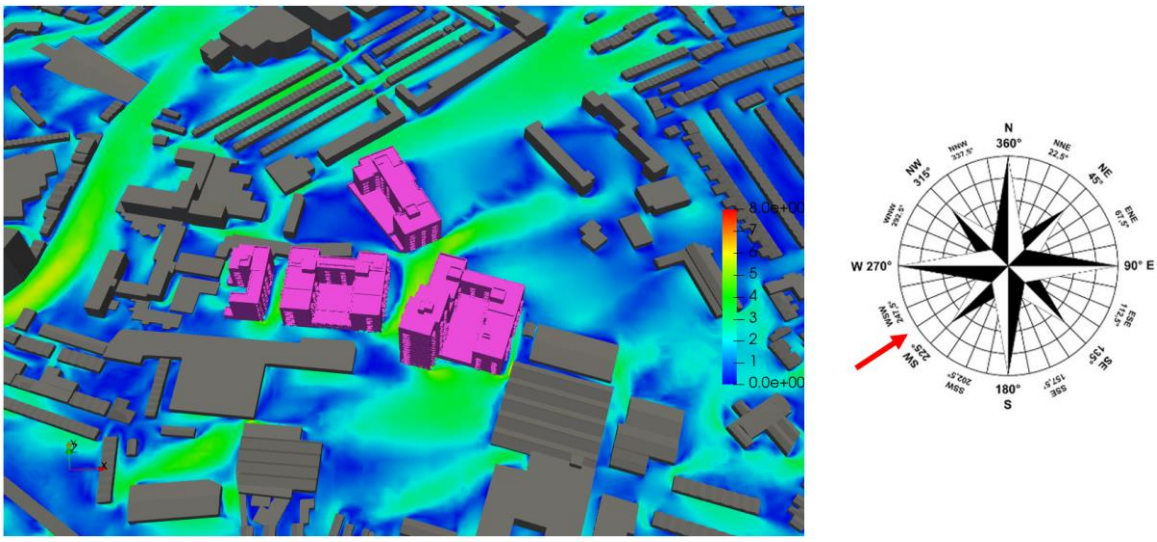


Figure 8-41: Wind at pedestrian level – Proposed Scenario -direction SW

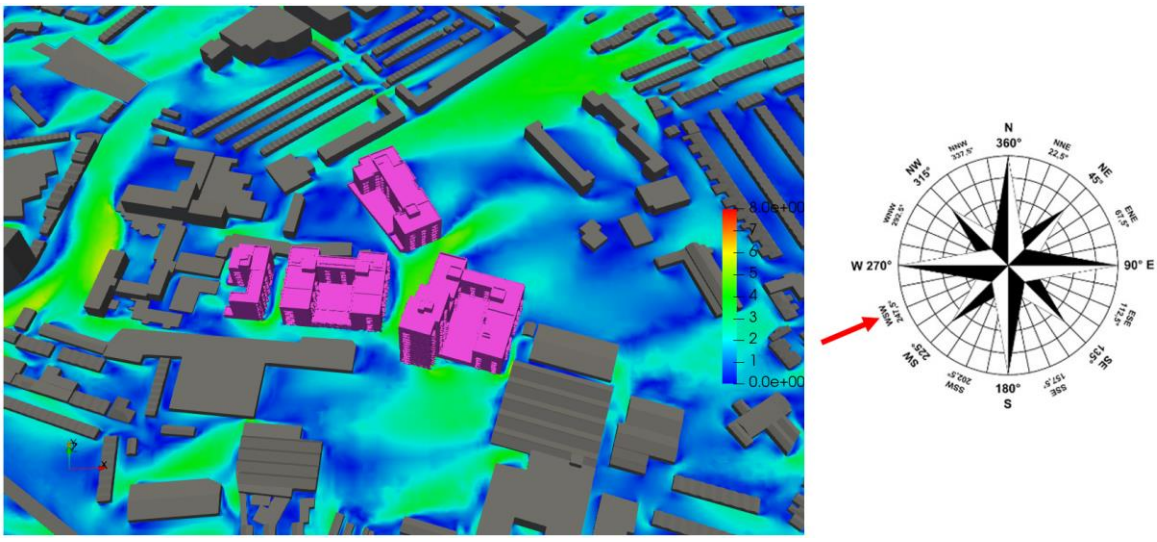


Figure 8-42: Wind at pedestrian level – Proposed Scenario -direction WSW

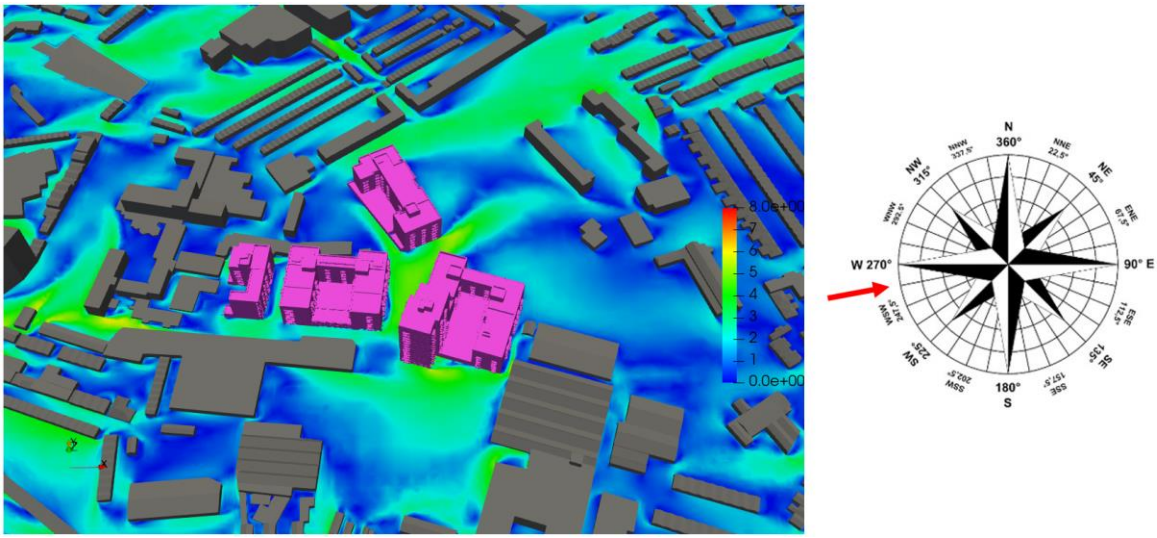


Figure 8-43: Wind at pedestrian level – Proposed Scenario -direction WSWW

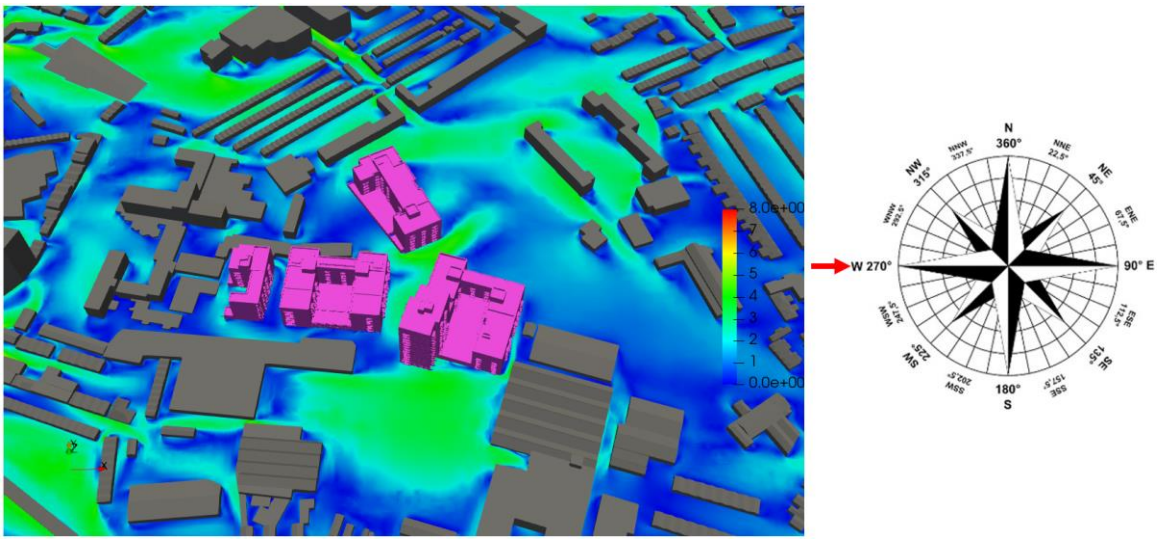


Figure 8-44: Wind at pedestrian level – Proposed Scenario -direction W

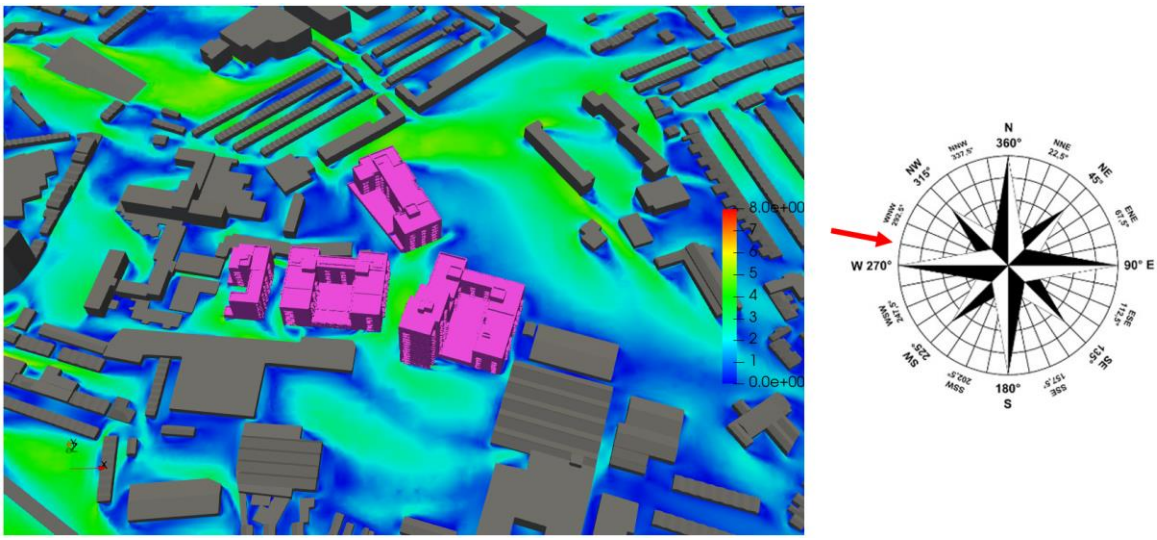


Figure 8-45: Wind at pedestrian level – Proposed Scenario -direction WWNW

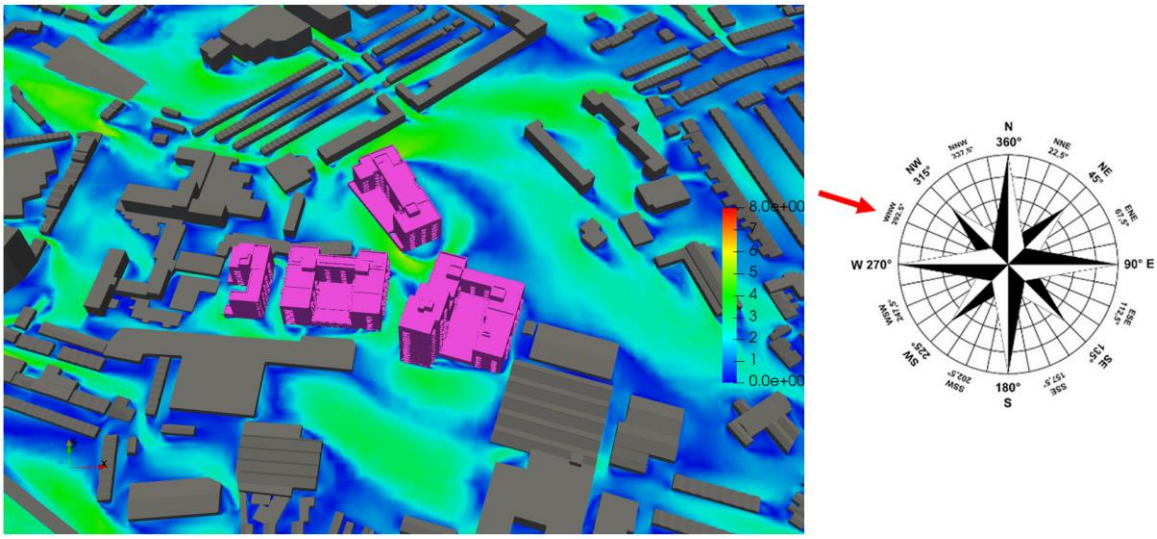


Figure 8-46: Wind at pedestrian level – Proposed Scenario -direction WNW

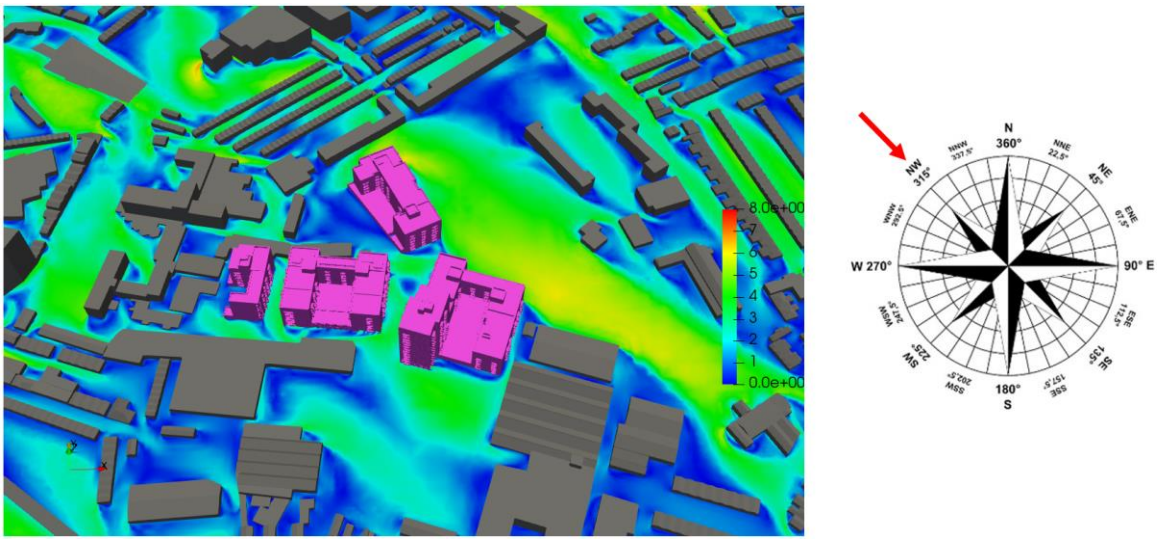


Figure 8-47: Wind at pedestrian level – Proposed Scenario -direction NW

8.2.5.2.2 Wind speeds on sensitive receptors (balconies-vertical plane)

Results of velocity across the balconies in the vertical plane are presented in the following images.

Some local accelerations can be found on the top-level balconies when the wind is blowing from west-south-west direction. However, these velocities are below the threshold values defined by the acceptance criteria and therefore are not critical for safety. Furthermore, balconies are likely to be used as amenity space mostly during spring/summer season when the wind is calmer.

The images also report the wind velocity conditions across the block which is the tallest proposed block in this development. As anticipated in Section 8.2.1.1 the air stream across the tallest building can be, in part deflected towards the ground causing a downwash/downdraft effect. As it can be seen from the wind simulation results, the downwash effect is not critical, and the design of the ground level receiving the effect from above acts as

a mitigation measure to this effect, furthermore the road below is for pedestrian walking or traffic circulation and there is no sitting or play area directly into the air stream from above.

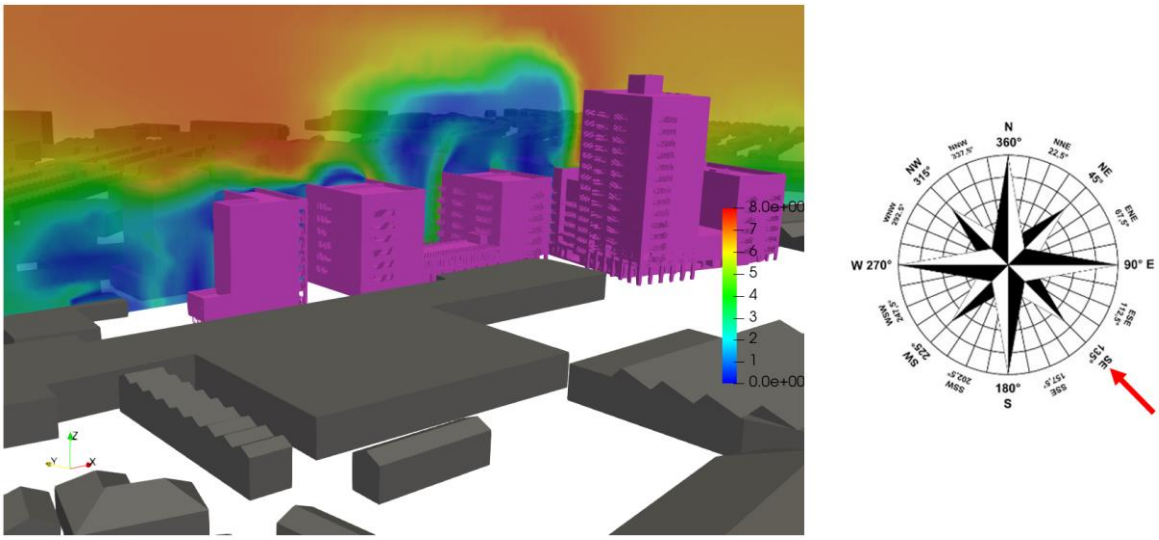


Figure 8-48: Wind across development – Proposed Scenario – direction SE

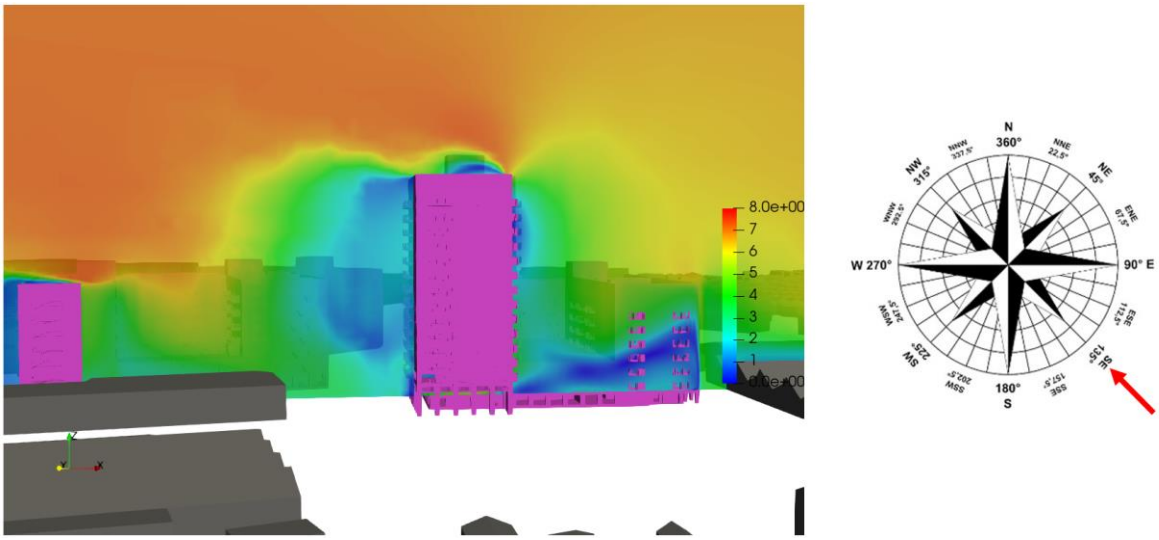


Figure 8-49: Wind across block DCC3 (tallest proposed) – direction SE

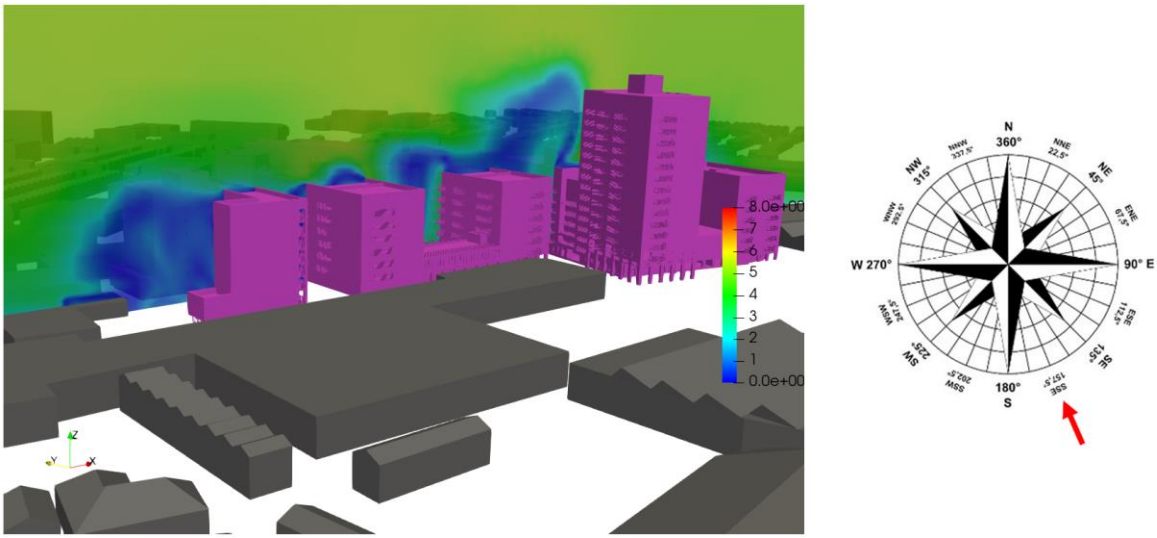


Figure 8-50: Wind across development – Proposed Scenario – direction SSE

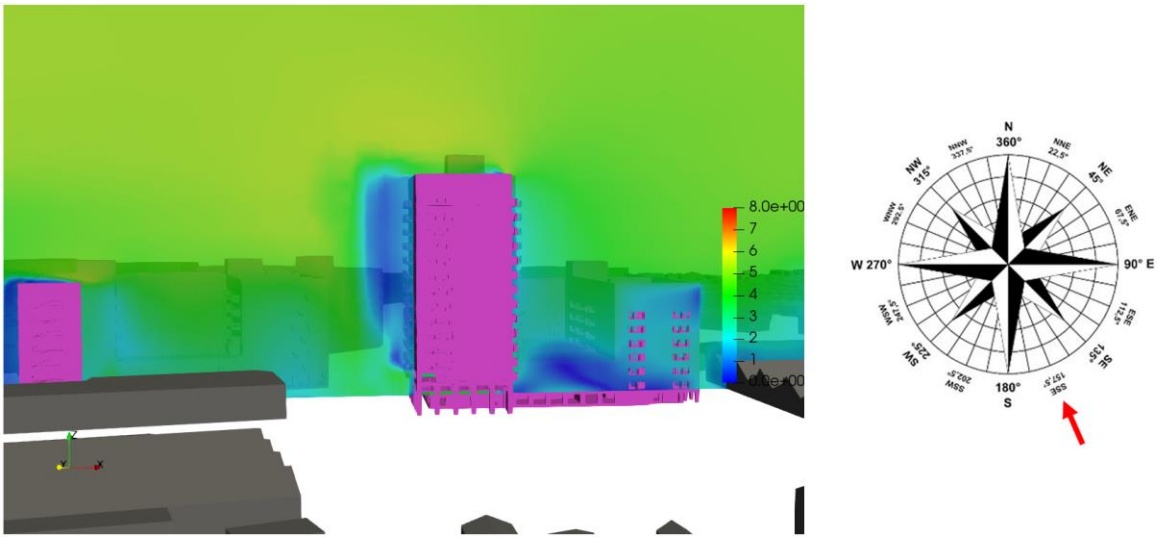


Figure 8-51: Wind across block DCC3 (tallest proposed) – direction SSE

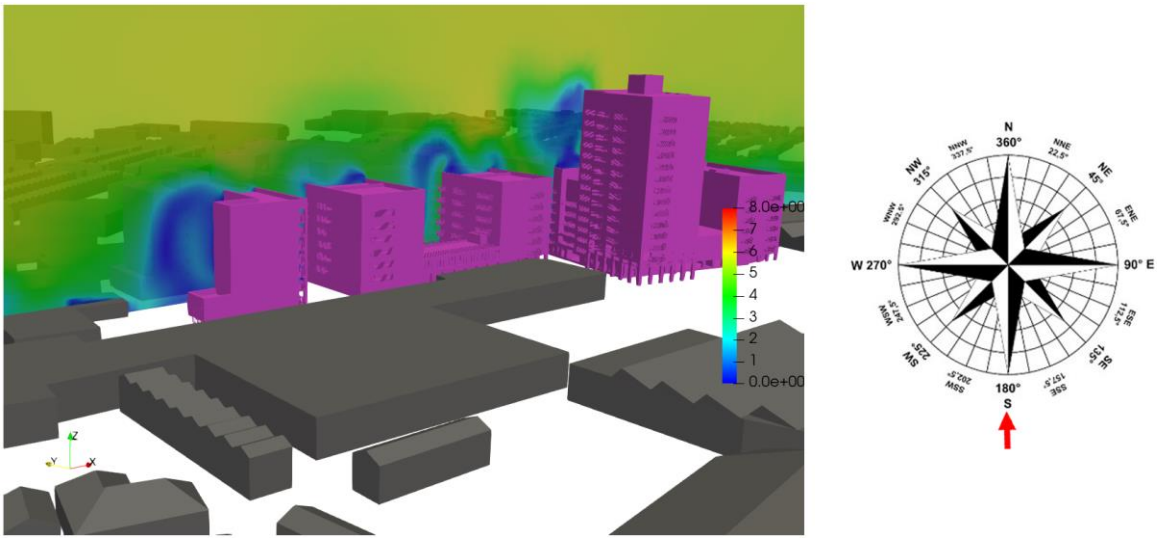


Figure 8-52: Wind across development – Proposed Scenario – direction S

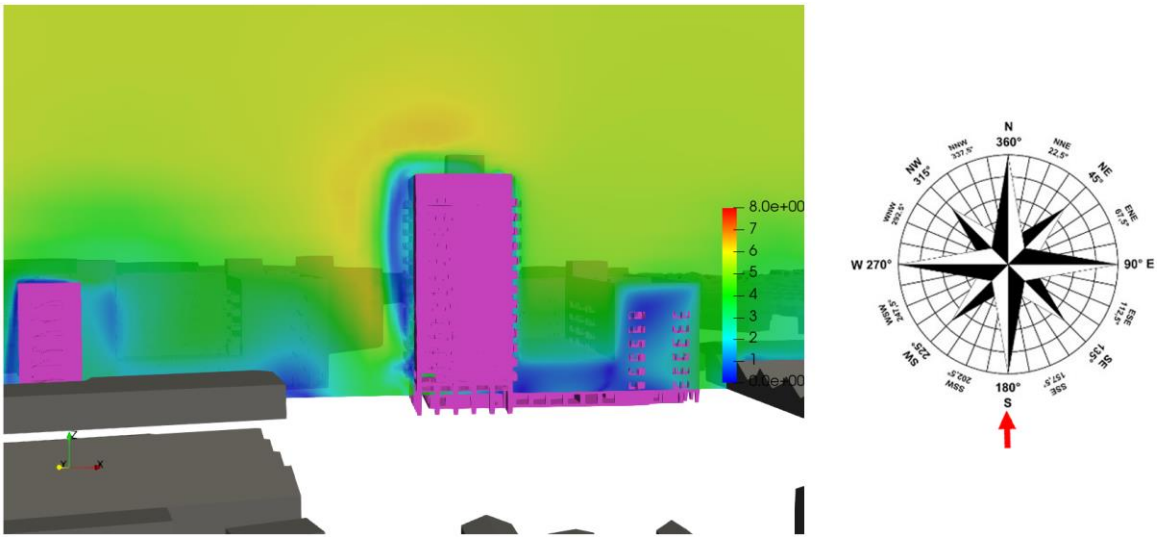


Figure 8-53: Wind across block DCC3 (tallest proposed) – direction S

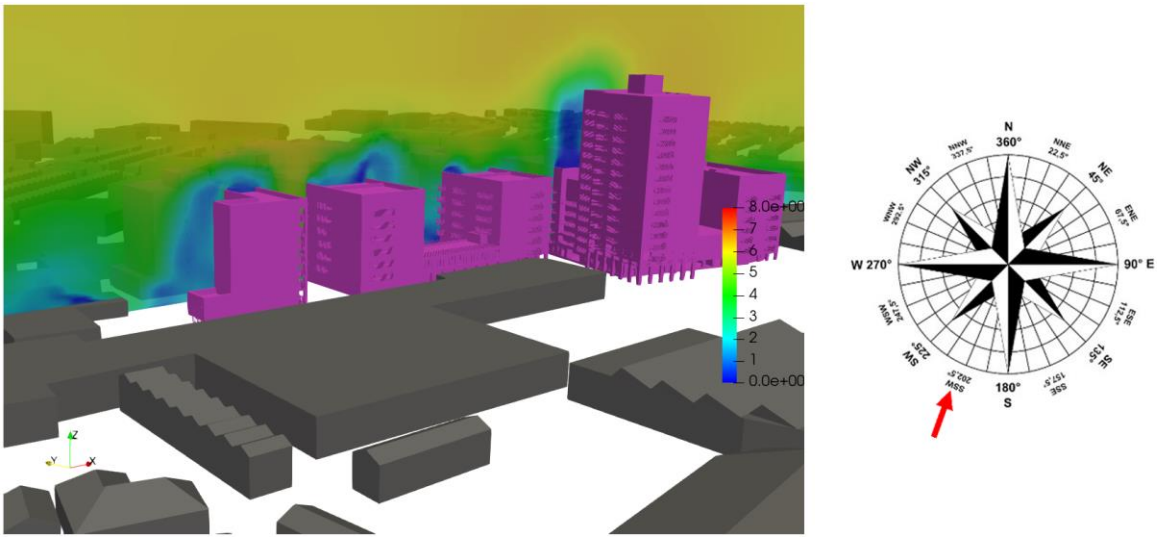


Figure 8-54: Wind across development – Proposed Scenario – direction SSW

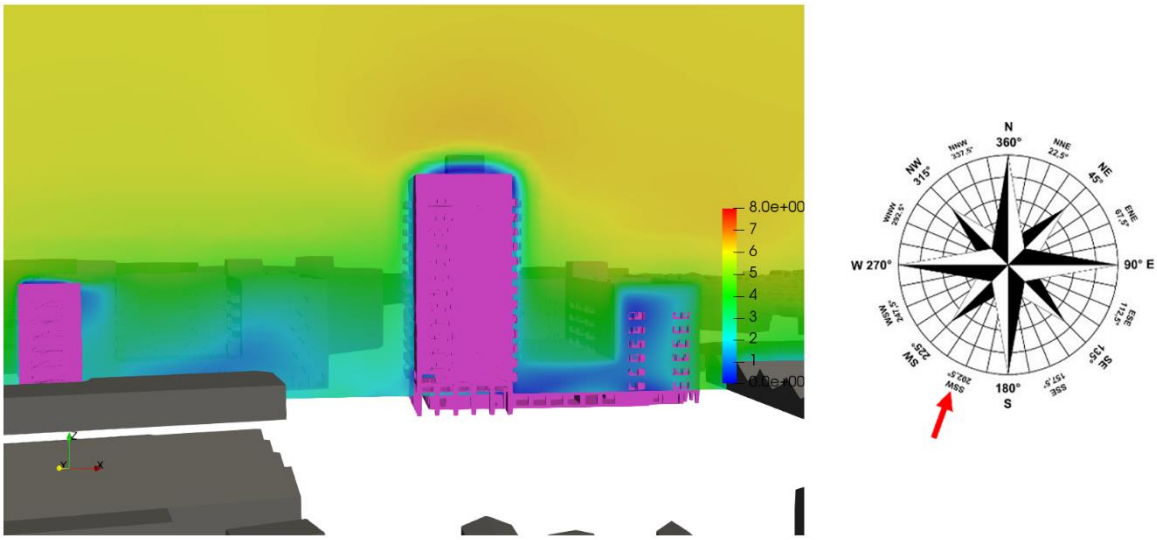


Figure 8-55: Wind across block DCC3 (tallest proposed) – direction SSW

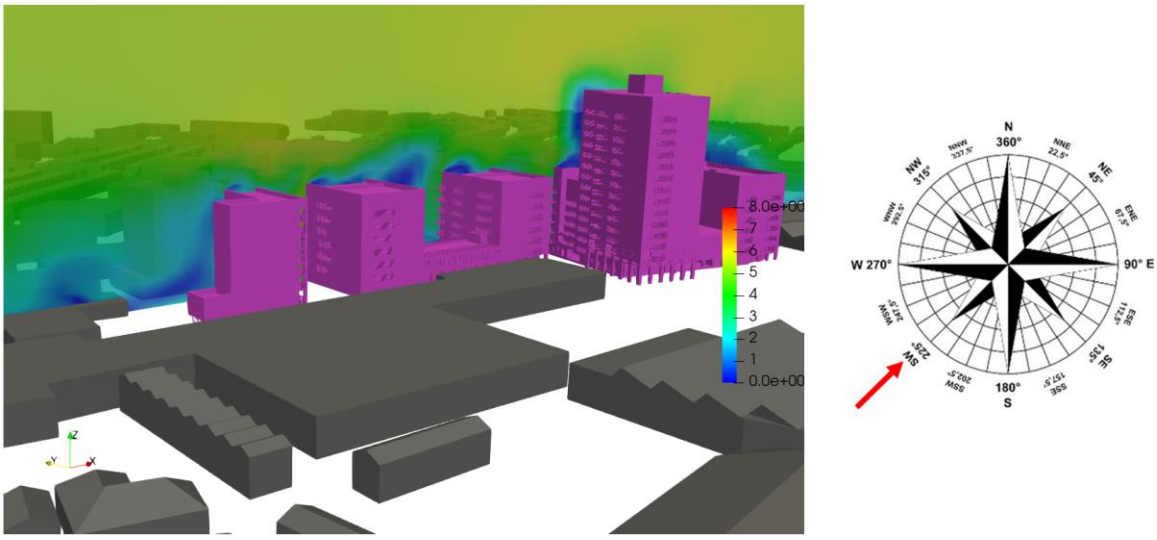


Figure 8-56: Wind across development – Proposed Scenario – direction SW

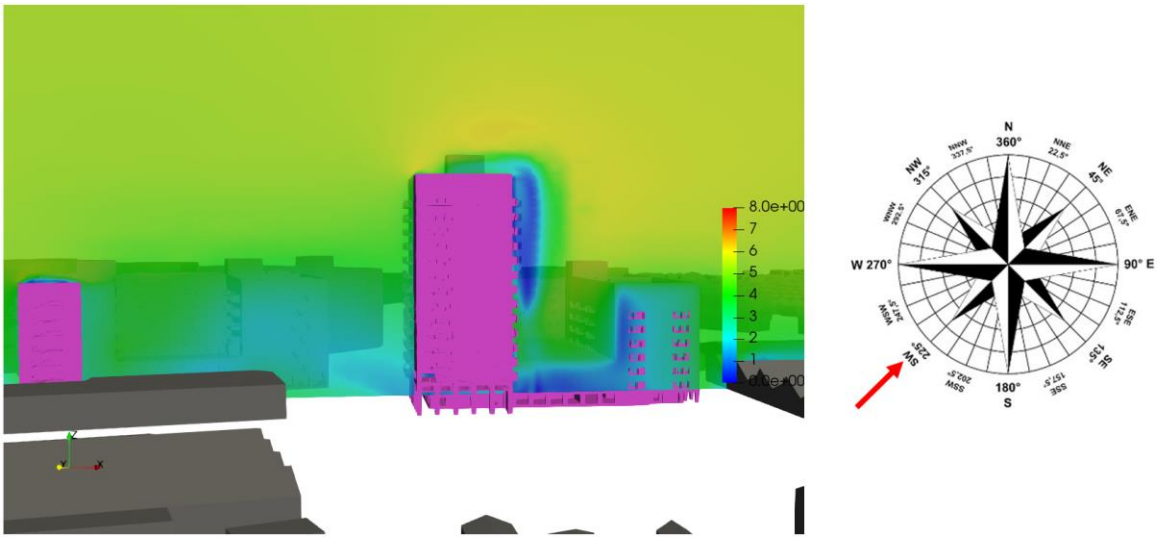


Figure 8-57: Wind across block DCC3 (tallest proposed) – direction SW

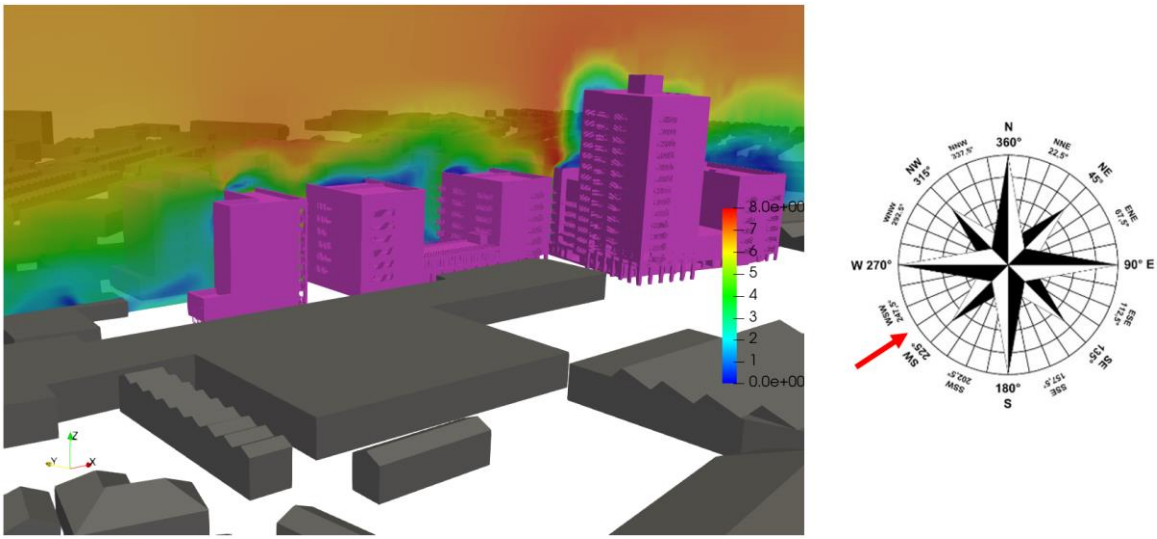


Figure 8-58: Wind across development – Proposed Scenario – direction SWWSW

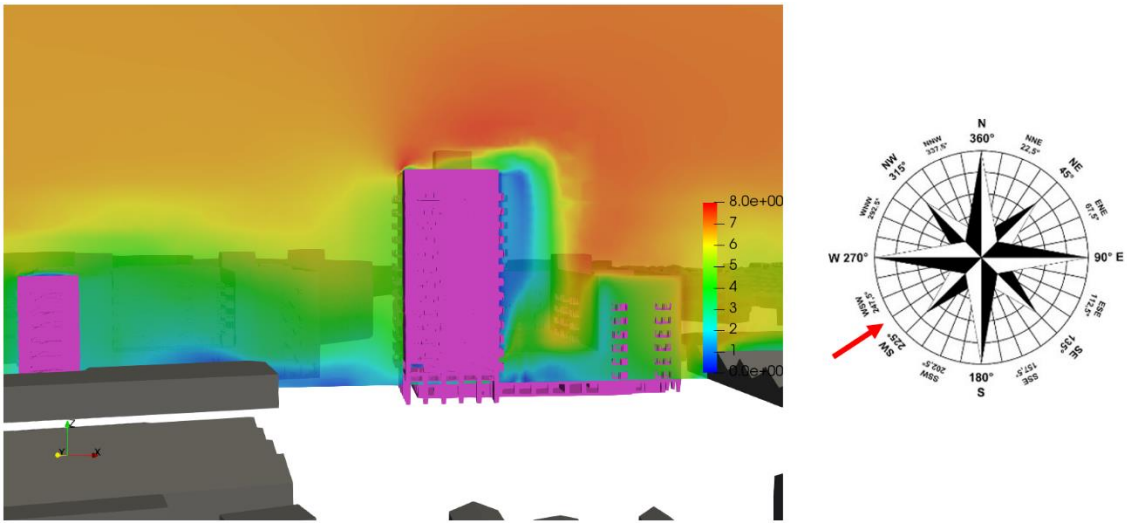


Figure 8-59: Wind across block DCC3 (tallest proposed) – direction SWWSW

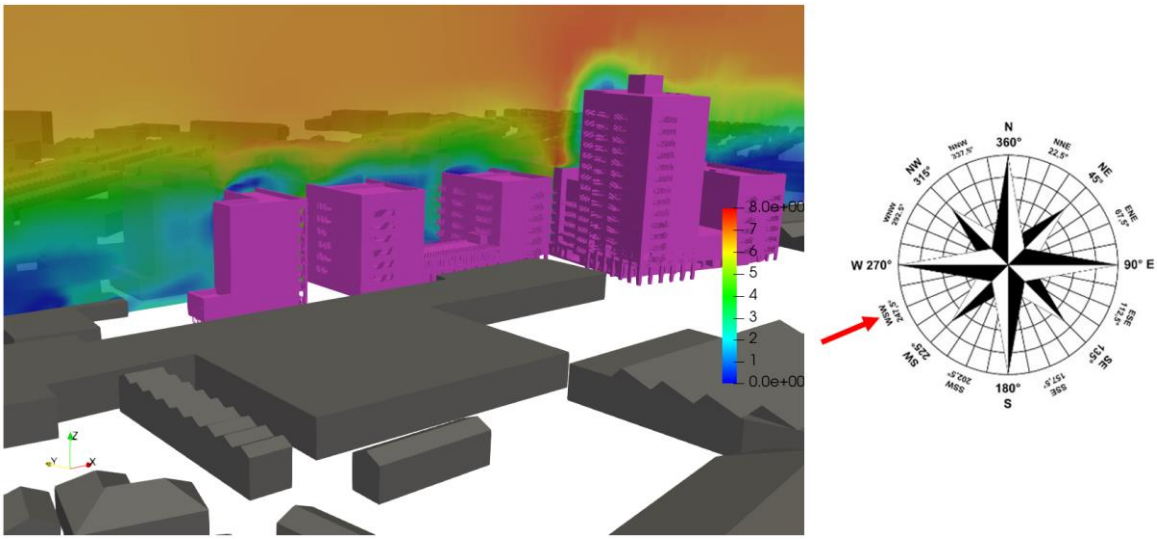


Figure 8-60: Wind across development – Proposed Scenario – direction WSW

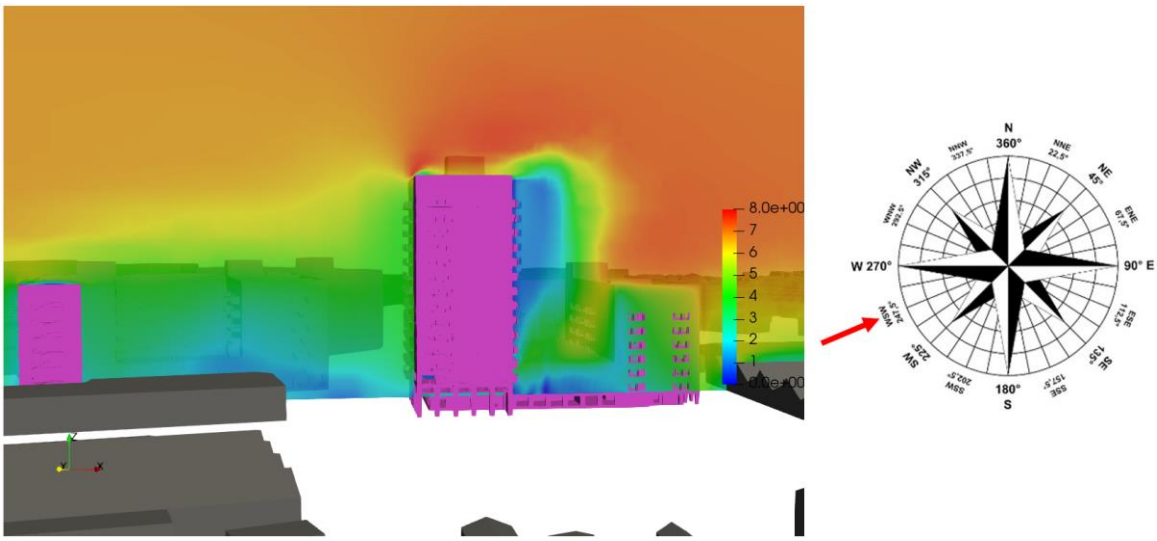


Figure 8-61: Wind across block DCC3 (tallest proposed) – direction WSW

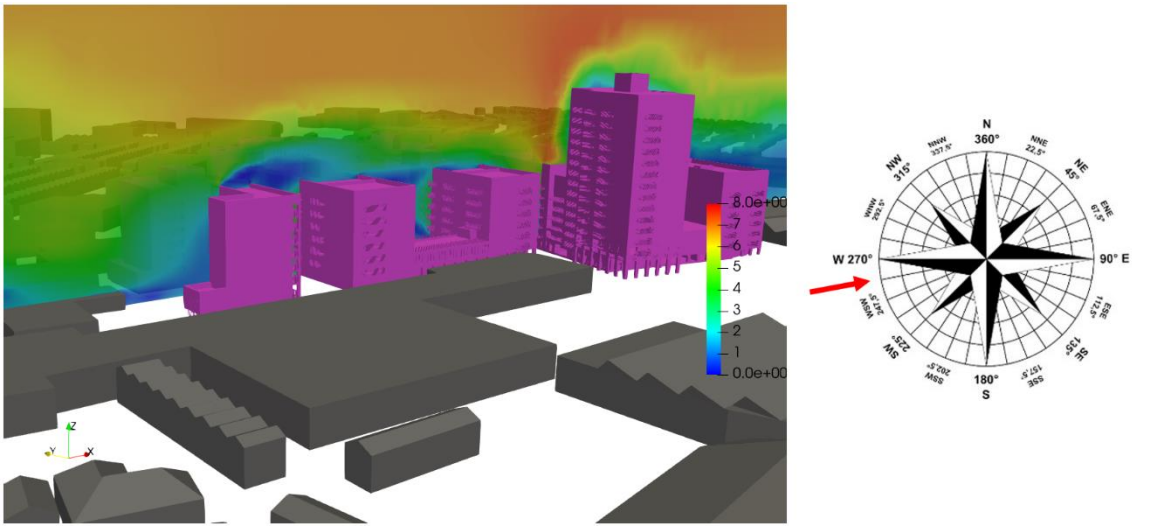


Figure 8-62: Wind across development – Proposed Scenario – direction WSWW

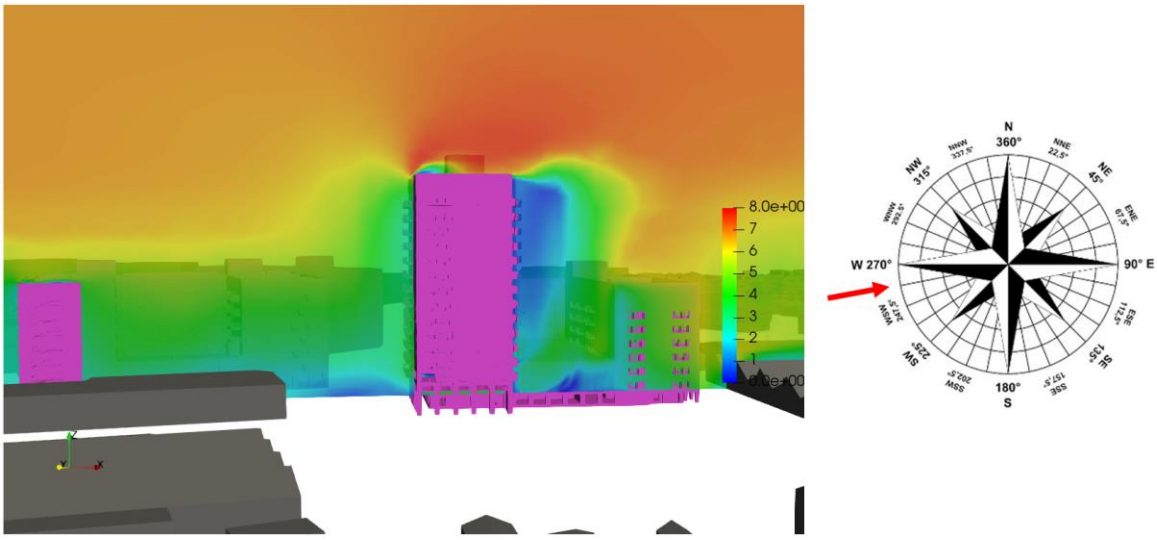


Figure 8-63: Wind across block DCC3 (tallest proposed) – direction WSWW

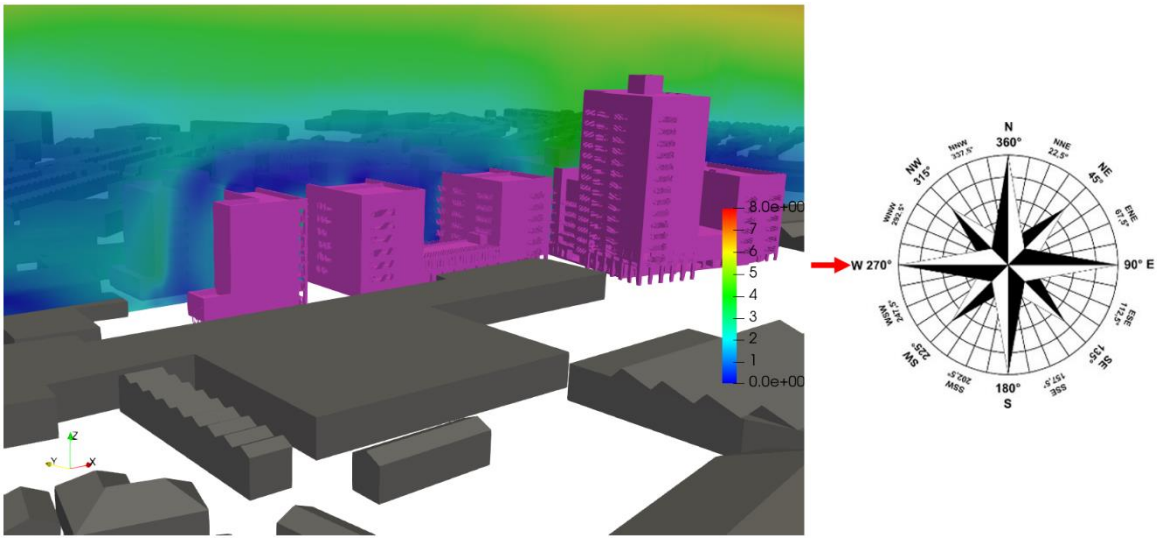


Figure 8-64: Wind across development – Proposed Scenario – direction W

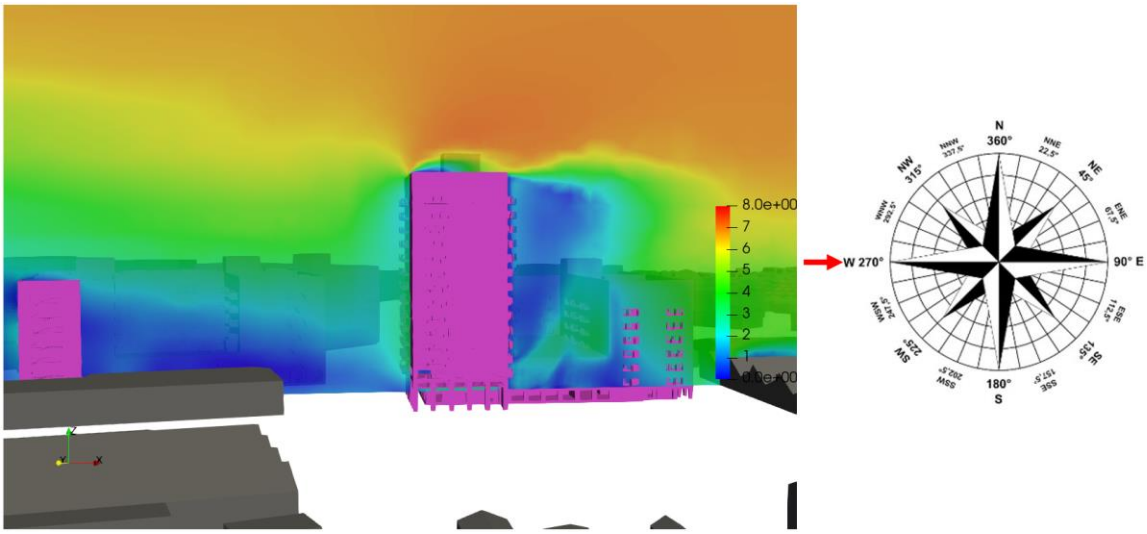


Figure 8-65: Wind across block DCC3 (tallest proposed) – direction W

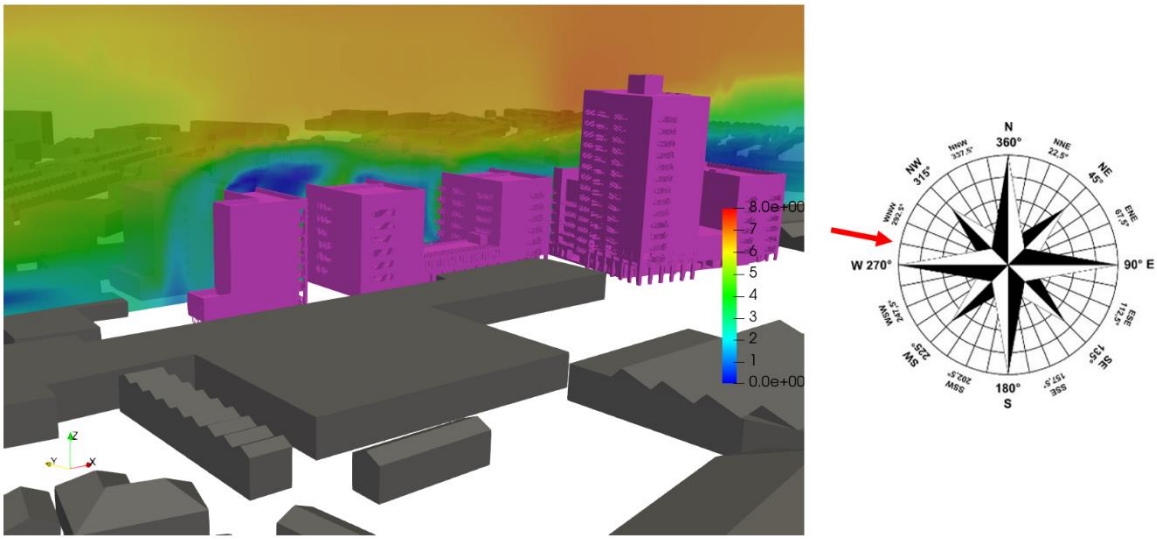


Figure 8-66: Wind across development – Proposed Scenario – direction WWNW

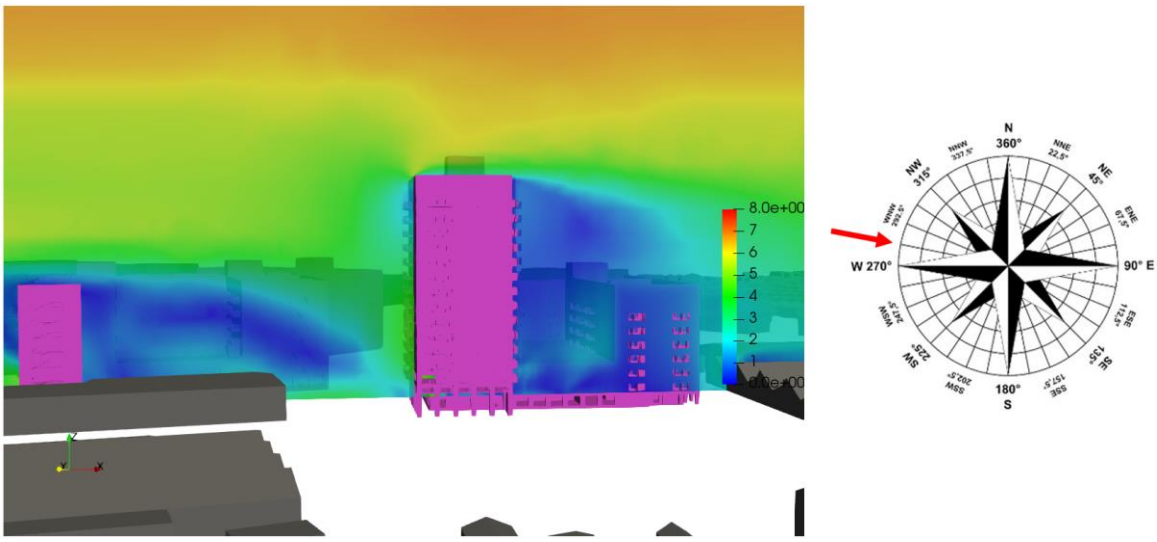


Figure 8-67: Wind across block DCC3 (tallest proposed) – direction WWNW

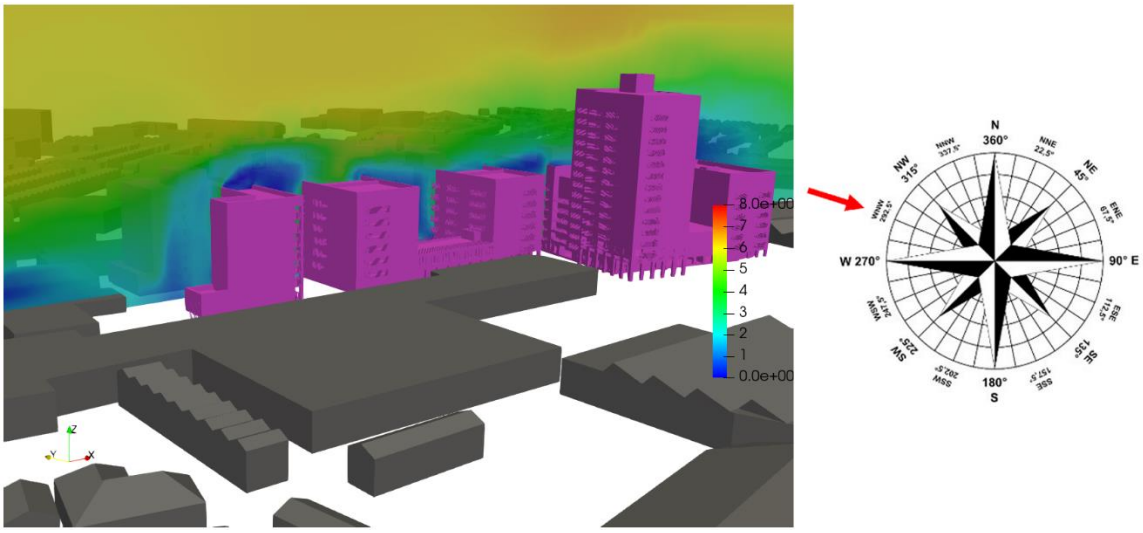


Figure 8-68: Wind across development – Proposed Scenario – direction WNW

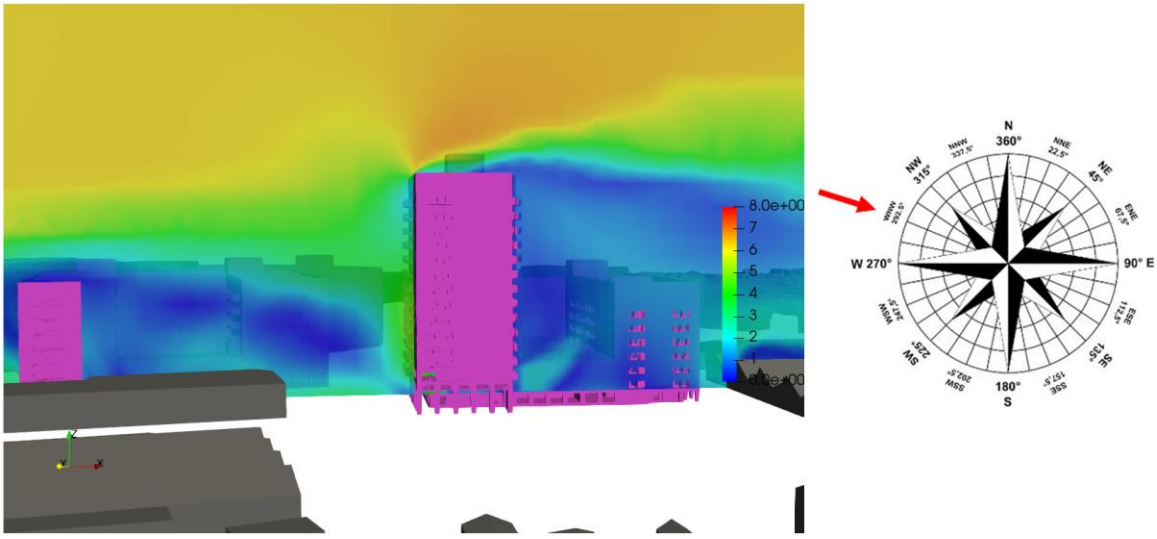


Figure 8-69: Wind across block DCC3 (tallest proposed) – direction WNW

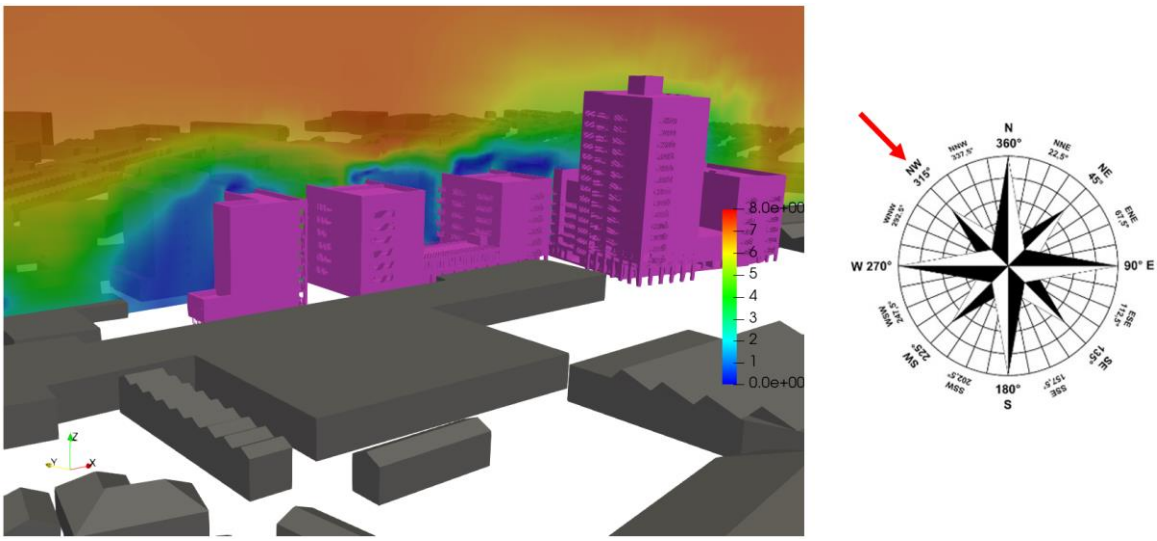


Figure 8-70: Wind across development – Proposed Scenario – direction NW

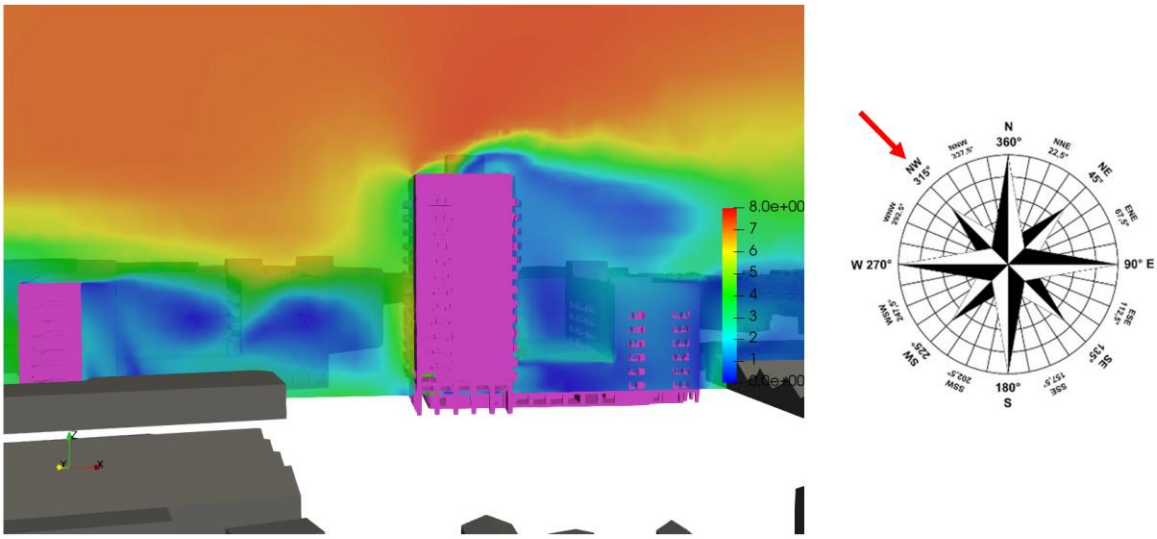


Figure 8-71: Wind across development – Proposed Scenario – direction NW

8.2.5.2.3 Proposed Scenario Wind Microclimate

The wind flow results obtained simulating the different direction and wind speeds, are combined with wind frequencies of occurrence to obtain comfort ratings at pedestrian level in all areas included within the model. The comparison of comfort ratings with intended pedestrian activities is shown in the Lawson Comfort and Distress Map that follows. The comfort/distress conditions are presented using a colour coded diagram (Figure 8-72) formulated in accordance with the Lawson Criteria.

Figure 8-72: Lawson Comfort Categories

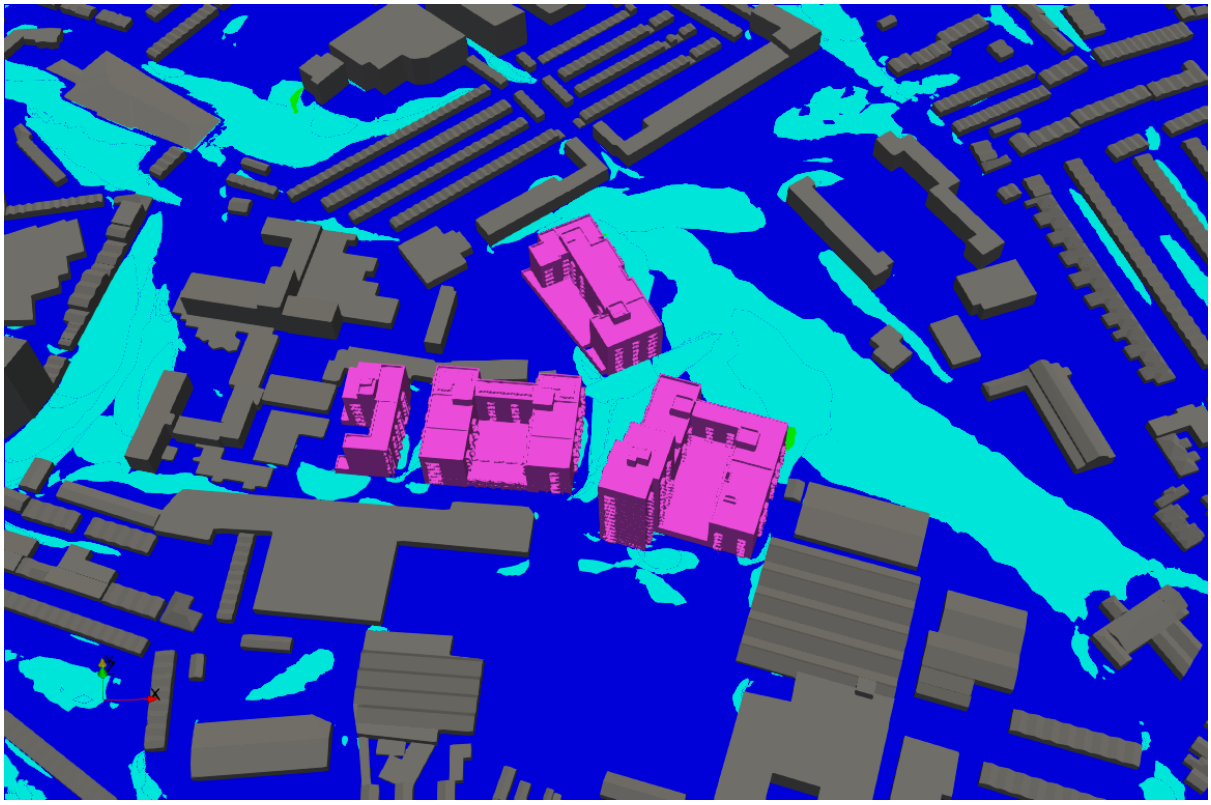


Figure 8-73: Wind comfort-distress map (Lawson Map) – Proposed scenario

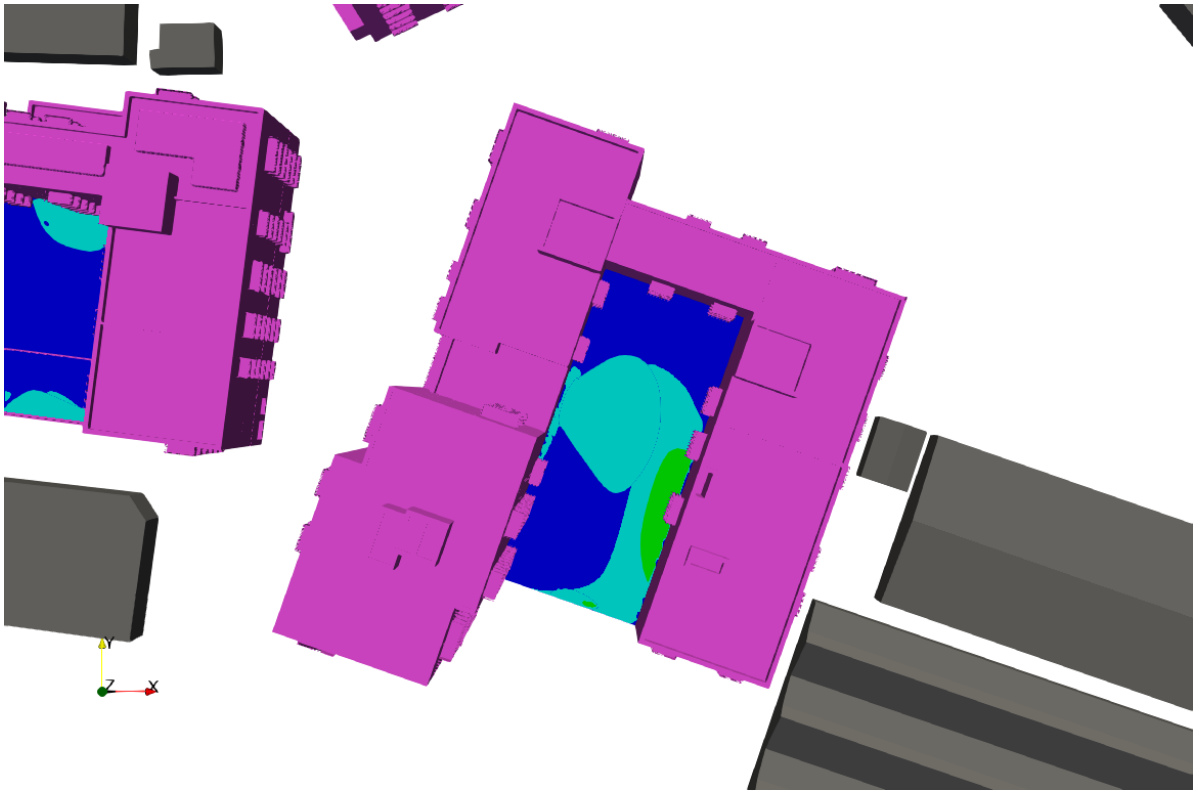


Figure 8-74: Wind comfort-distress map (Lawson Map) – Proposed scenario-zoom above podium

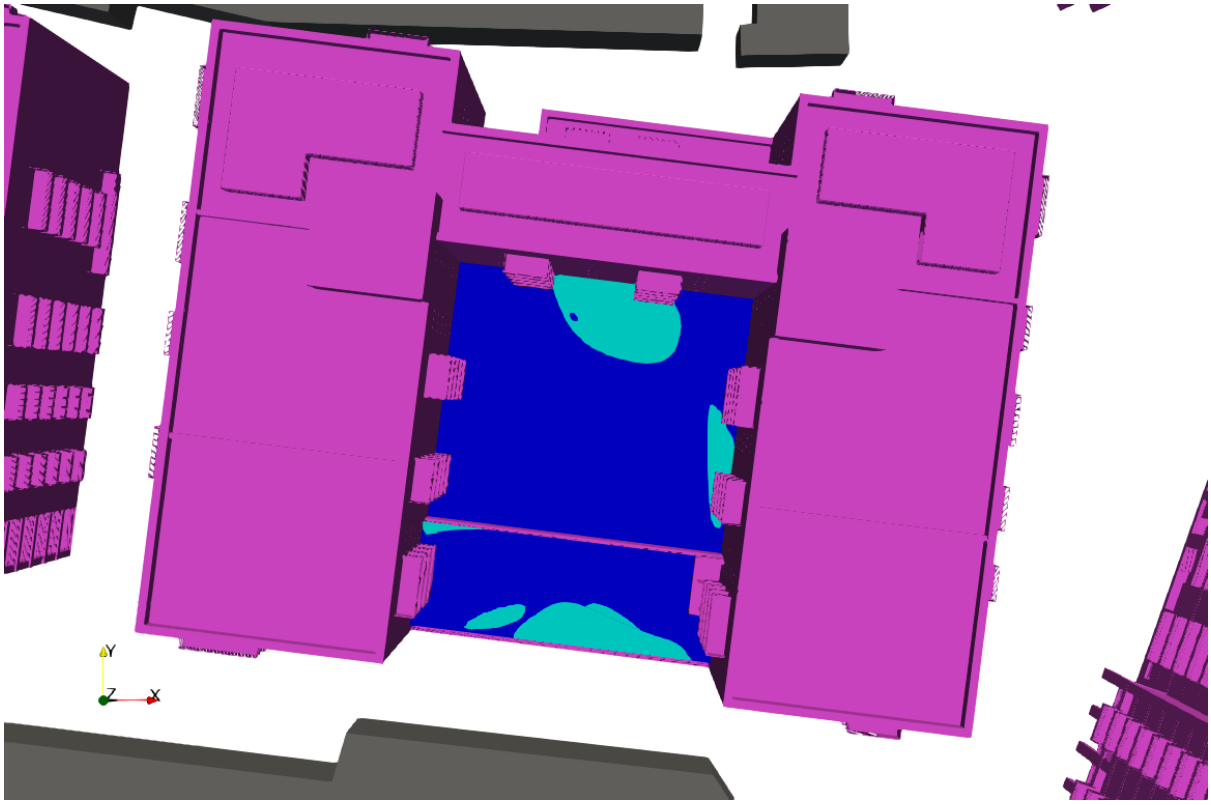


Figure 8-75: Wind comfort-distress map (Lawson Map) – Proposed scenario-zoom above podium

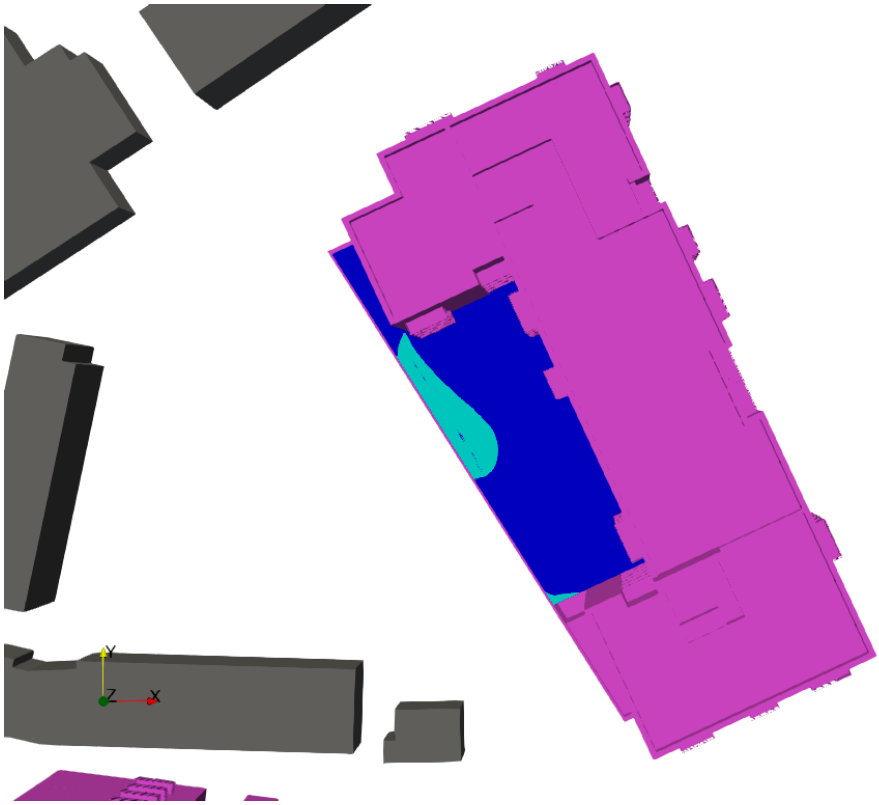


Figure 8-76: Wind comfort-distress map (Lawson Map) – Proposed scenario-zoom above podium

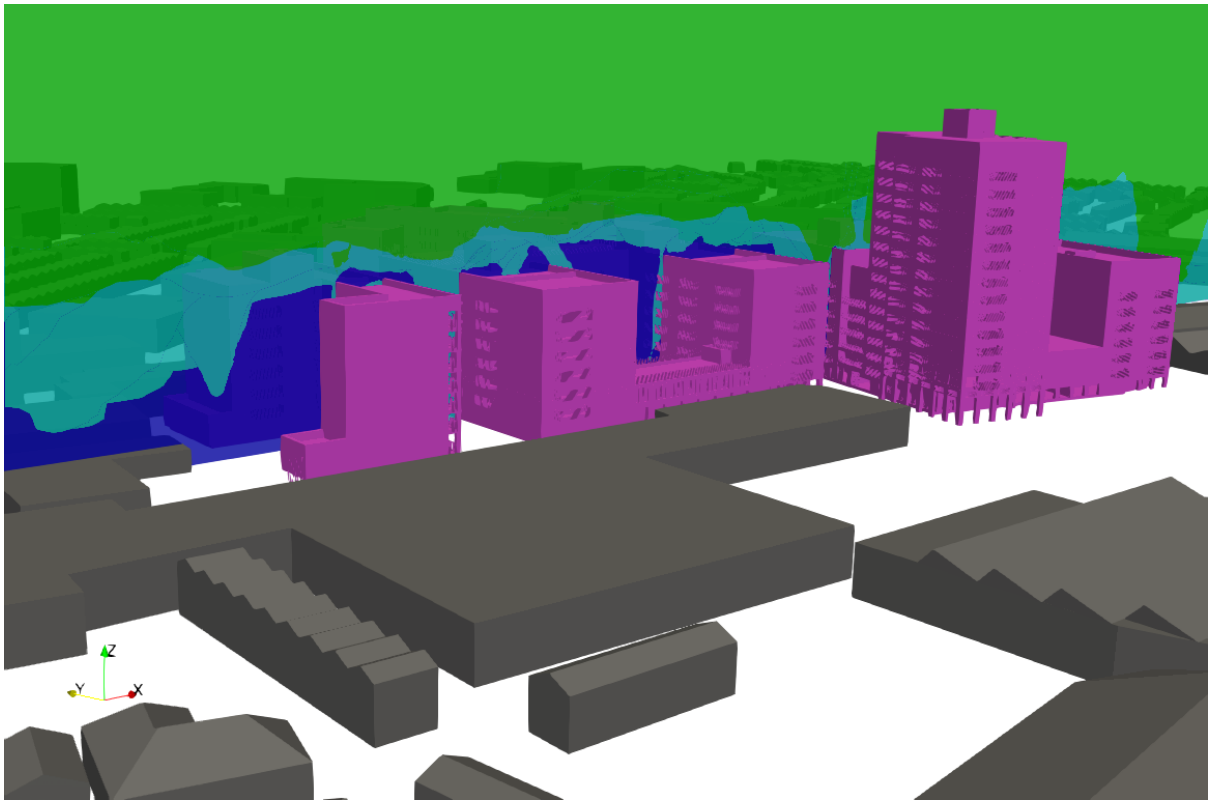


Figure 8-77: Wind comfort-distress map (Lawson Map) – Proposed scenario vertical view

Figure 8-78: Wind comfort-distress map (Lawson Map) – Proposed scenario vertical view

Table 8-17 indicates the impact and significance criteria accounting the impact of the Proposed Development on the on-site receptors (pedestrian areas, roads, entrances) and on the off-site receptors (roads/ pedestrian areas off-site on the north, south, west and east directions) and the impact are evaluated in comparison with the conditions on the same areas for the baseline scenario. As result of the Proposed Development construction, the wind on the surrounding urban context is also mitigated when compared with the baseline situation, in this sense the Proposed Development has a beneficial effect on the surrounding wind microclimate and can create comfortable pedestrian areas and public spaces. Furthermore, the proposed scenario assessment demonstrates that wind microclimate conditions are also improving (calmer areas on off-site receptors) when the Proposed Development is analysed in conjunction with the existing developments within an area of 400m radius from the centre of the Proposed Development site.

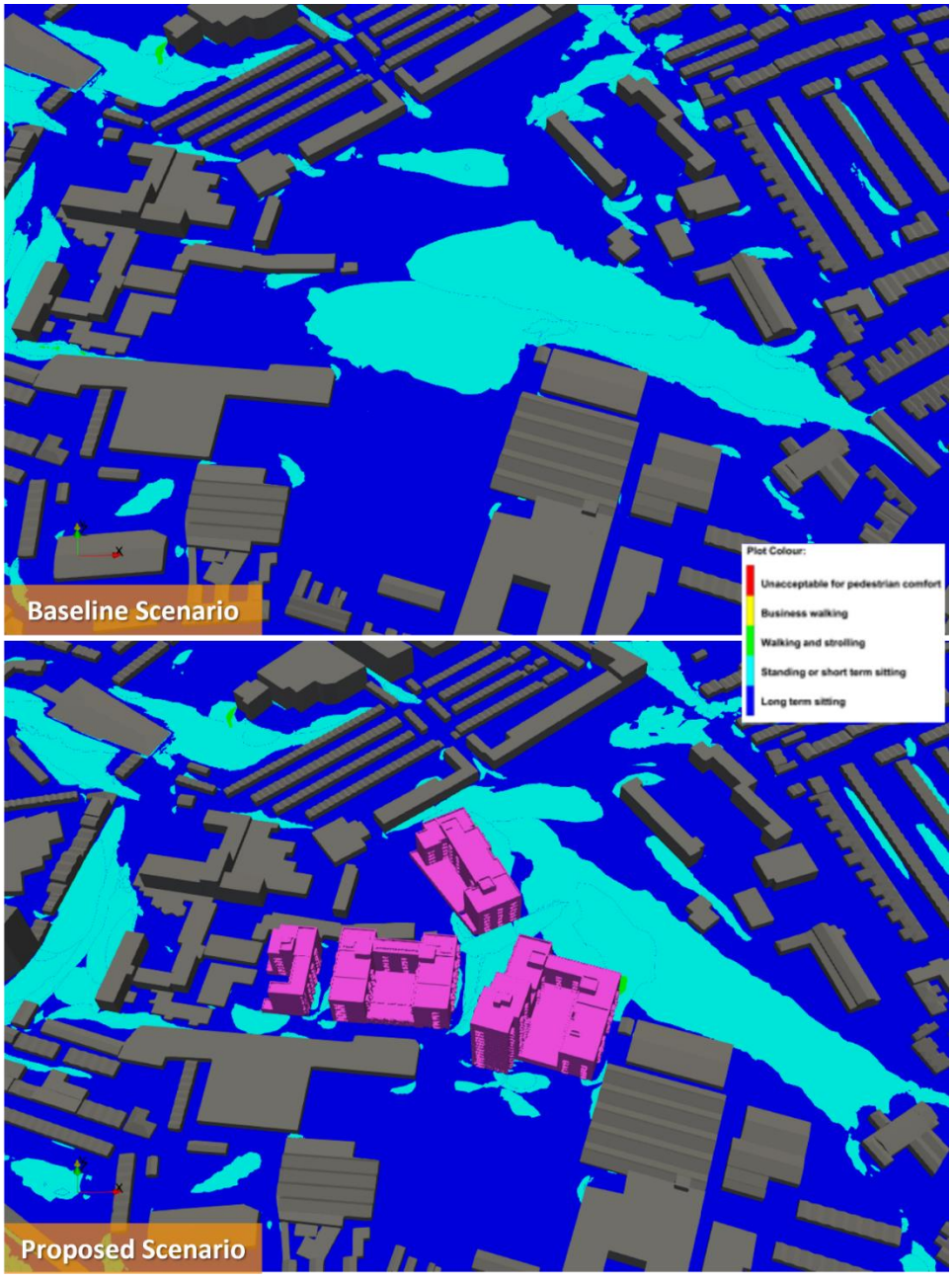


Figure 8-79: Wind comfort/distress map – Baseline versus Proposed scenario

Table 8-17 Significance impact of the Proposed Development versus baseline conditions

Potential Receptors *(on-site)*	**Baseline Conditions**	**Proposed Development Conditions**	**Impact Significance**
Roads	Conditions are “suitable” for the intended pedestrian use.	Conditions are calmer than required for the intended pedestrian use (by at least one comfort category).	*Beneficial/*
Entrances	Not applicable	Conditions are “suitable” for the intended pedestrian use.	*Negligible*
Pedestrian circulation areas	On the location designated for this use conditions are “suitable” for the intended pedestrian use.	Conditions are calmer than required for the intended pedestrian use (by at least one comfort category).	*Beneficial*
Balconies	Not applicable	Conditions are “suitable” for the intended use. (short/long-term sitting especially in relation to the balconies and considering the wind roses of the spring/summer seasons).	*Beneficial*
Podium areas	Not applicable	Conditions are “suitable” for the intended use. (short/long-term sitting considering the wind roses of the spring/summer season).	*Beneficial*
Potential Receptors *(off-site)*	**Baseline Conditions**	**Proposed Development Conditions**	**Impact Significance**
Off-Site Area-North	Conditions are suitable for the pedestrian activity intended.	Conditions become calmer than required for the intended pedestrian use (by at least one comfort category).	*Beneficial*
Off-Site Area-South	Conditions are calmer than required for the intended pedestrian use (by at least one comfort category).	Conditions remain the same as in the baseline scenario.	*Negligible*
Off-Site Area-East	Conditions are calmer than required for the intended pedestrian use (by at least one comfort category).	Conditions remain the same as in the baseline scenario.	*Negligible*
Off-Site Area-West	Conditions are calmer than required for the intended pedestrian use (by at least one comfort category).	Conditions remain the same as in the baseline scenario.	*Negligible*

8.2.5.3 Potential Cumulative Impacts - Bailey Gibson SHD 1

This section assesses the impact of the Proposed Development on the existing environment and also considers projects that have been:

- (a) granted planning permission but that are not built yet and,
- (b) projects that have been submitted for consent but not yet consented.

In accordance with the guideline cited in Section 8.2.2, the wind microclimate study should consider the effect of the Proposed Development together with buildings (existing, permitted but not built and proposed but not consented yet) that are within 400m from the centre of the site. Other taller buildings outside of this zone that could have an influence on wind conditions within the Proposed Development site should be included for wind directions where they are upwind of the Proposed Development site. At the time of this planning application submission, the permitted and proposed buildings which are included in a cumulative assessment are as detailed in the list below and shown in the Figure 8-80.

- **Hines – Bailey Gibson SHD 1** – Ref. ABP-307221-20
  Demolitions of existing structures and construction of 416 residential units in 5 blocks ranging in height from 2-16 storeys on site of 2.18ha.
- **Hines – Player Wills** – Ref. ABP-308917-20
  Demolitions of existing structures and construction of 492 BtR apartments and 240 BtR shared accommodation units, plus commercial and community units in 4 blocks ranging in height from 2-19 storeys on site of 3.06ha.
- **Coombe Women & Infants University Hospital**
  - Colposcopy Building – Ref. 3537/21 planning permission granted for a 3 storey 988m2 building.
  - Laboratory Building – Ref. 4049/19 planning permission granted for a 4 storey lab building in 2020.
- **Remaining two blocks of original St. Teresa's Gardens Flat Complex** – Ref. 2475/18
  Part 8 amendment permission which includes demolition of remaining two blocks.

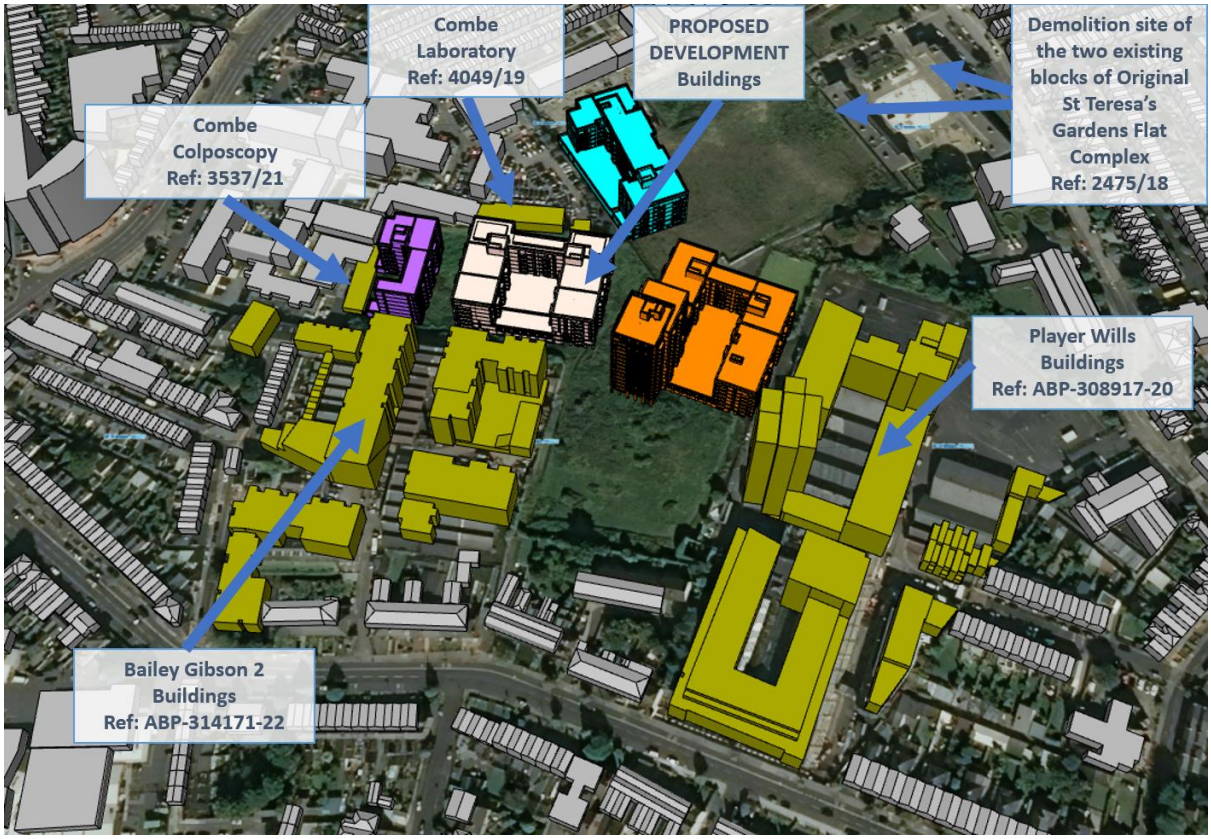


Figure 8-80: Cumulative Buildings

8.2.5.3.1 Wind speeds at pedestrian level

Results of wind speeds and their circulations at pedestrian level of 1.5m above the development ground are presented in the following images to assess wind flows at ground floor level of Donore Project.

Wind flow speeds are shown to be within an acceptable range. Higher velocity and recirculation effects are found in the existing site.

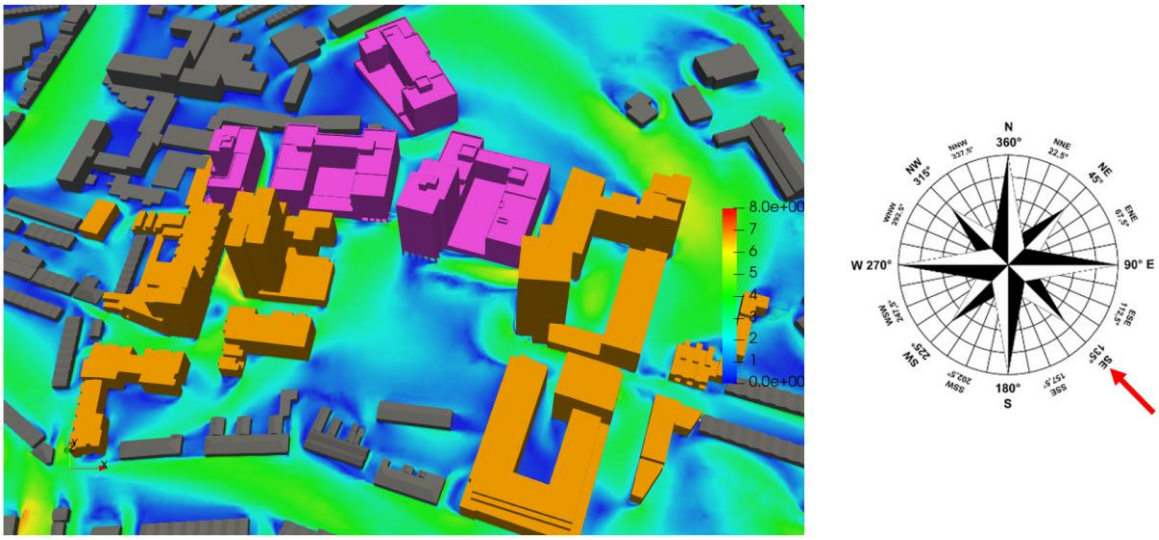


Figure 8-81: Wind at pedestrian level – Cumulative Scenario - direction SE

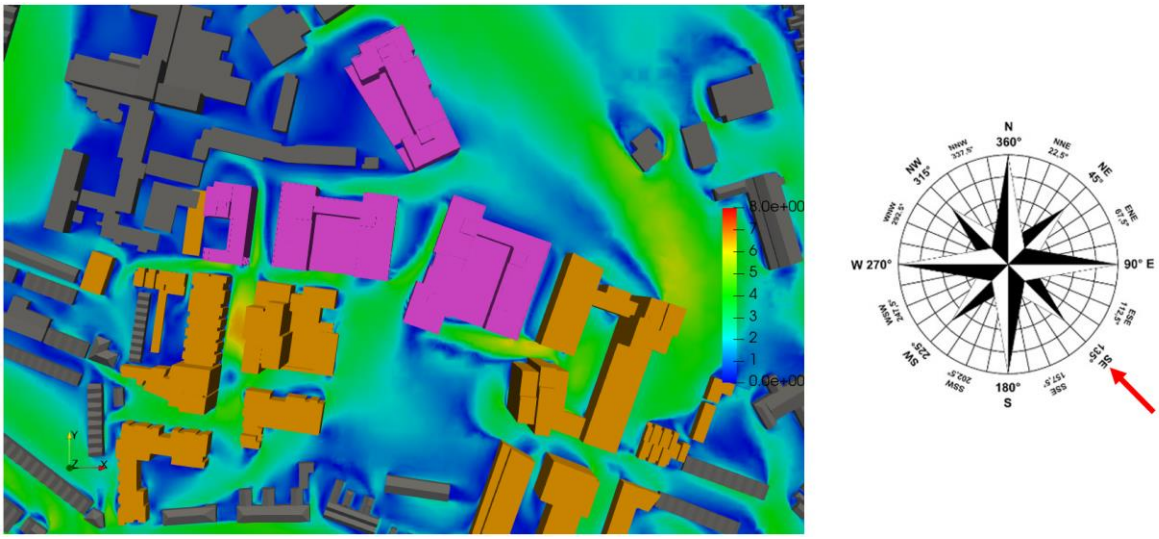


Figure 8-82: Wind at pedestrian level – Cumulative Scenario - Plan View SE

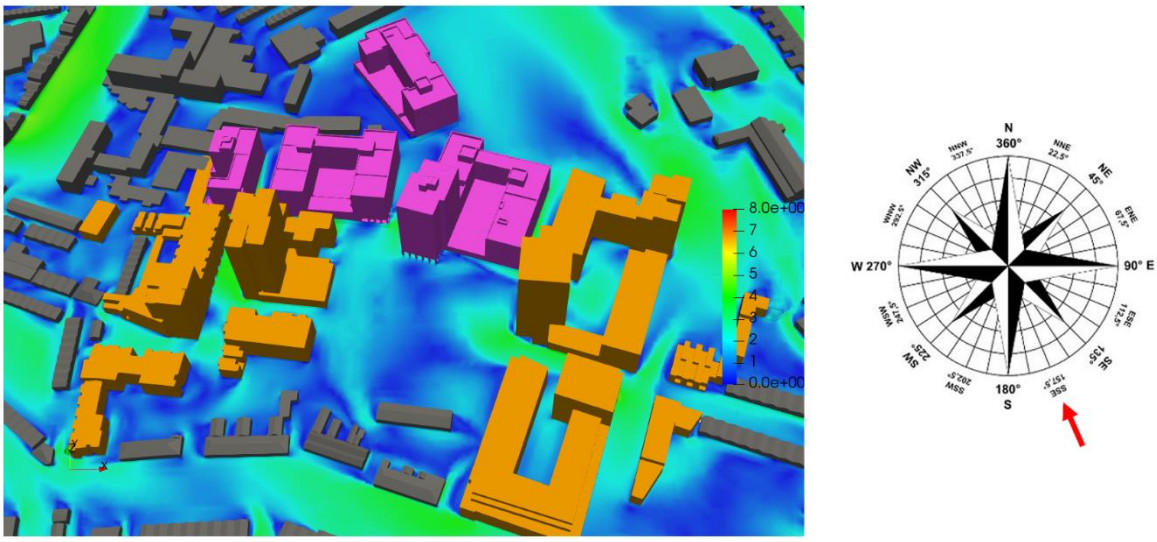


Figure 8-83: Wind at pedestrian level – Cumulative Scenario - direction SSE

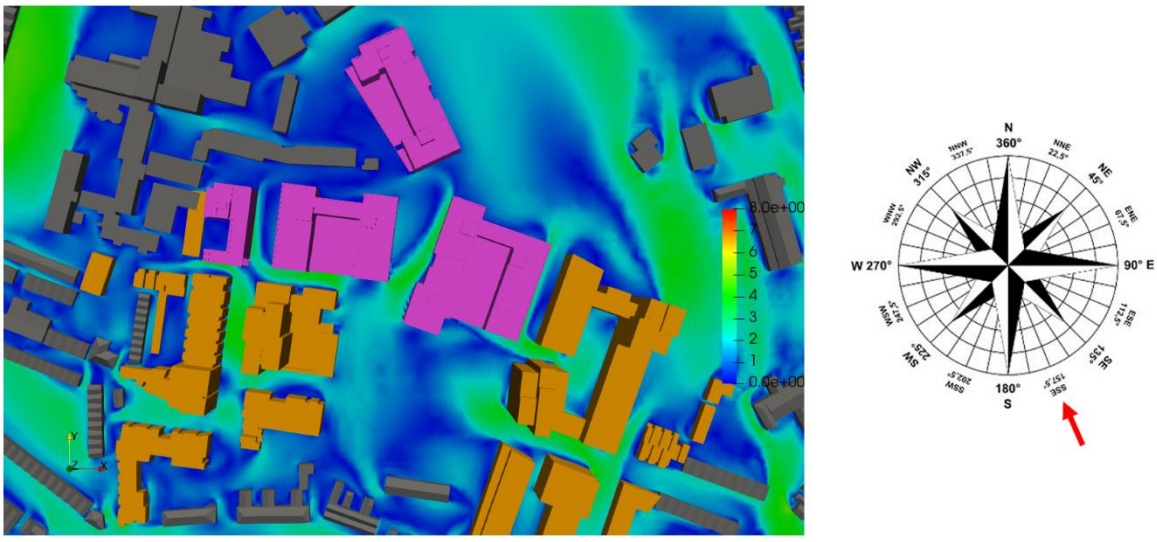


Figure 8-84: Wind at pedestrian level – Cumulative Scenario – Plan view - direction SSE

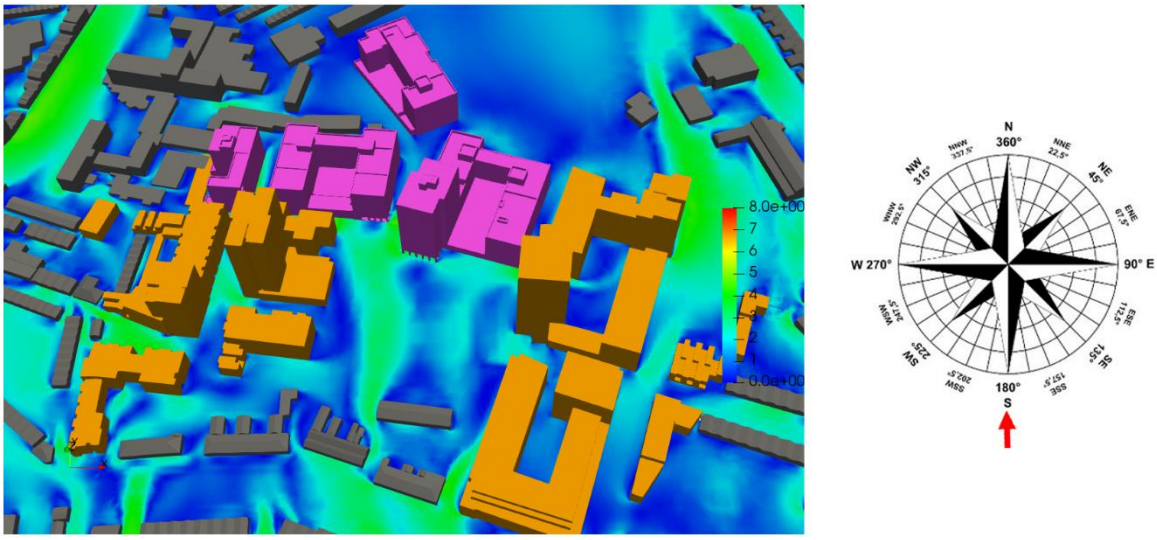


Figure 8-85: Wind at pedestrian level – Cumulative Scenario - direction S

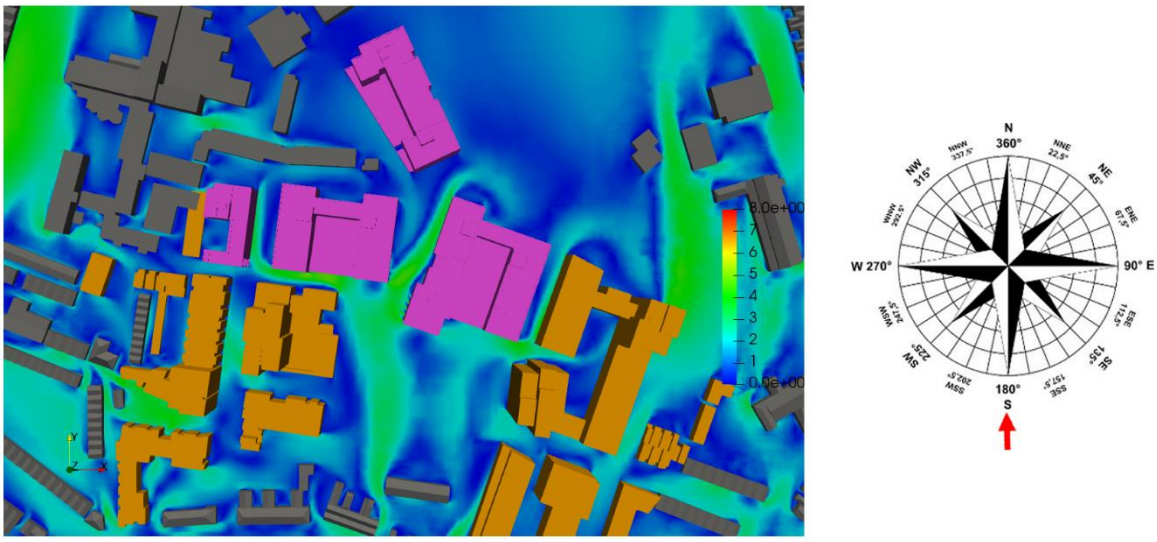


Figure 8-86: Wind at pedestrian level – Cumulative Scenario – Plan view - direction S

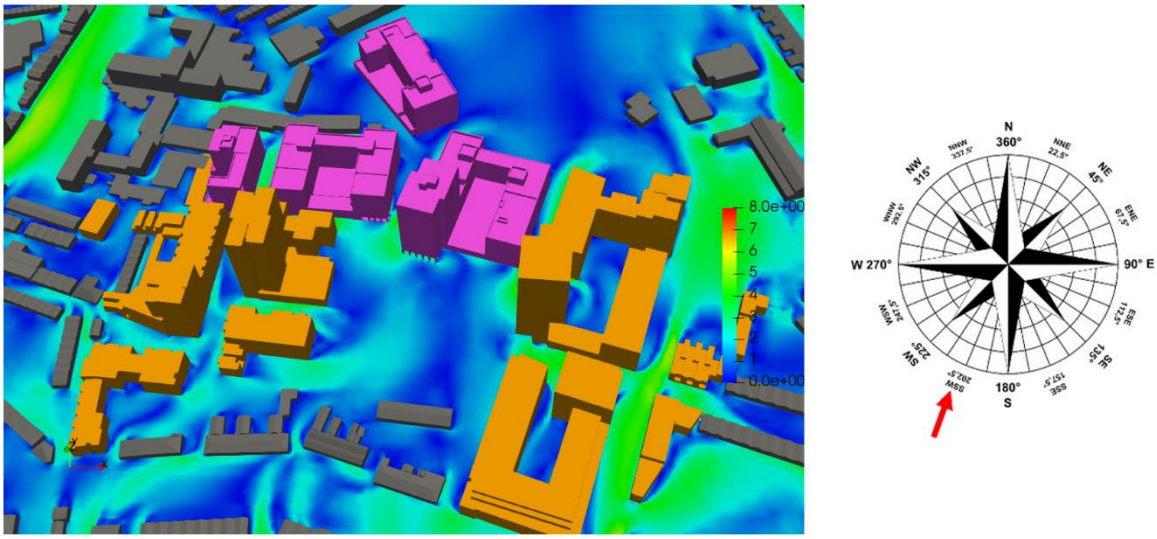


Figure 8-87: Wind at pedestrian level – Cumulative Scenario - direction SSW

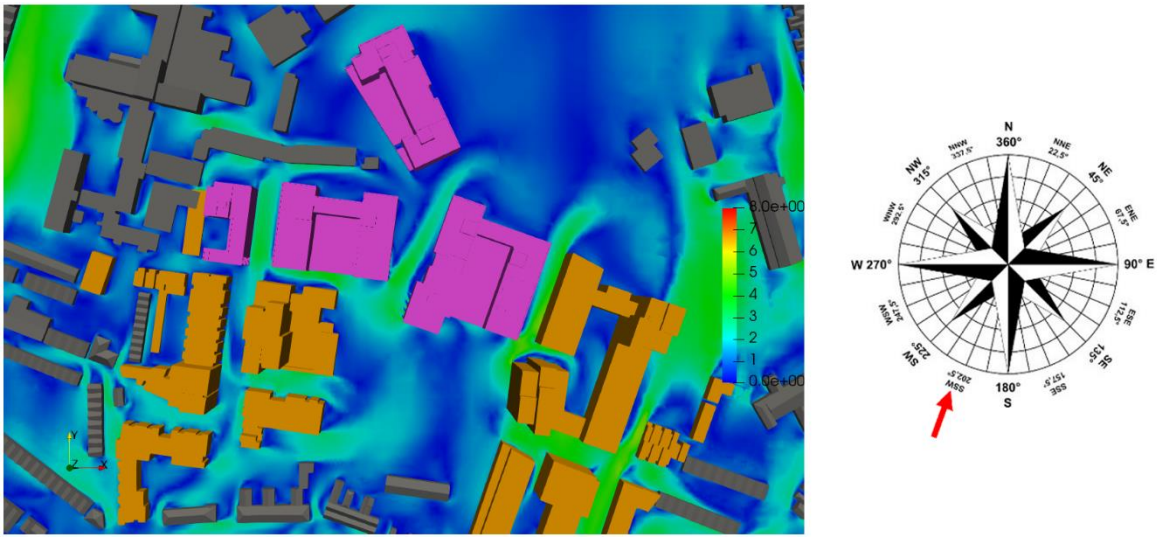


Figure 8-88: Wind at pedestrian level – Cumulative Scenario – Plan view - direction SSW

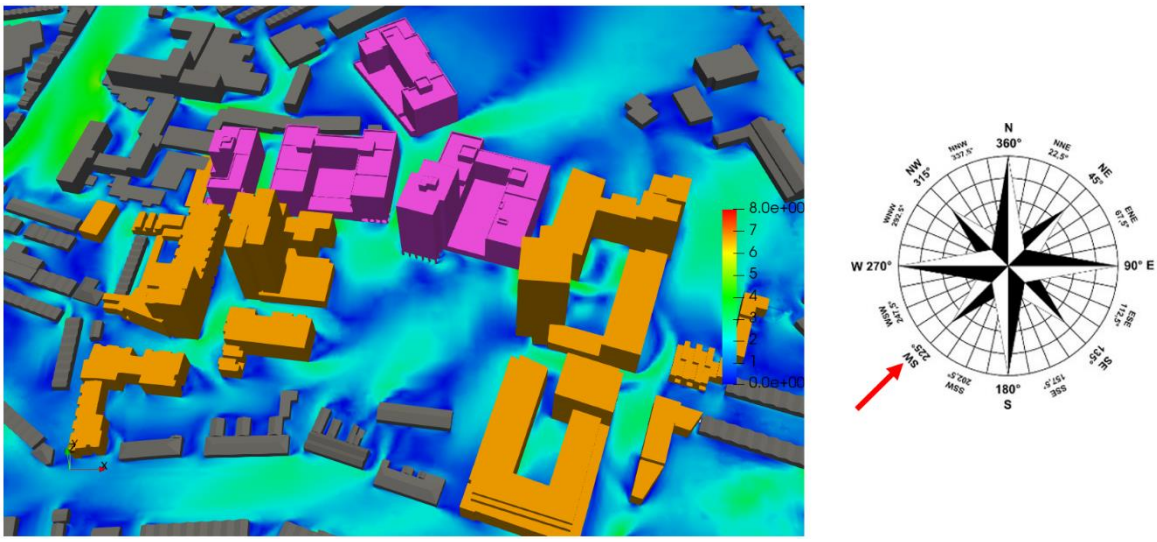


Figure 8-89: Wind at pedestrian level – Cumulative Scenario - direction SW

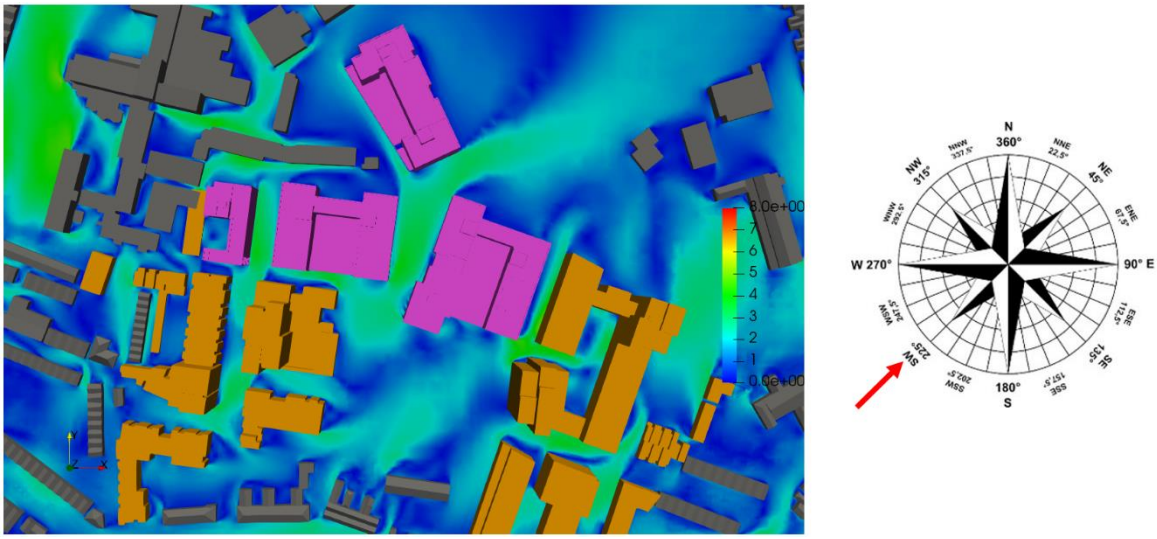


Figure 8-90: Wind at pedestrian level – Cumulative Scenario - Plan view - direction SW

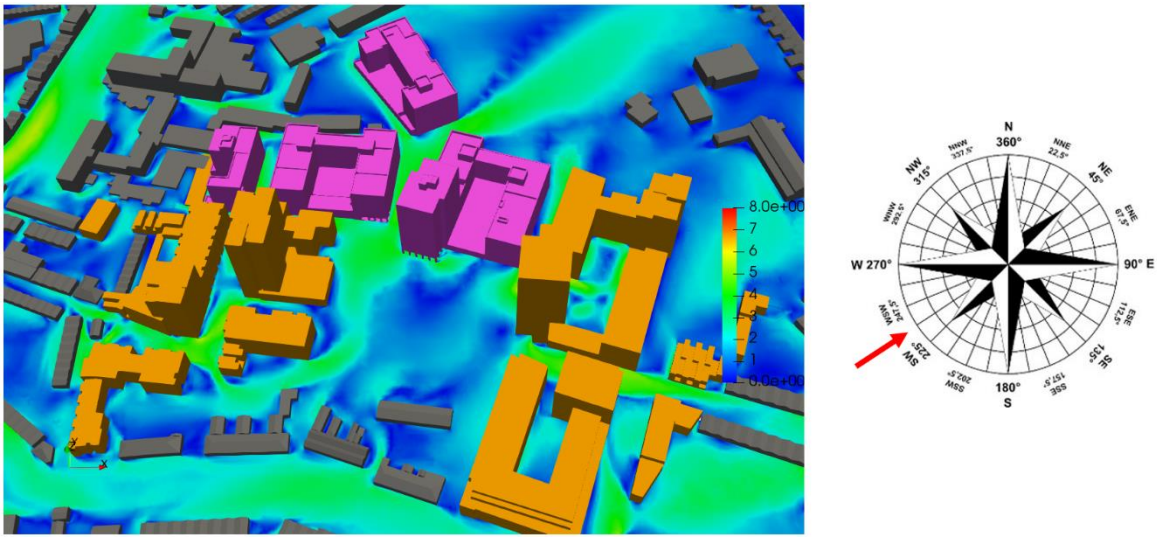


Figure 8-91: Wind at pedestrian level – Cumulative Scenario - direction SW

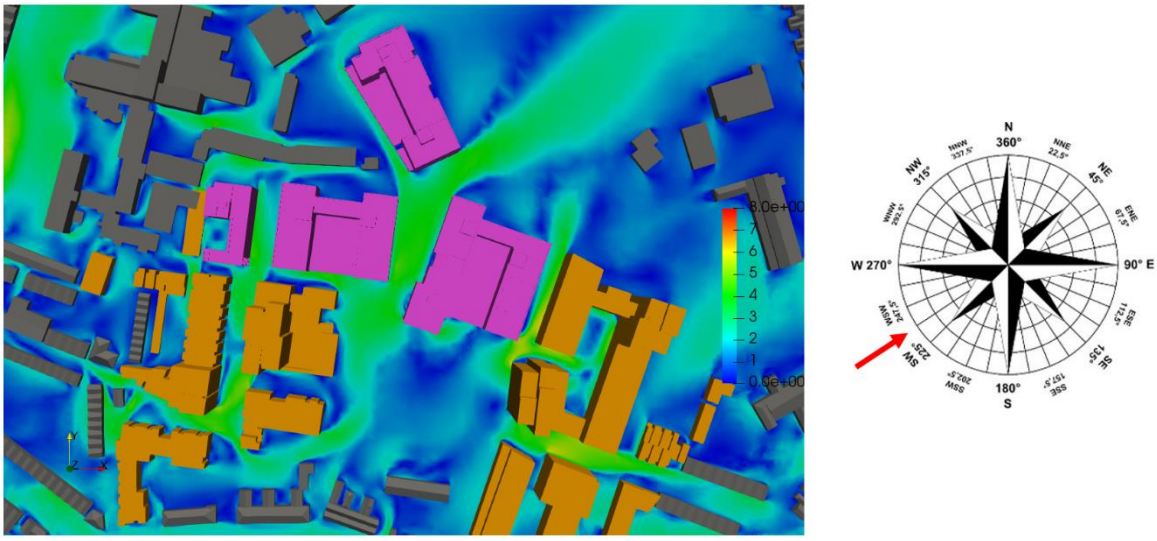


Figure 8-92: Wind at pedestrian level – Cumulative Scenario – Plan view - direction SW

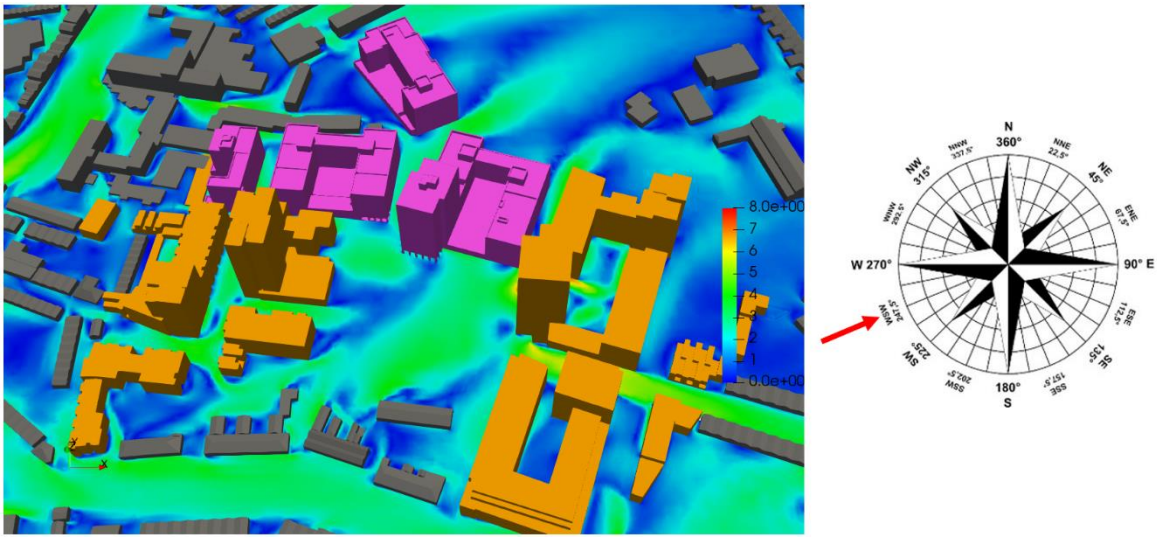


Figure 8-93: Wind at pedestrian level – Cumulative Scenario - direction WSW

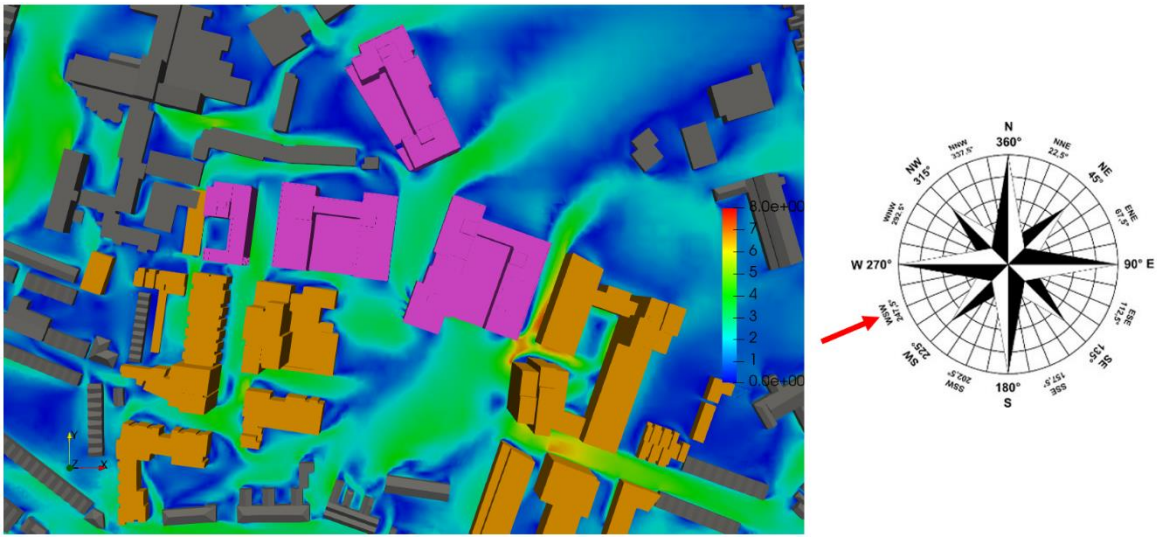


Figure 8-94: Wind at pedestrian level – Cumulative Scenario - Plan view - direction WSW

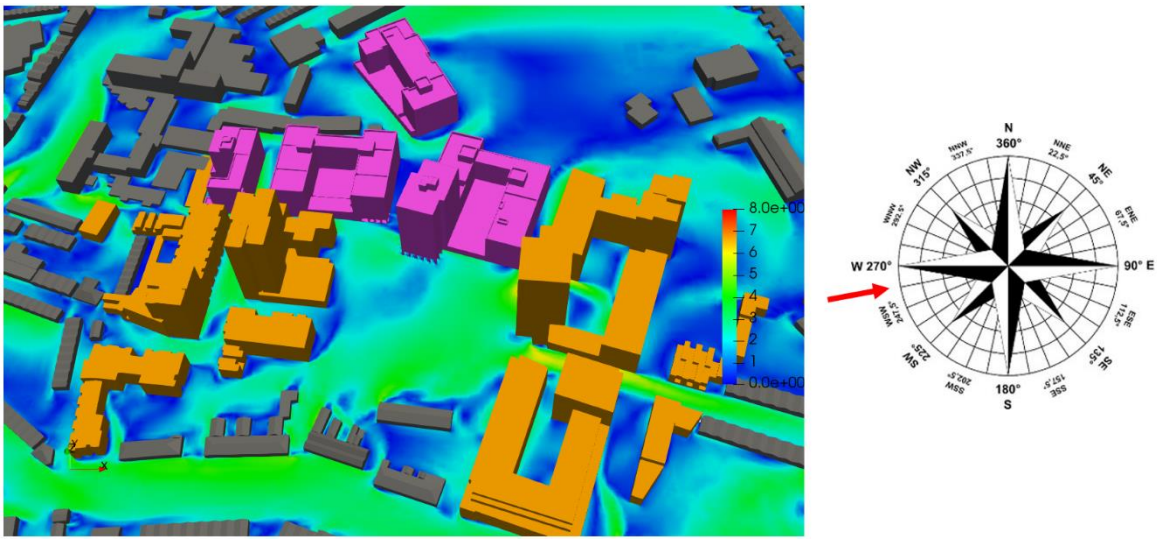


Figure 8-95: Wind at pedestrian level – Cumulative Scenario - direction WSWW

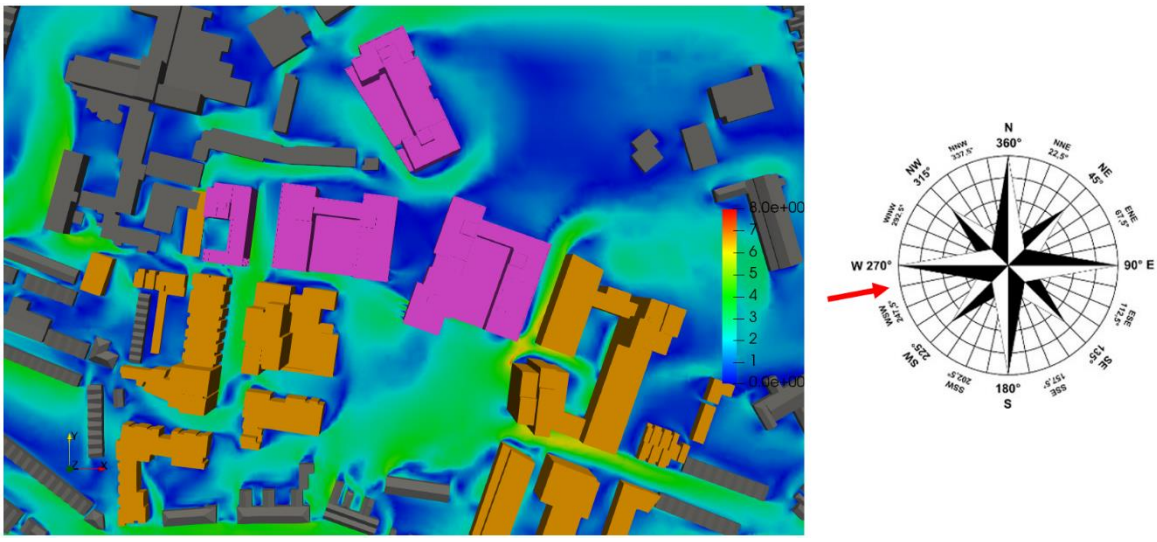


Figure 8-96: Wind at pedestrian level – Cumulative Scenario - Plan view - direction WSWW

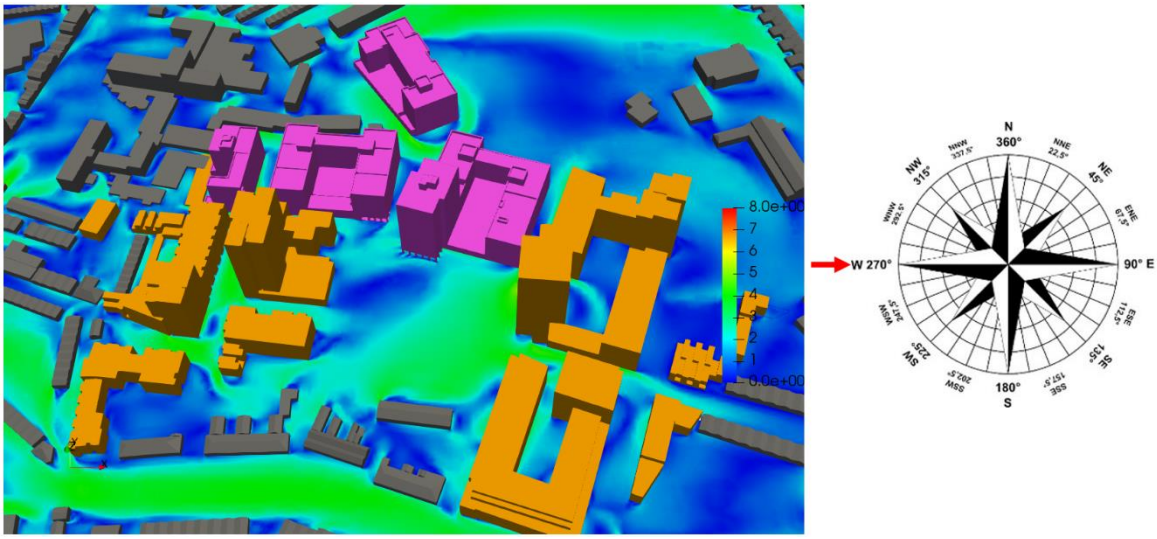


Figure 8-97: Wind at pedestrian level – Cumulative Scenario - direction W

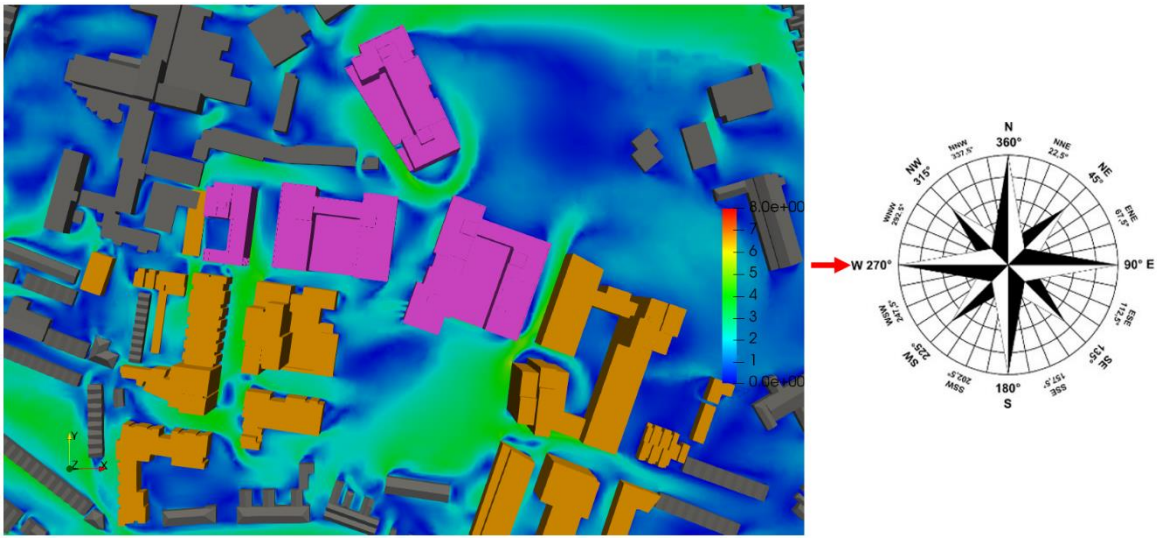


Figure 8-98: Wind at pedestrian level – Cumulative Scenario - Plan view - direction W

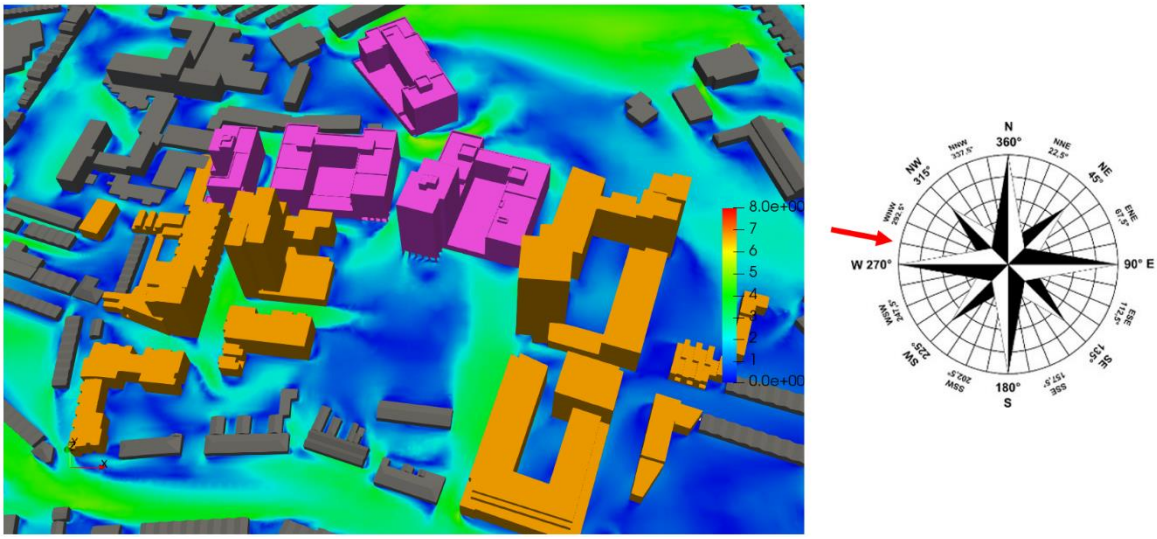


Figure 8-99: Wind at pedestrian level – Cumulative Scenario - direction WWNW

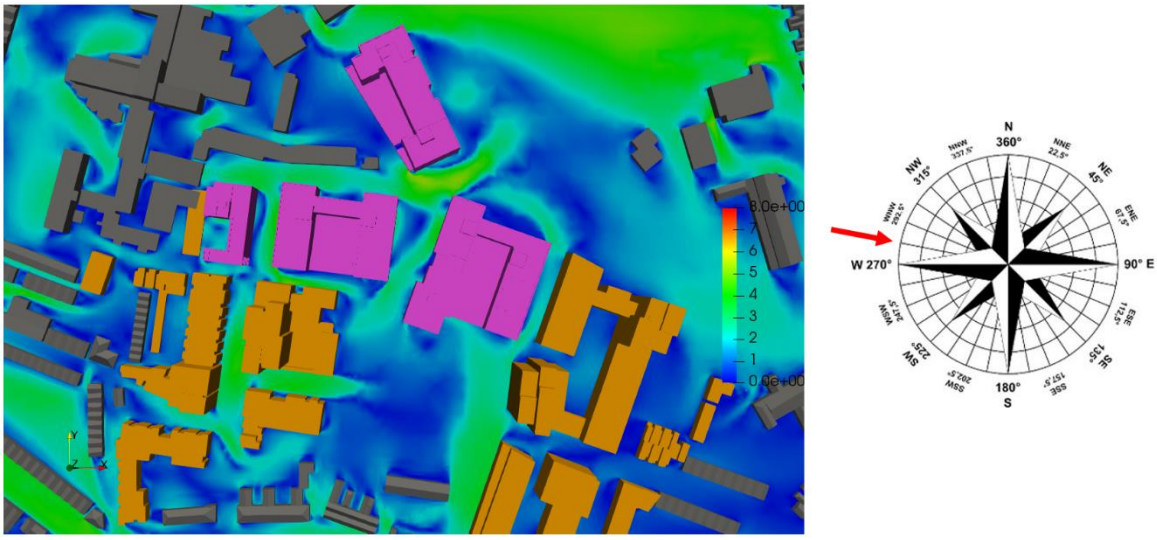


Figure 8-100: Wind at pedestrian level – Cumulative Scenario - Plan view - direction WWNW

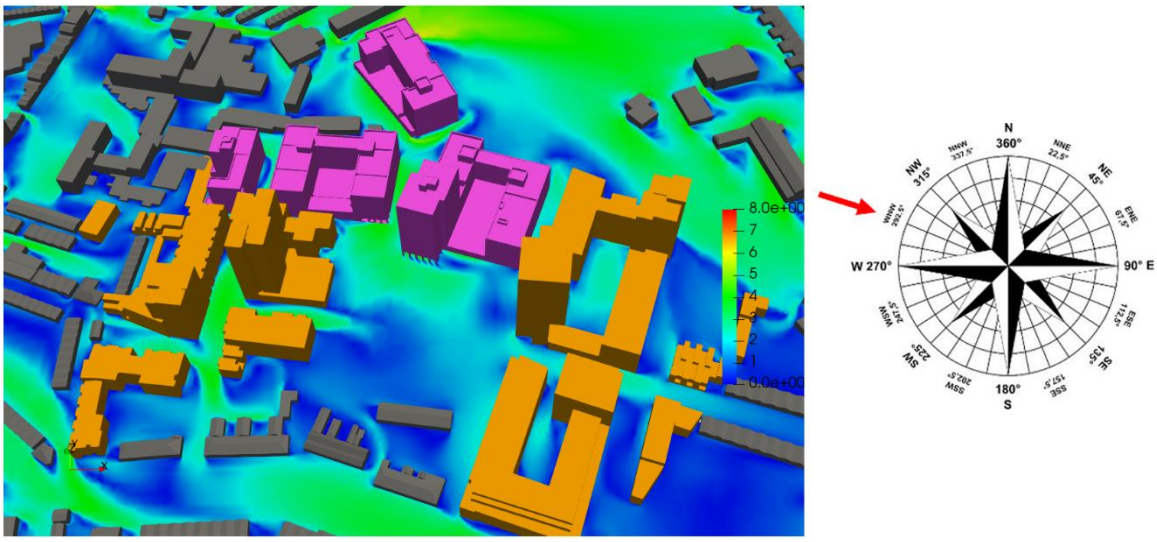


Figure 8-101: Wind at pedestrian level – Cumulative Scenario - direction WNW

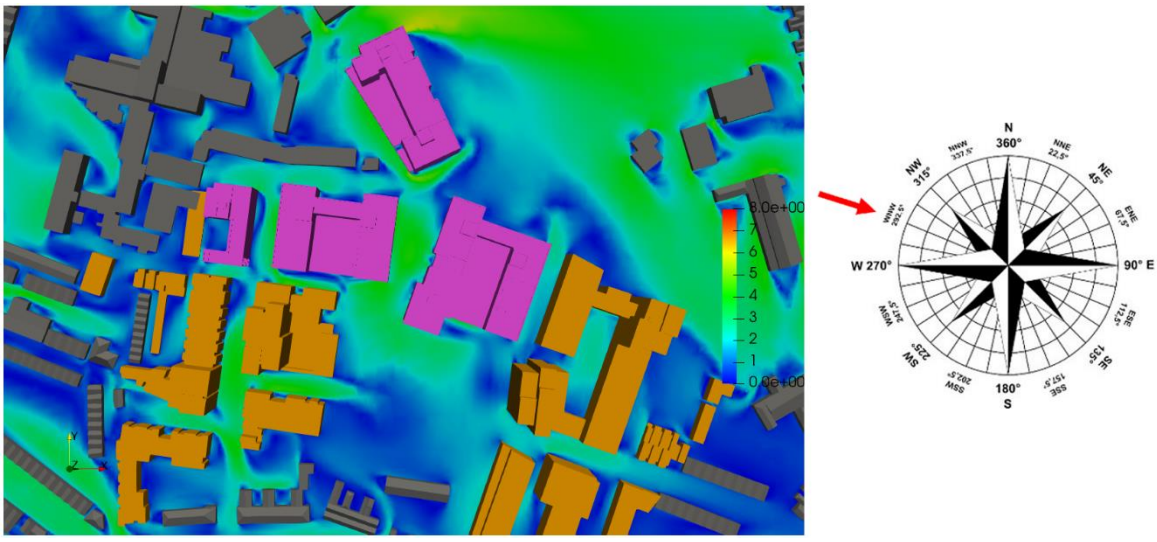


Figure 8-102: Wind at pedestrian level – Cumulative Scenario – Plan view - direction WNW

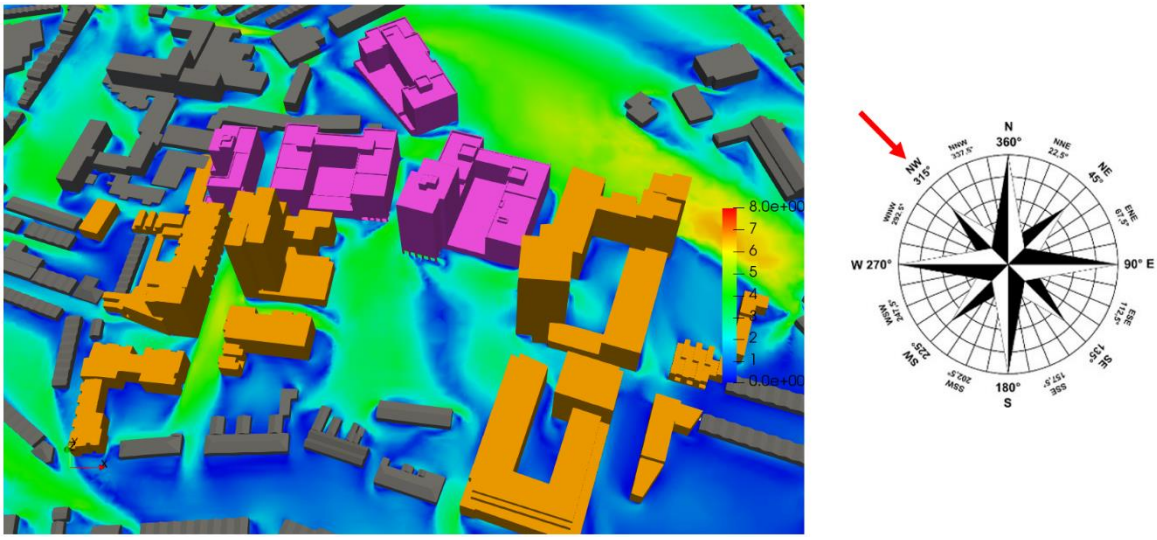


Figure 8-103: Wind at pedestrian level – Cumulative Scenario - direction NW

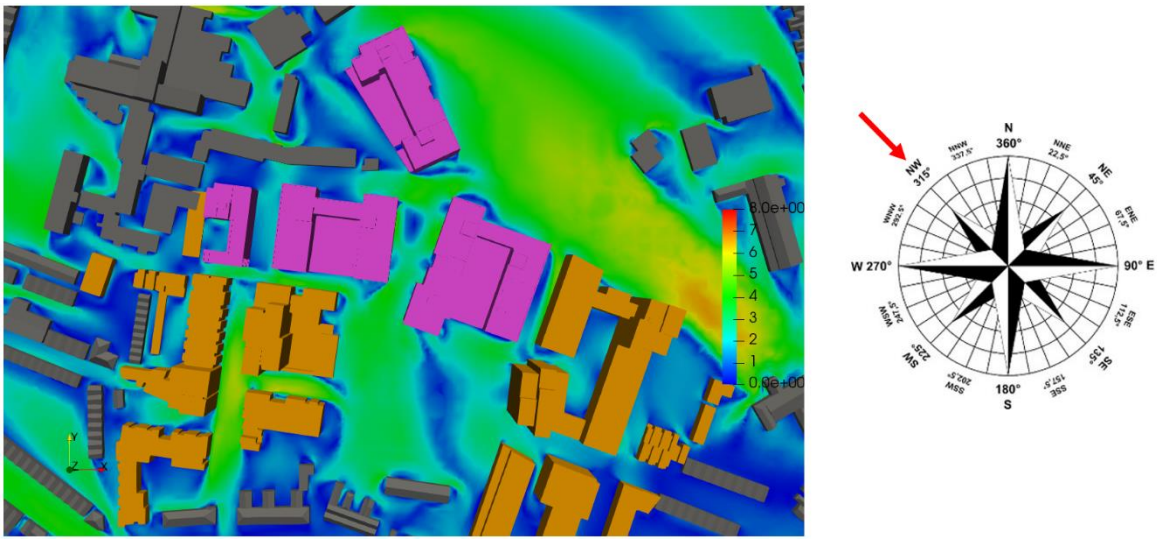


Figure 8-104: Wind at pedestrian level – Cumulative Scenario – Plan view - direction NW

8.2.5.3.2 Wind speeds on sensitive receptors (Balconies-vertical plane)

Results of velocity across the balconies in the vertical plane are presented in the following images.

Some local accelerations can be found on the top-level balconies when the wind is blowing from west-south-west direction. However, these velocities are below the threshold values defined by the acceptance criteria and therefore are not critical for safety. Furthermore, balconies are likely to be used as amenity space mostly during spring/summer season when the wind is calmer.

The images also report the wind velocity conditions across the block which is the tallest proposed block in this development. As anticipated in Section 8.2.1.1 the air stream across the tallest building can be, in part deflected towards the ground causing a downwash/downdraft effect. As it can be seen from the wind simulation results, the downwash effect is not critical, and the design of the ground level receiving the effect from above acts as

a mitigation measure to this effect, furthermore the road below is for pedestrian walking or traffic circulation and there is no sitting or play area directly into the air stream from above.

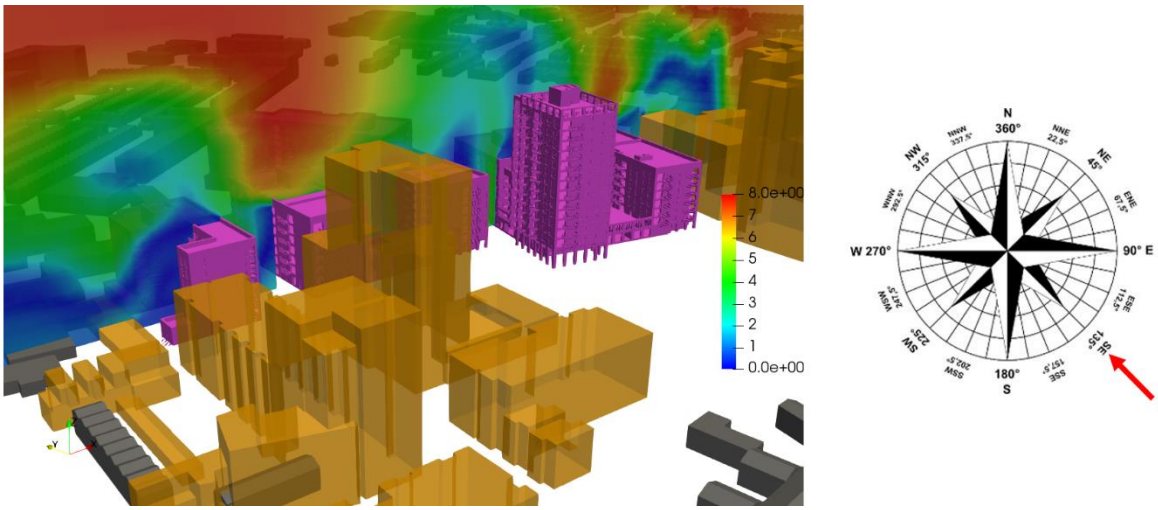


Figure 8-105: Wind across development – Cumulative Scenario - direction SE

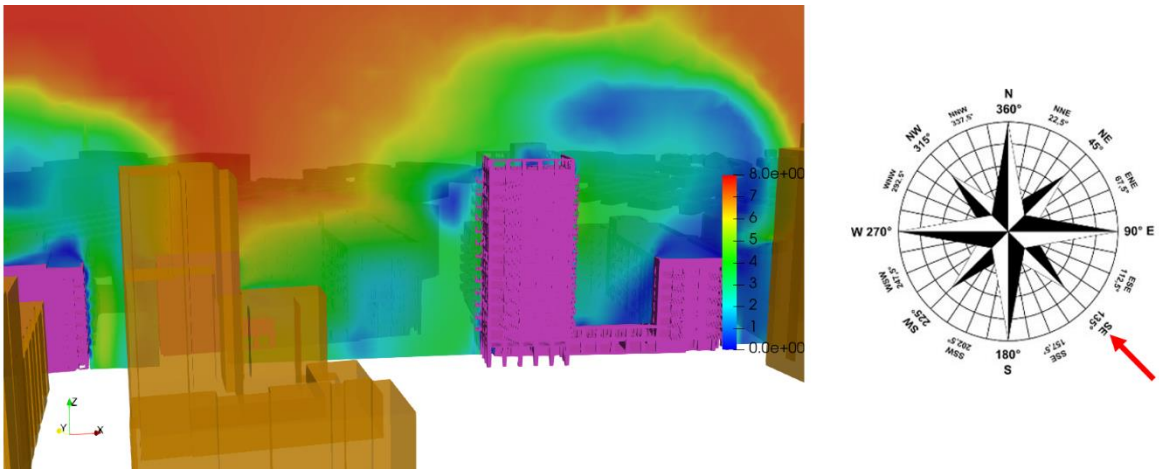


Figure 8-106:Wind across block DCC3 - Cumulative Scenario - direction SE

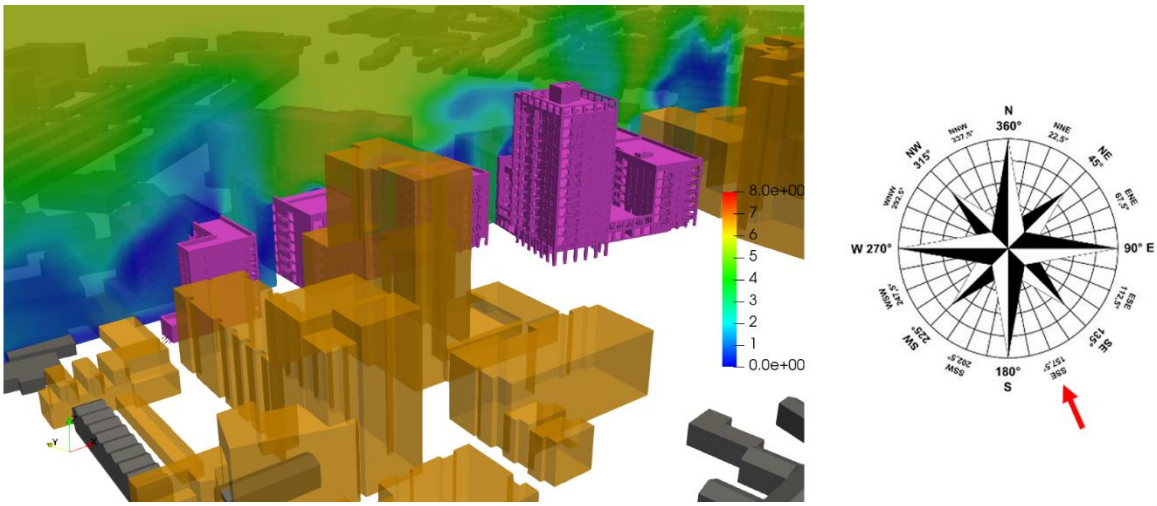


Figure 8-107: Wind across development – Cumulative Scenario - direction SSE

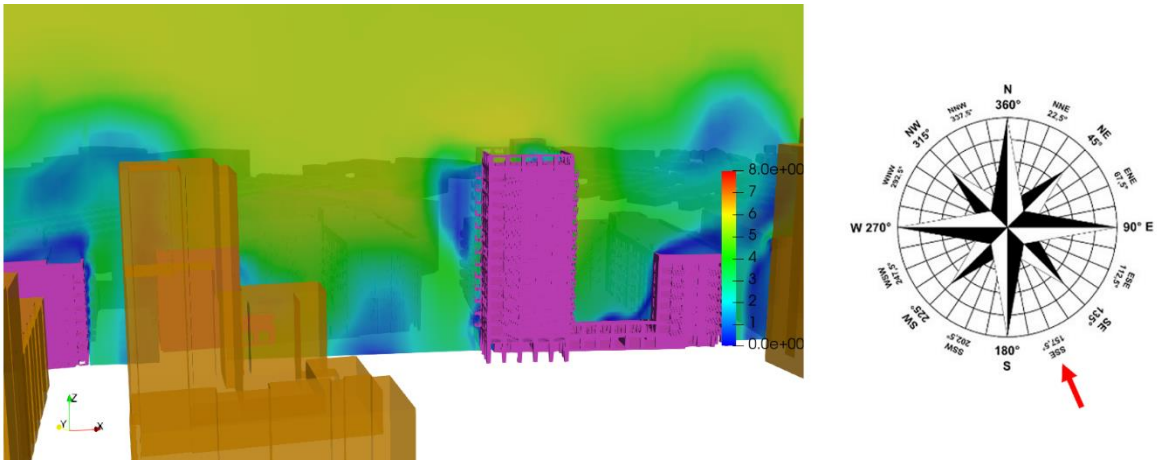


Figure 8-108: Wind across block DCC3 - Cumulative Scenario -direction SSE

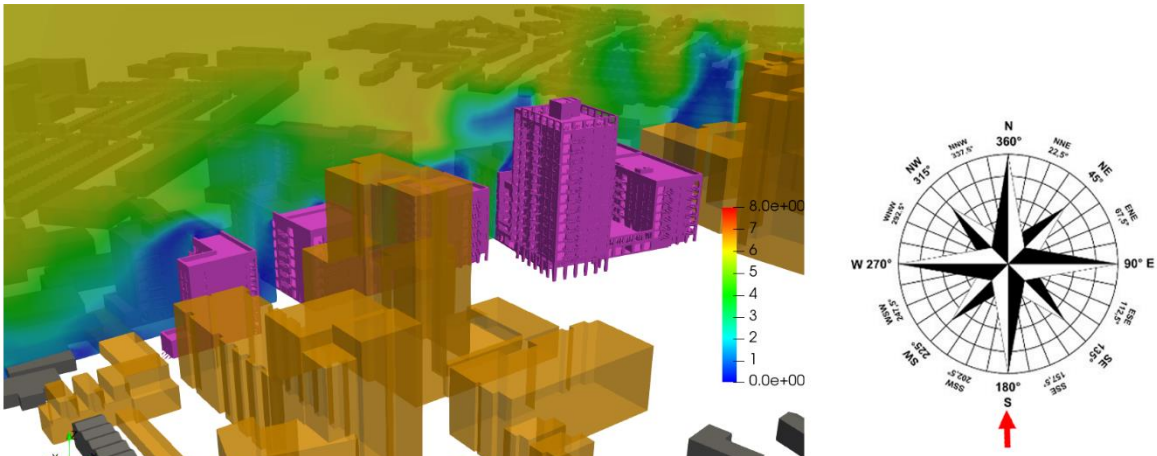


Figure 8-109: Wind across development – Cumulative Scenario - direction S

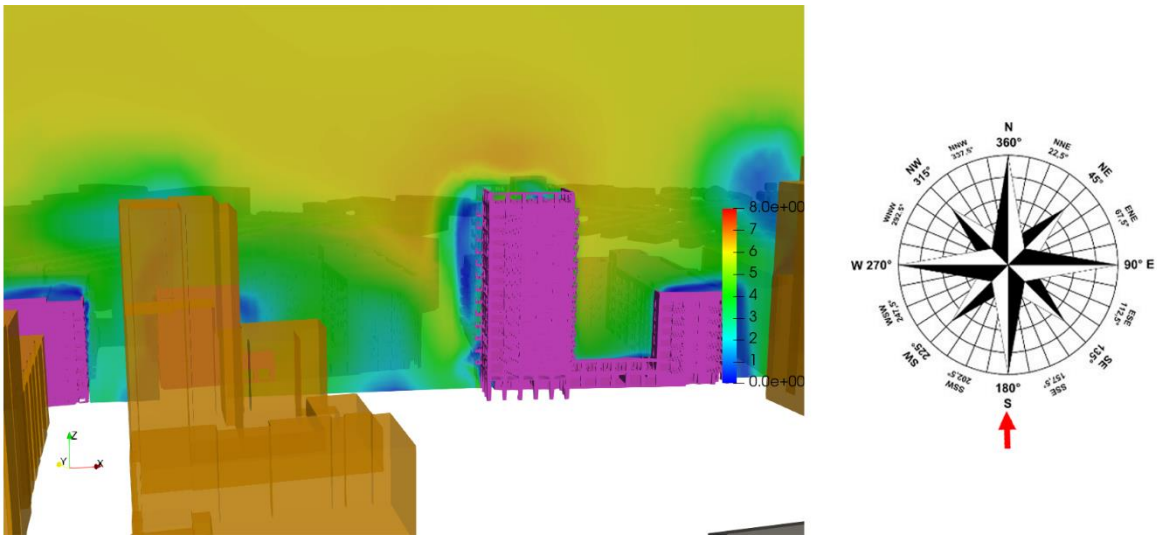


Figure 8-110: Wind across block DCC3 - Cumulative Scenario - direction S

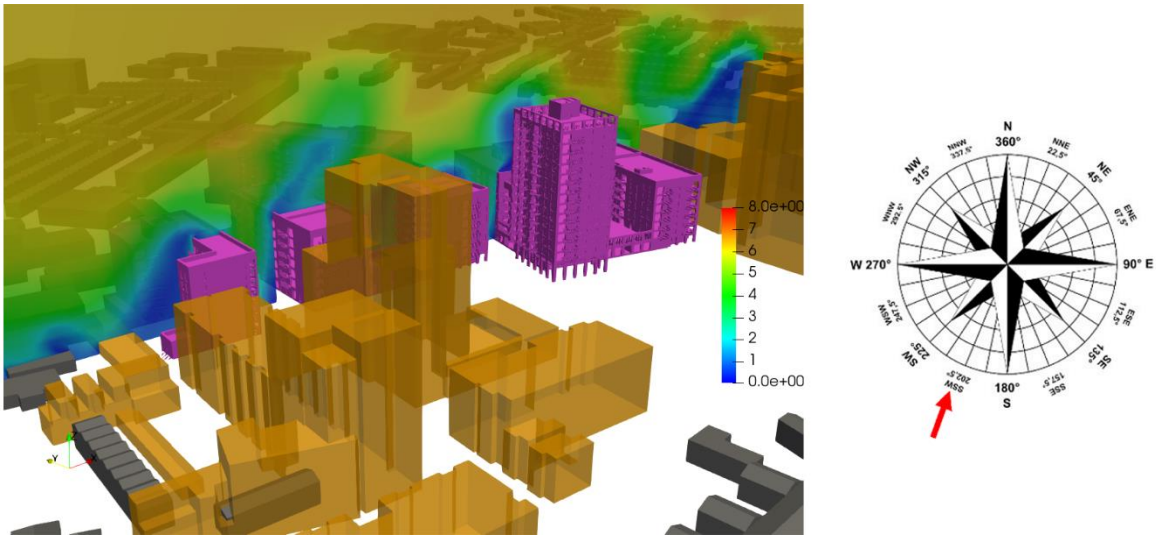


Figure 8-111: Wind across development – Cumulative Scenario - direction SSW

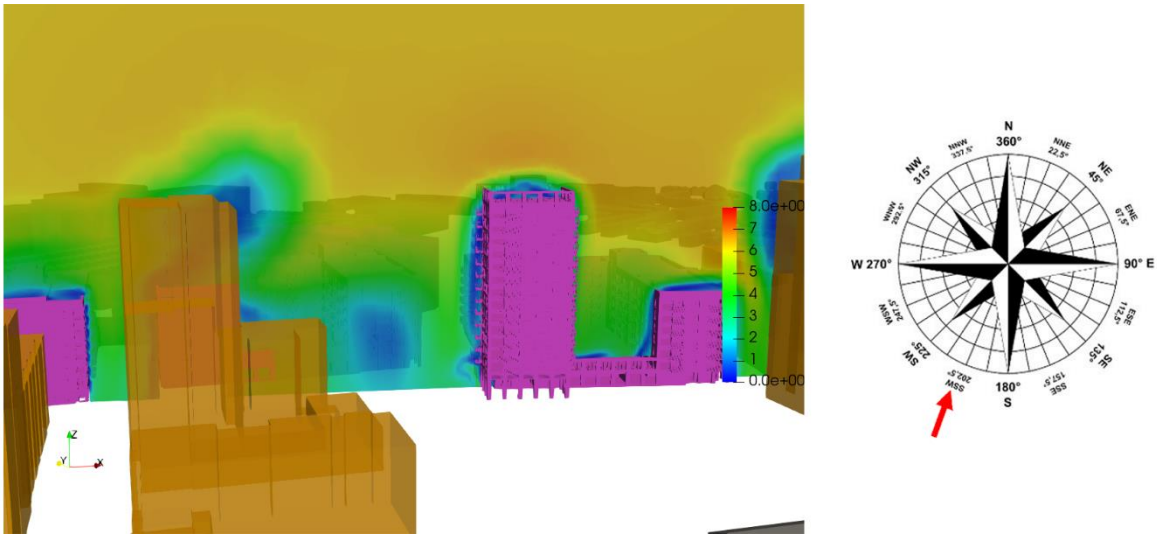


Figure 8-112: Wind across block DCC3 - Cumulative Scenario - direction SSW

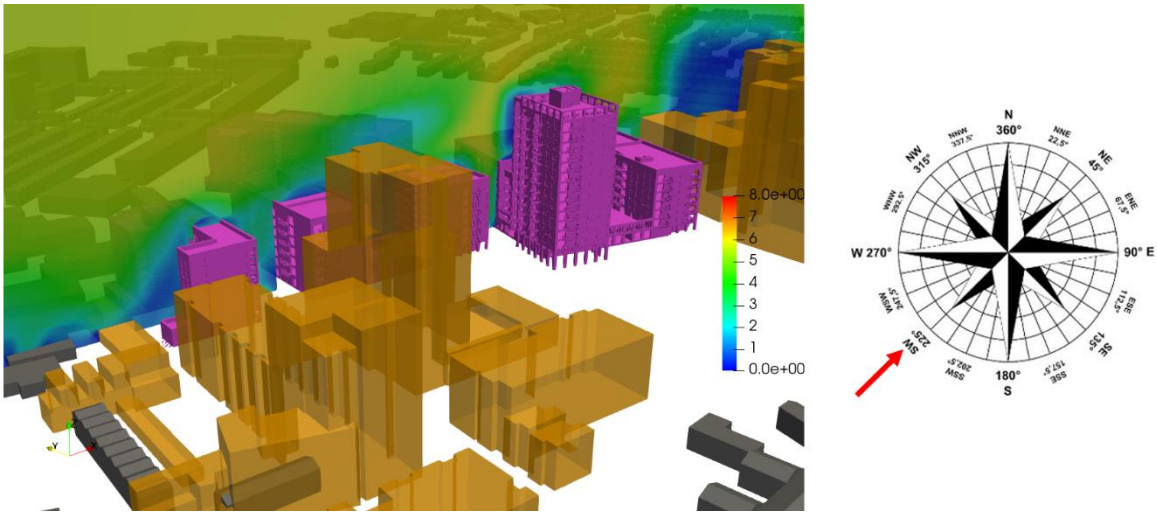


Figure 8-113: Wind across development – Cumulative Scenario - direction SW

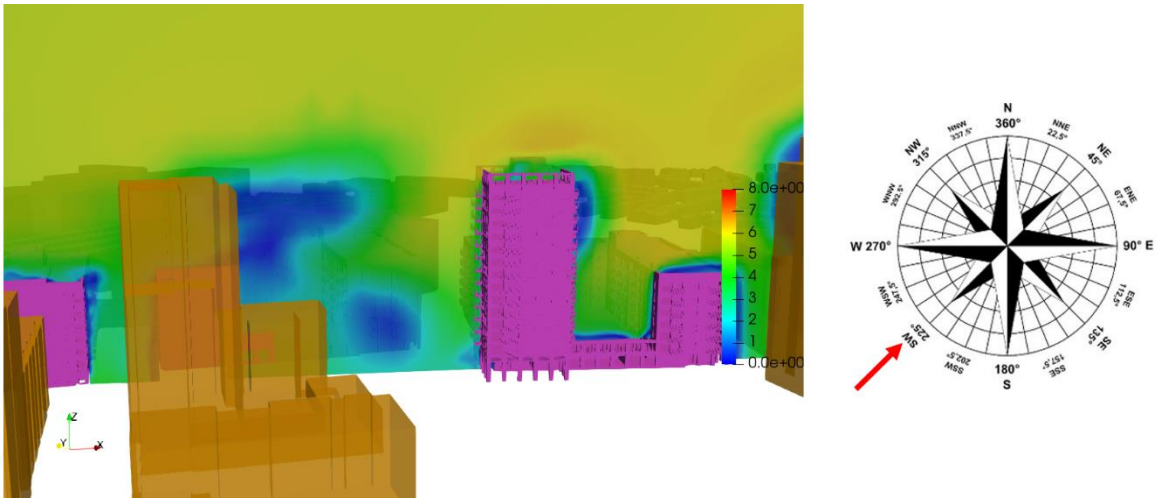


Figure 8-114: Wind across block DCC3 - Cumulative Scenario - direction SW

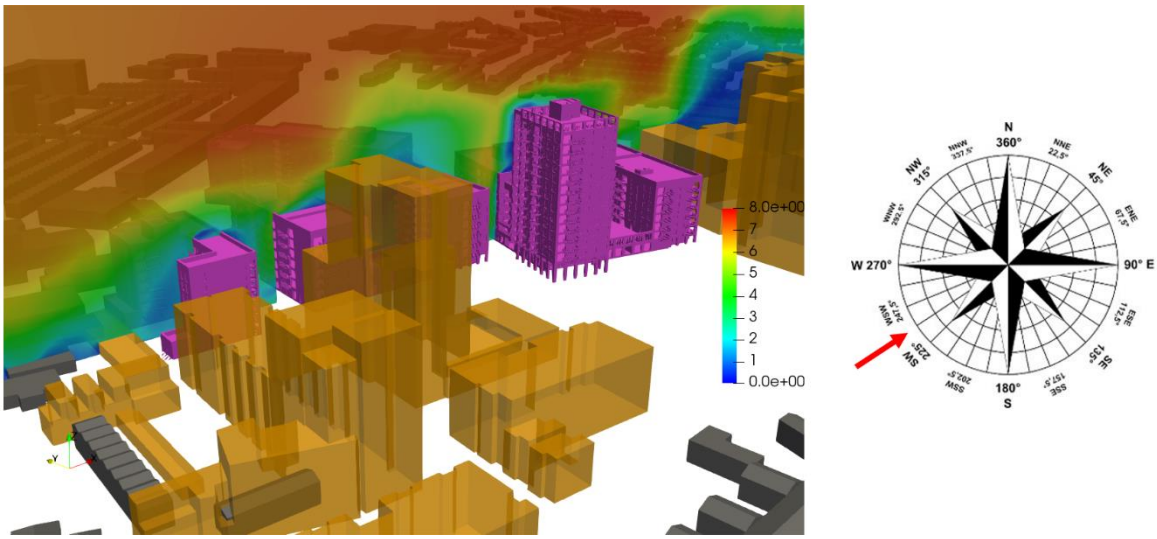


Figure 8-115: Wind across development – Cumulative Scenario - direction SWWSW

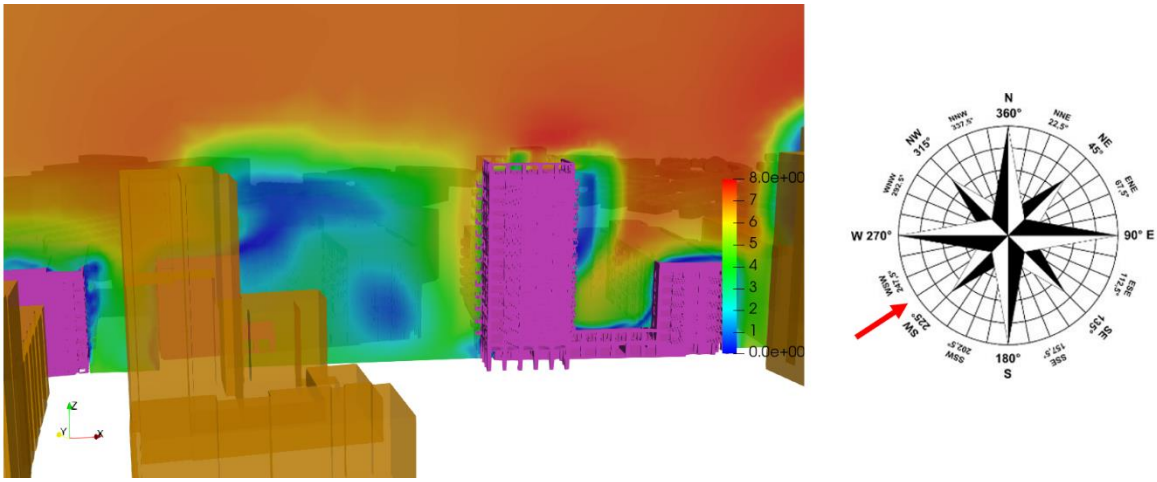


Figure 8-116: Wind across block DCC3 - Cumulative Scenario - direction SWWSW

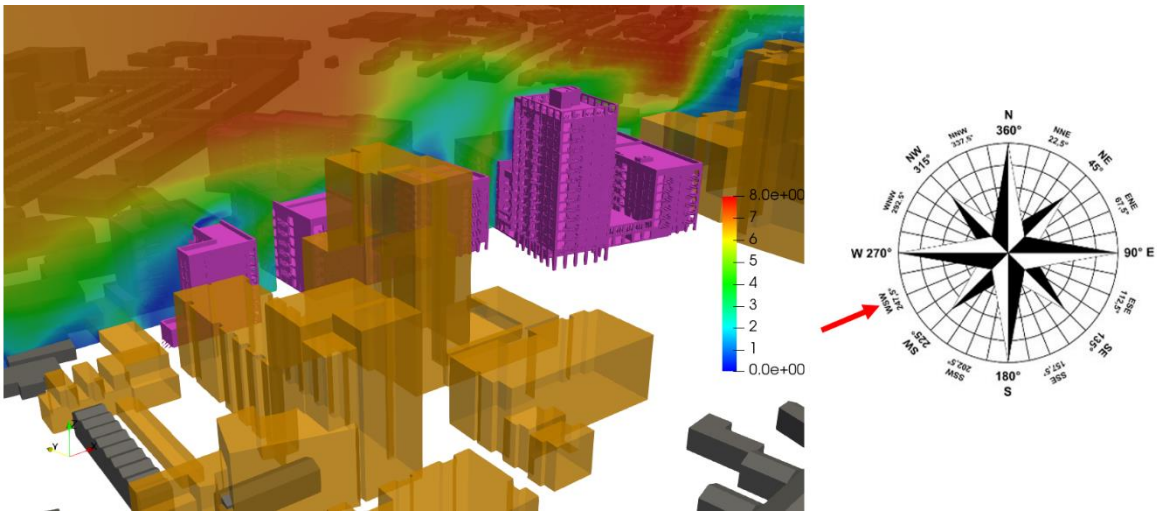


Figure 8-117: Wind across development – Cumulative Scenario - direction WSW

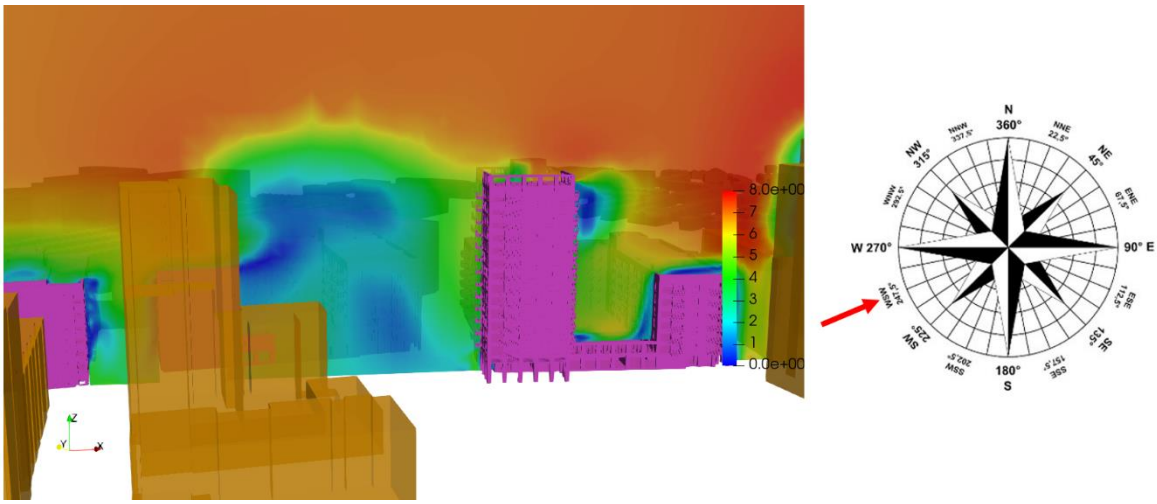


Figure 8-118: Wind across block DCC3 - Cumulative Scenario - direction WSW

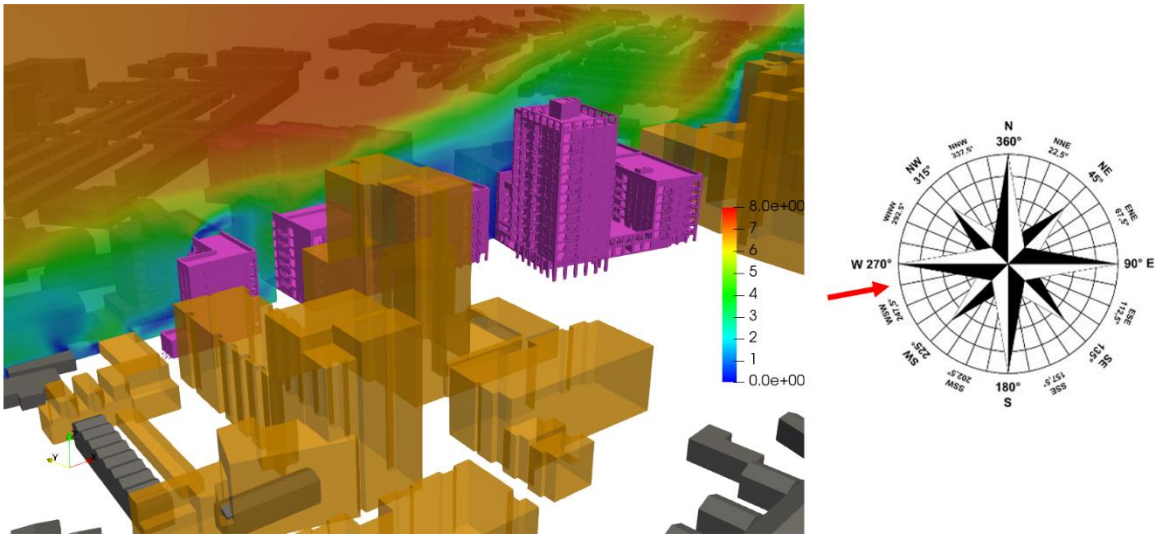


Figure 8-119: Wind across development – Cumulative Scenario - direction WSWW

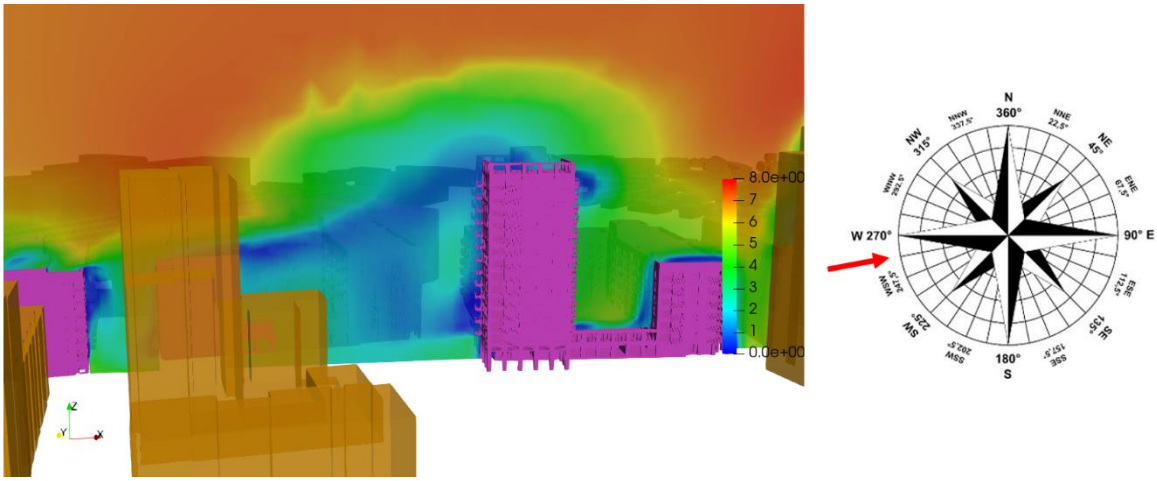


Figure 8-120: Wind across block DCC3 - Cumulative Scenario - direction WSWW

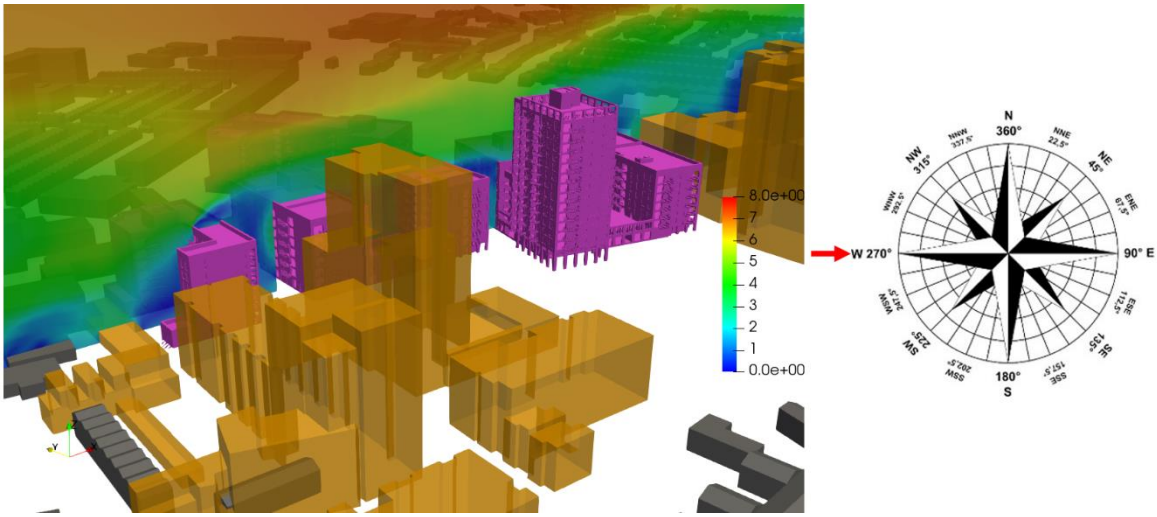


Figure 8-121: Wind across development – Cumulative Scenario - direction W

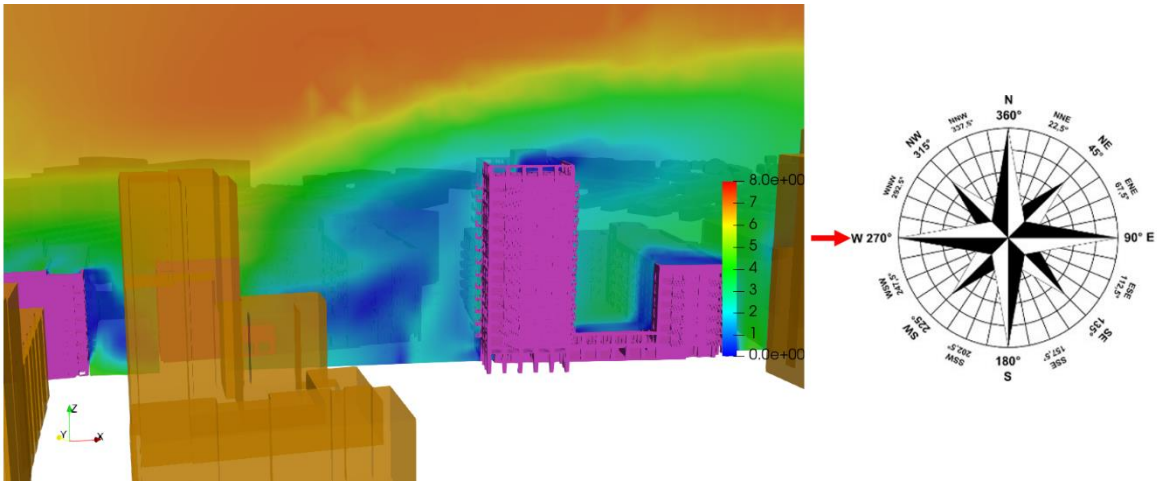


Figure 8-122: Wind across block DCC3 - Cumulative Scenario - direction W

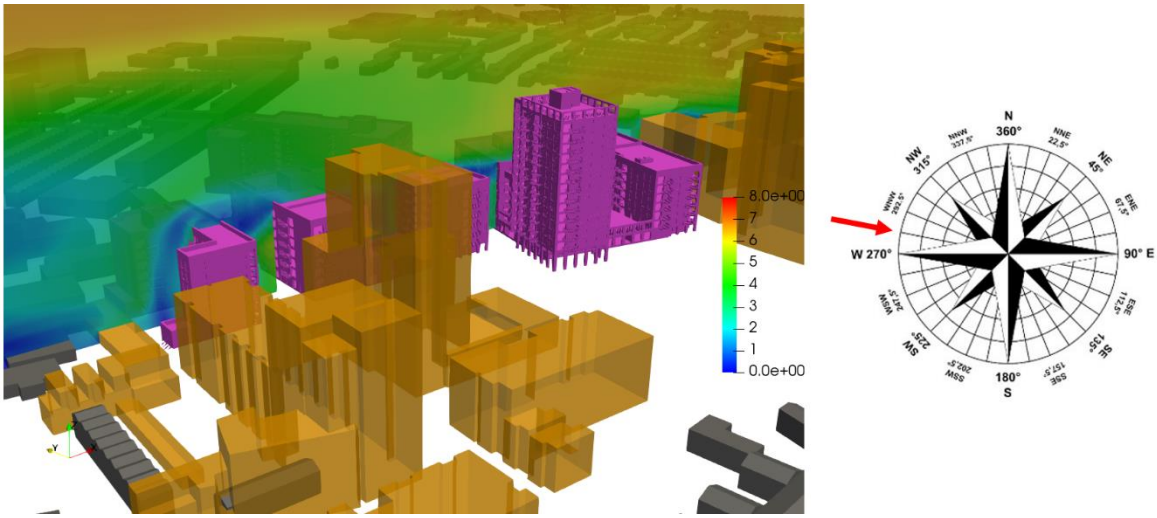


Figure 8-123: Wind across development – Cumulative Scenario - direction WWNW

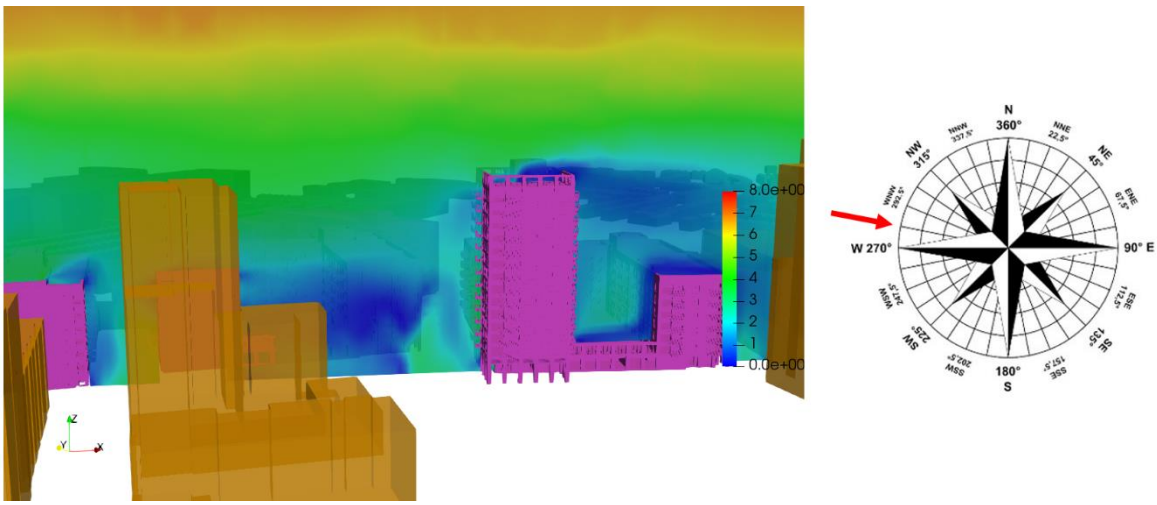


Figure 8-124: Wind across block DCC3 - Cumulative Scenario - direction WWNW

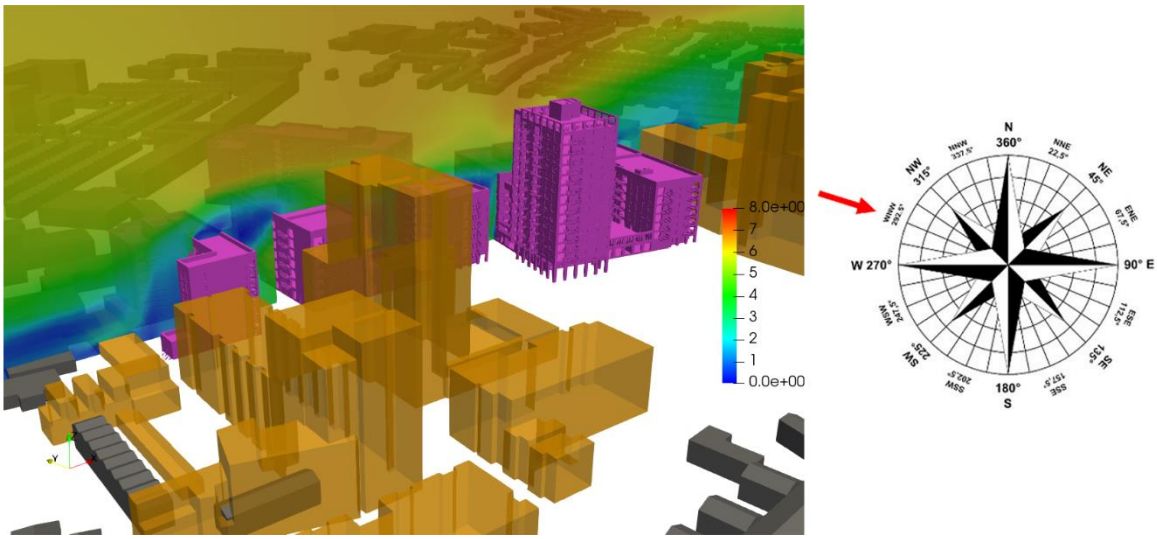


Figure 8-125: Wind across development – Cumulative Scenario - direction WNW

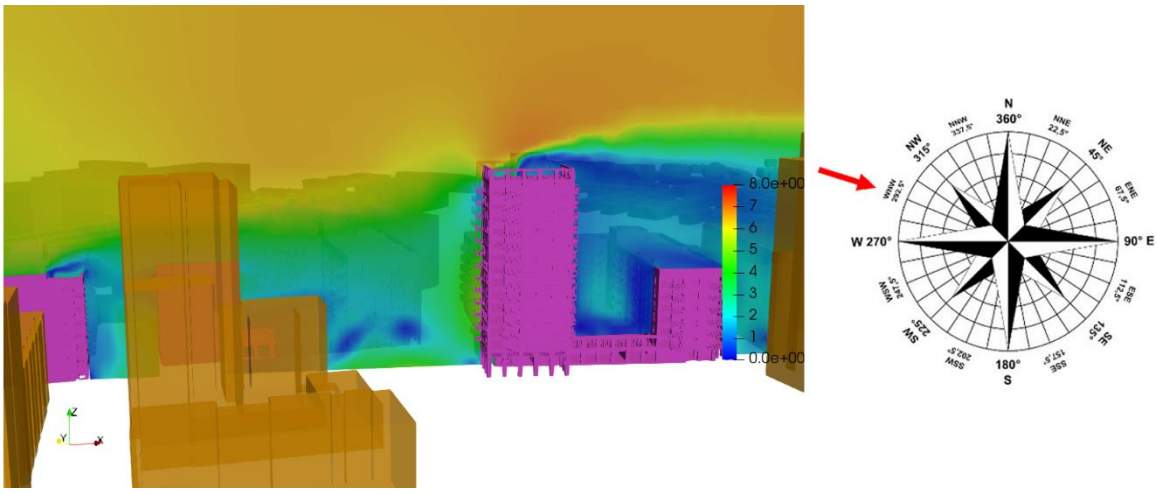


Figure 8-126: Wind across block DCC3 - Cumulative Scenario - direction WNW

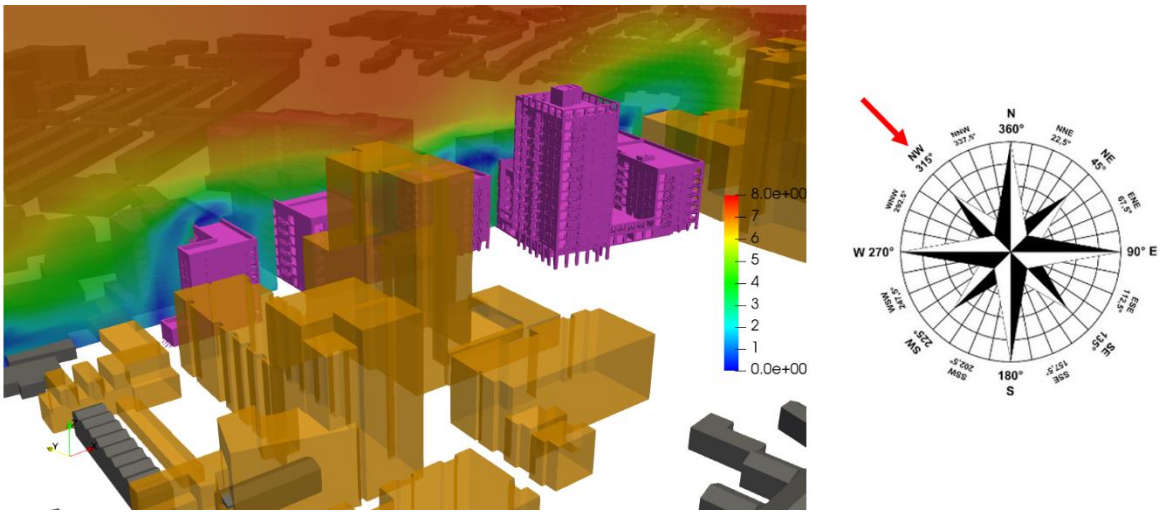


Figure 8-127: Wind across development – Cumulative Scenario - direction NW

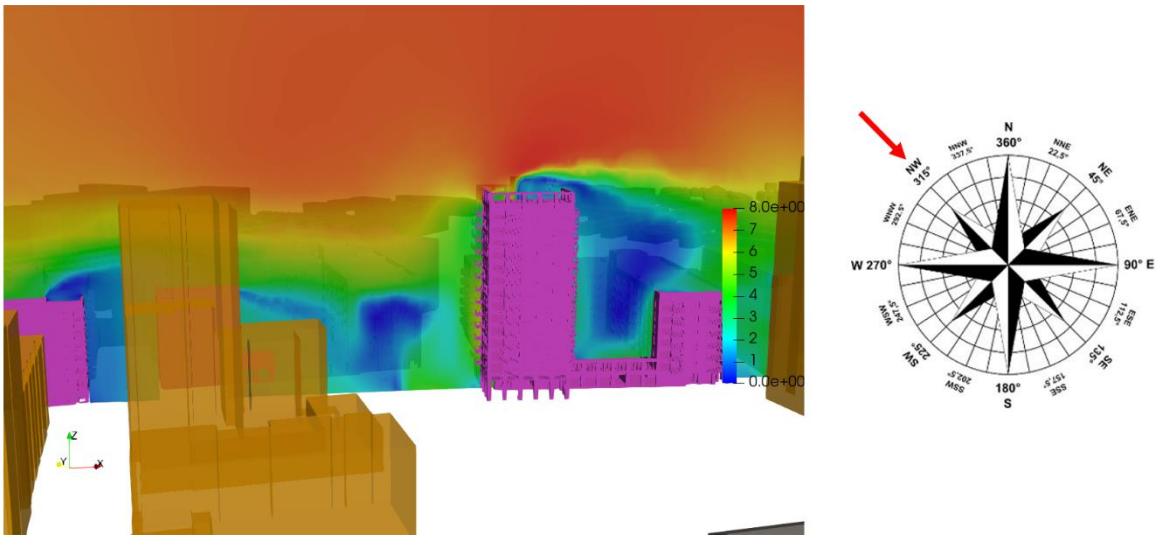


Figure 8-128: Wind across block DCC3 – Cumulative Scenario - direction NW

8.2.5.3.3 Cumulative Scenario Wind Microclimate

The wind flow results simulating the different direction and wind speeds, are combined with wind frequencies of occurrence to obtain comfort ratings at pedestrian level in all areas included within the model. The comparison of comfort ratings with intended pedestrian activities is shown in the Lawson Comfort and Distress Map that follows. The comfort/distress conditions are presented using a colour coded diagram (Figure 8-129) formulated in accordance with the Lawson Criteria.

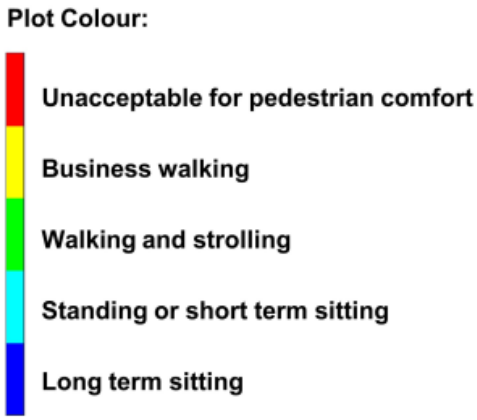


Figure 8-129: Lawson criteria scale

Figure 8-130: Wind comfort-distress map (Lawson Map) - Cumulative scenario

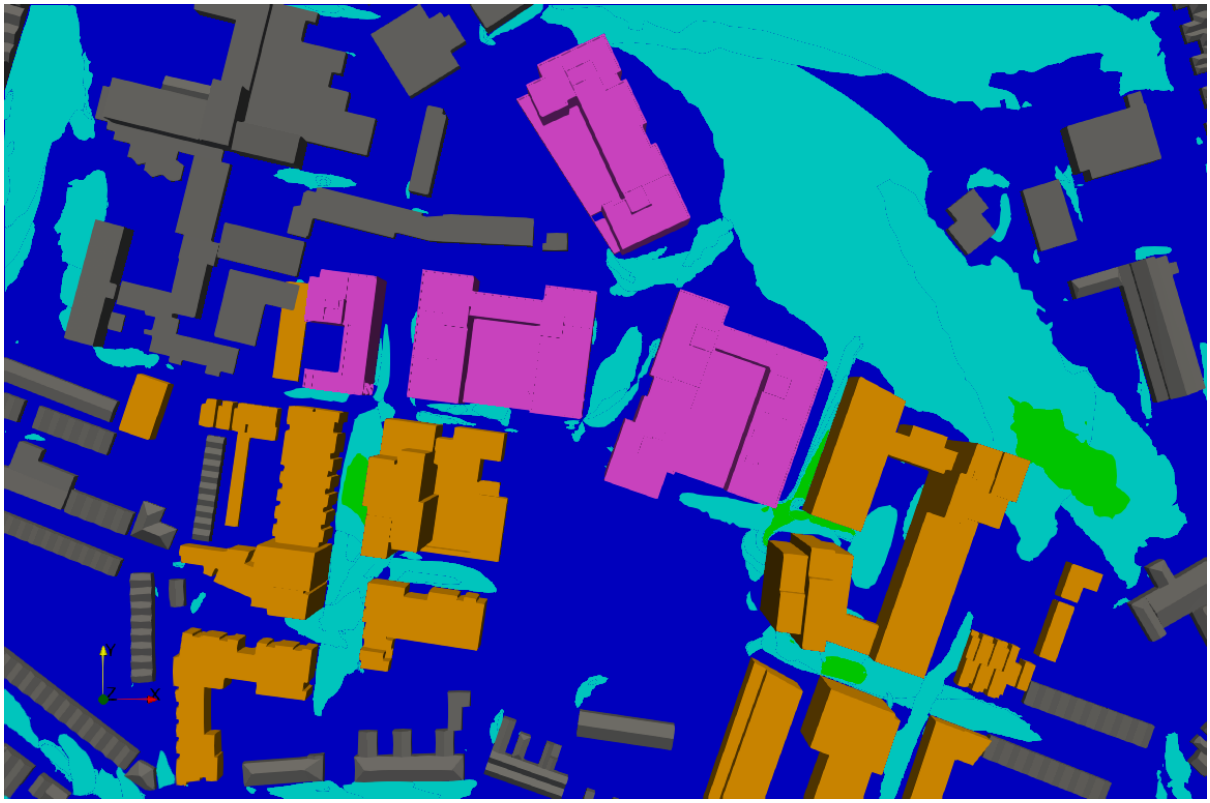


Figure 8-131: Wind comfort-distress map (Lawson Map) - Cumulative scenario- top view

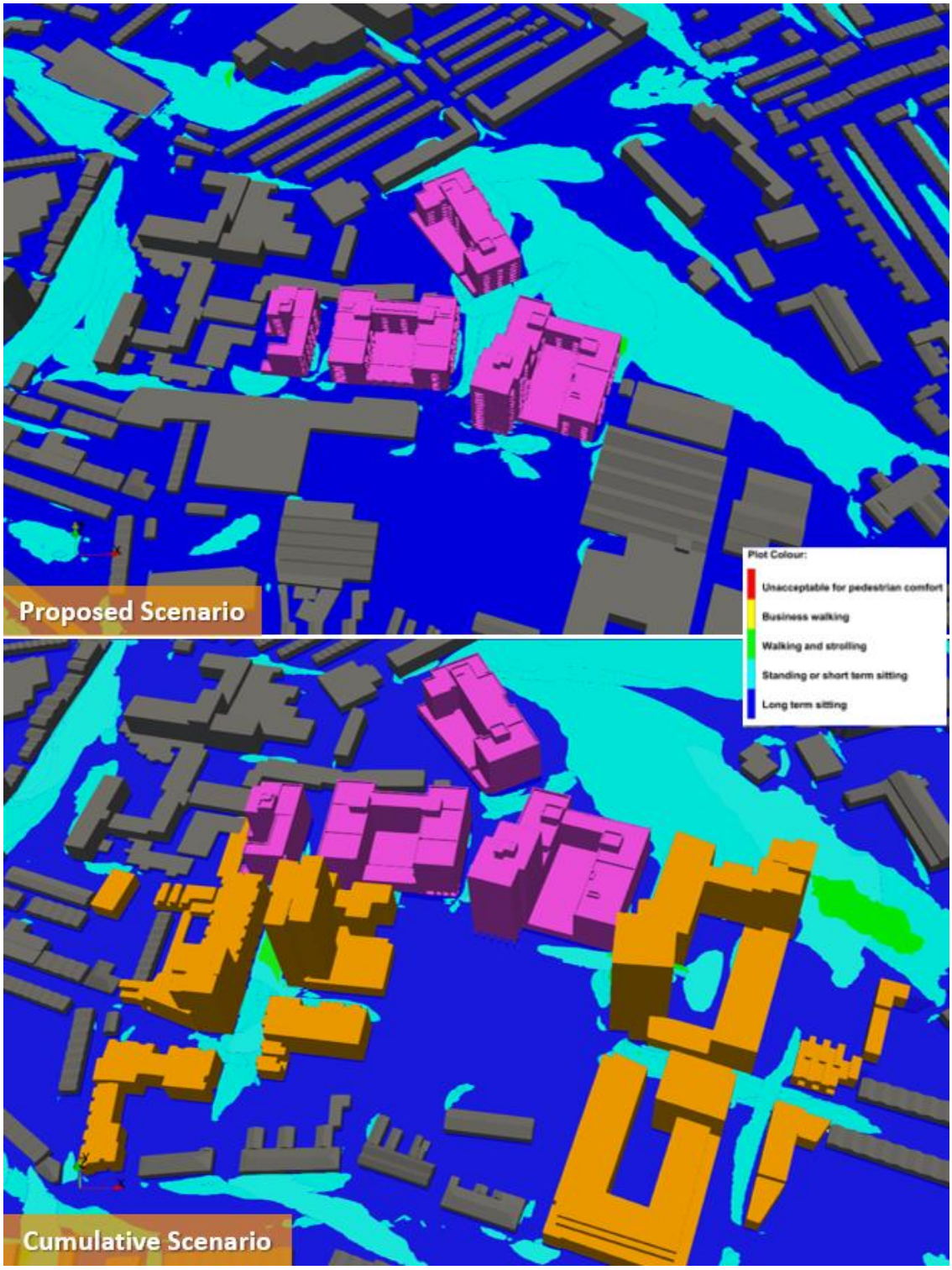


Figure 8-132: Wind comfort/distress map – Proposed versus Cumulative scenario

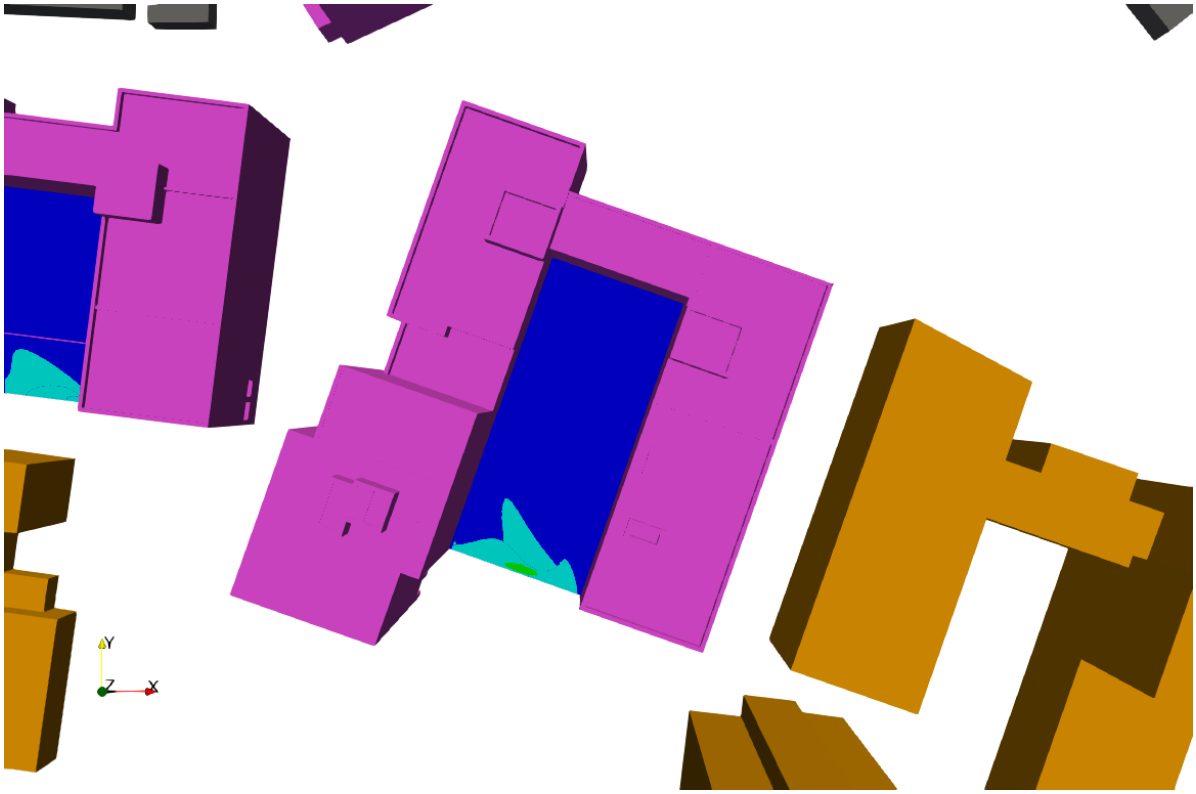


Figure 8-133: Wind comfort-distress map (Lawson Map) - Cumulative scenario-zoom above podium

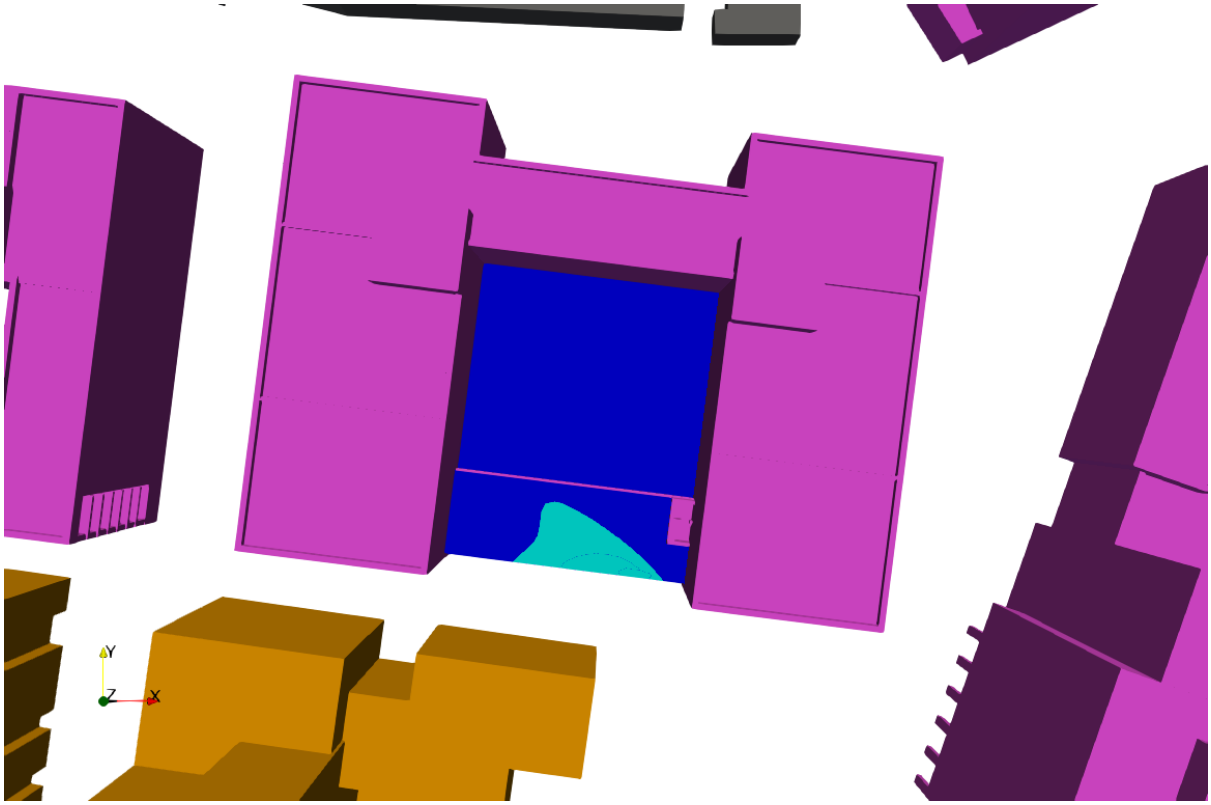


Figure 8-134: Wind comfort-distress map (Lawson Map) - Cumulative scenario-zoom above podium

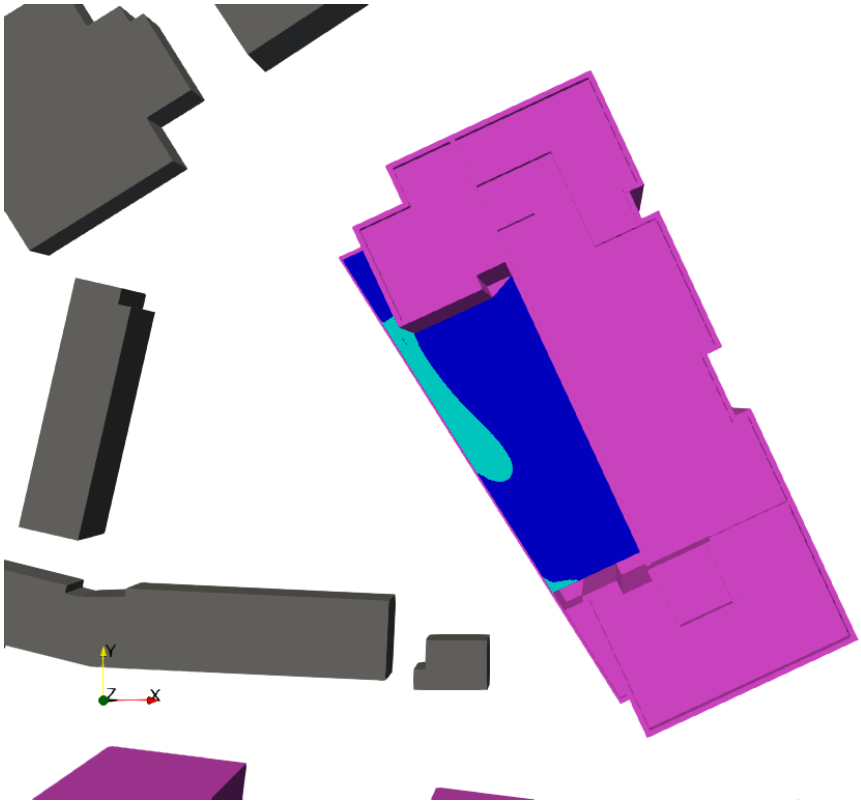


Figure 8-135: Wind comfort-distress map (Lawson Map) - Cumulative scenario-zoom above podium

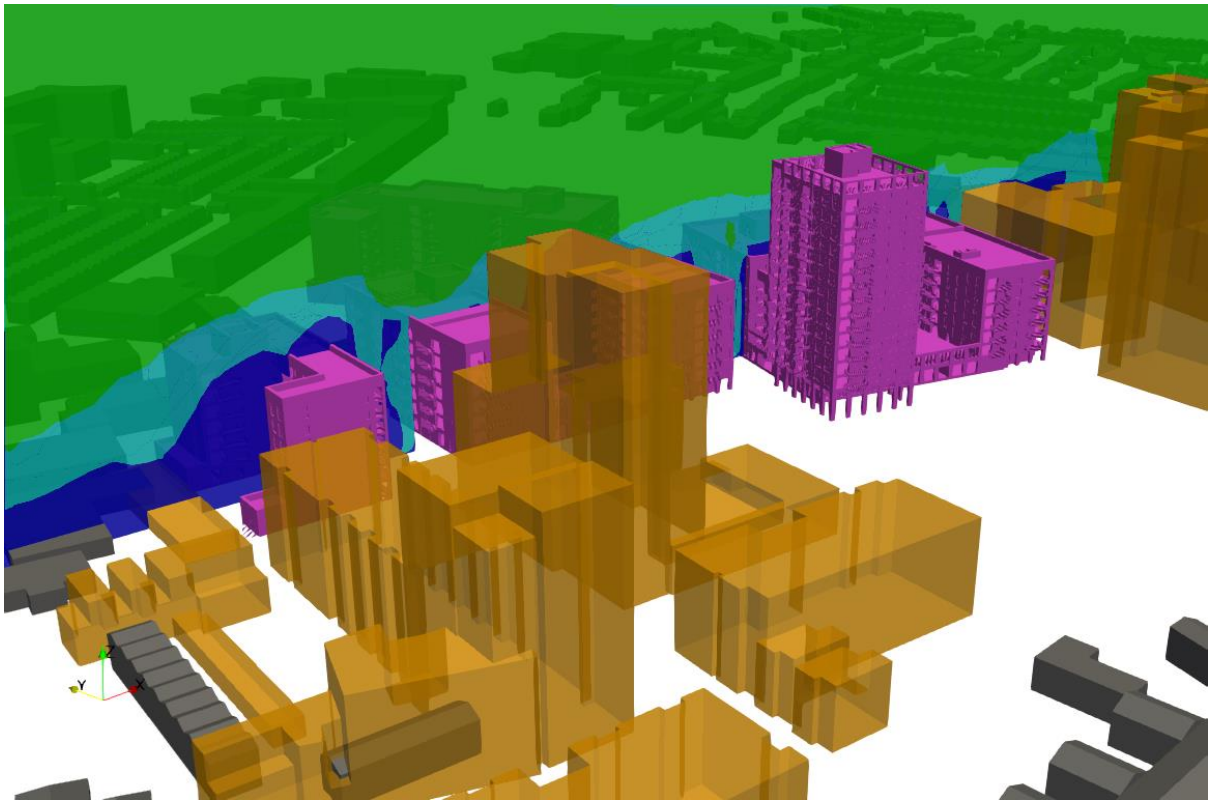


Figure 8-136: Wind comfort-distress map (Lawson Map) - Cumulative scenario vertical view

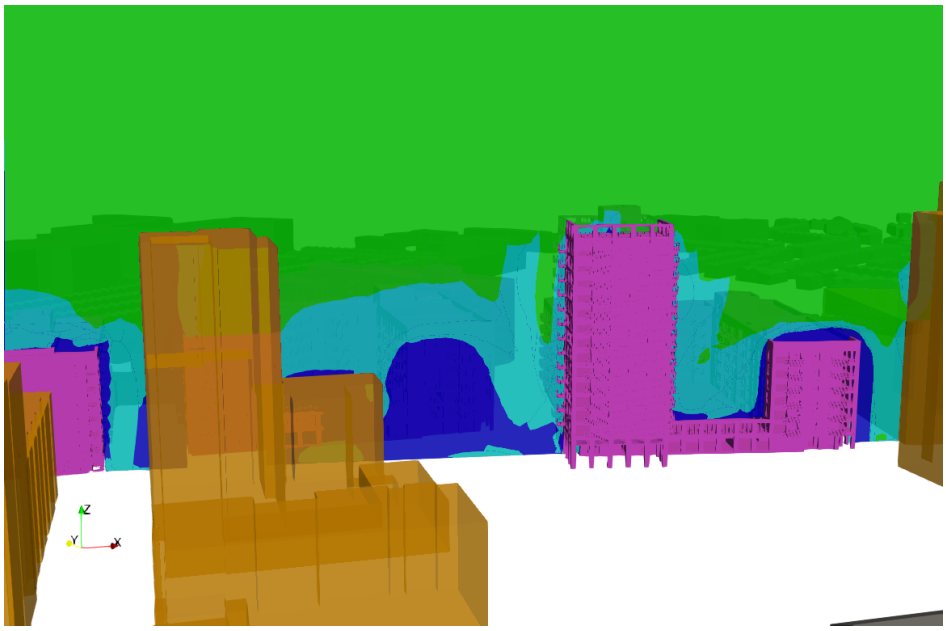


Figure 8-137: Wind comfort-distress map (Lawson Map) - Cumulative scenario vertical view

Table 8-18 indicates the impact and significance of the Proposed Development in a Cumulative Scenario on the on-site receptors (pedestrian areas, roads, entrances) and on the off-site receptors (roads/ pedestrian areas off-site on the north, south, west and east directions).

Figure 8-138 provides a visual comparison of the vertical wind comfort distress map along the balconies (including the tallest building) based on Lawson criteria for the proposed and cumulative scenarios. The proposed building in both scenarios can be seen to provide a calm environment for balcony use and therefore has a beneficial effect on microclimate conditions along the balconies.

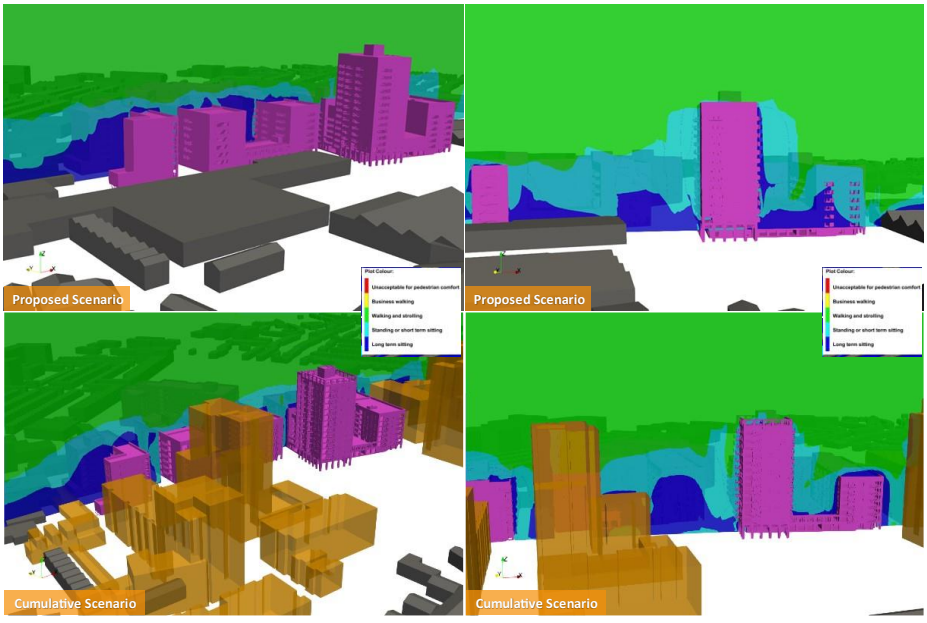


Figure 8-138: Comparison of Wind Comfort effects on balconies for Proposed and Cumulative Scenarios based on Lawson Criteria.

The wind comfort distress map showing the baseline, proposed and cumulative scenarios are illustrated in Figure 8-139. As a result of the Proposed Development construction in conjunction with the permitted development considered in the Cumulative Scenario, the wind on the surrounding urban context is also mitigated when compared with the baseline situation and the proposed scenario in the existing context. The Proposed Development therefore has a beneficial effect on the surrounding wind microclimate and can create comfortable pedestrian areas and public spaces. Specifically, the area between Block DCC5 and DCC3 of the Proposed development when the Cumulative buildings are considered.

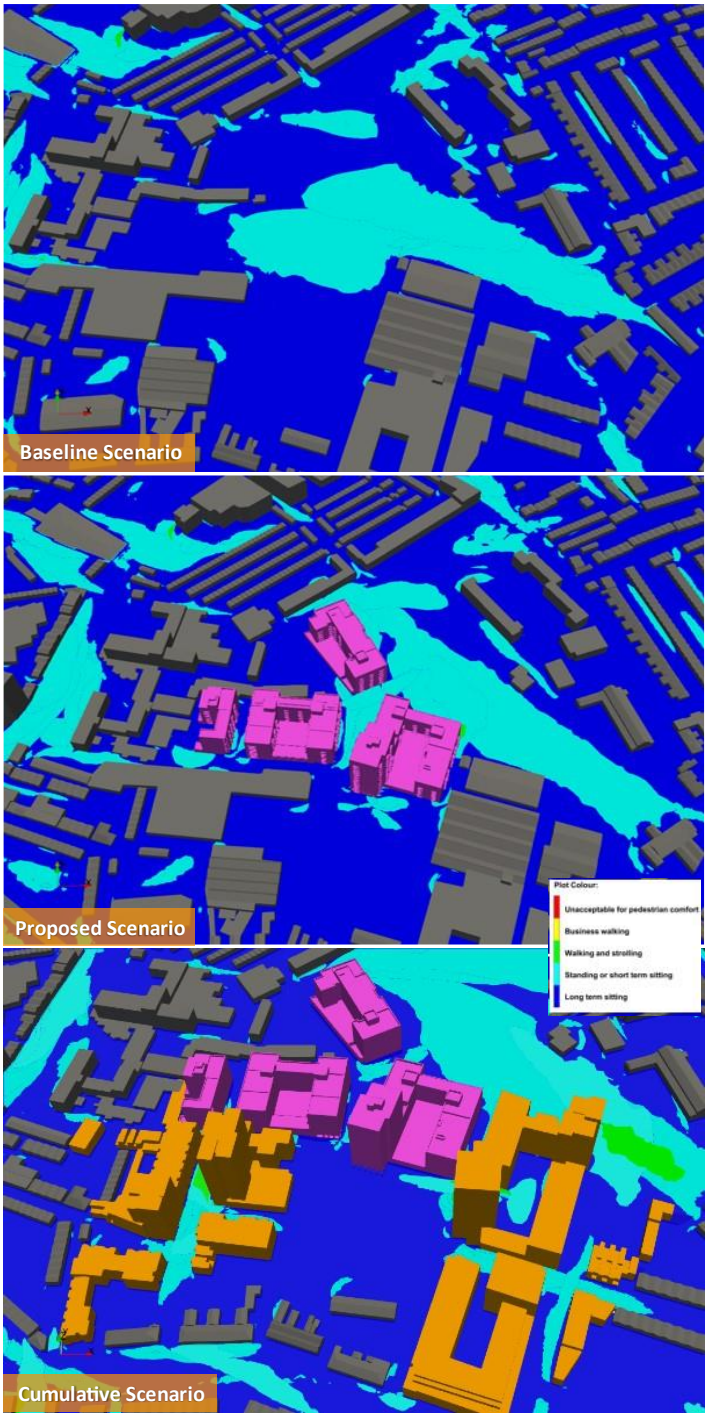


Figure 8-139: Wind comfort/distress map - Baseline versus Proposed versus Cumulative scenario.

Table 8-18: Significance impact of the Proposed Development versus cumulative conditions

Potential Receptors *(on-site)*	**Proposed Development Conditions**	**Cumulative Development Conditions**	**Impact Significance**
Roads	Conditions are calmer than required for the intended pedestrian use (by at least one comfort category in relation to the baseline).	Conditions remain the same as in the proposed scenario	*Negligible*
Entrances	Conditions are "suitable" for the intended pedestrian use.	Conditions remain the same as in the proposed scenario	*Negligible*
Pedestrian circulation areas	Conditions are calmer than required for the intended pedestrian use (by at least one comfort category in relation to the baseline).	Conditions remain the same as in the proposed scenario	*Negligible*
Balconies	Conditions are "suitable" for the intended use. (short/long-term sitting especially in relation to the balconies and considering the wind roses of the spring/summer seasons).	Conditions remain the same as in the proposed scenario	*Negligible*
Ground Amenity areas	Conditions are "suitable" for the intended use. (short/long-term sitting considering the wind roses of the spring/summer season).	Conditions remain the same as in the proposed scenario	*Negligible*
Potential Receptors *(off-site)*	**Proposed Development Conditions**	**Cumulative Development Conditions**	**Impact Significance**
Off-Site Area-North	Conditions become calmer than required for the intended pedestrian use (by at least one comfort category in relation to the baseline).	Conditions remain the same as in the proposed scenario	*Negligible*
Off-Site Area-South	Conditions remain the same as in the baseline scenario.	Conditions remain the same as in the proposed scenario.	*Negligible*
Off-Site Area-East	Conditions remain the same as in the baseline scenario.	Conditions remain the same as in the proposed scenario.	*Negligible*
Off-Site Area-West	Conditions remain the same as in the baseline scenario.	Conditions remain the same as in the proposed	*Negligible*

8.2.5.4 Potential Cumulative Impacts - Bailey Gibson SHD 2

This section assesses the impact of the Proposed Development on the existing environment and also considers projects that have been:

- (a) granted planning permission but that are not built yet and,
- (b) projects that have been submitted for consent but not yet consented.

In accordance with the guideline cited in Section 8.2.2, the wind microclimate study should consider the effect of the Proposed Development together with buildings (existing, permitted but not built and proposed but not consented yet) that are within 400m from the centre of the site. Other taller buildings outside of this zone that could have an influence on wind conditions within the Proposed Development site should be included for wind directions where they are upwind of the Proposed Development site. At the time of this planning application submission, the permitted and proposed buildings which are included in a cumulative assessment are as detailed in the list below and shown in Figure 8-140.

- **BG2** – Ref. ABP-314171-22
  Demolitions of existing structures and construction of 345 residential units in 5 blocks ranging in height from 2-7 storeys on site of 1.53ha.
- **Hines – Player Wills** – Ref. ABP-308917-20
  Demolitions of existing structures and construction of 492 BtR apartments and 240 BtR shared accommodation units, plus commercial and community units in 4 blocks ranging in height from 2-19 storeys on site of 3.06ha.
- **Coombe Women & Infants University Hospital**
  - Colposcopy Building – Ref. 3537/21 planning permission granted for a 3 storey 988m2 building.
  - Laboratory Building – Ref. 4049/19 planning permission granted for a 4 storey lab building in 2020.
- **Remaining two blocks of original St. Teresa's Gardens Flat Complex** – Ref. 2475/18 Part 8 amendment permission which includes demolition of remaining two blocks.

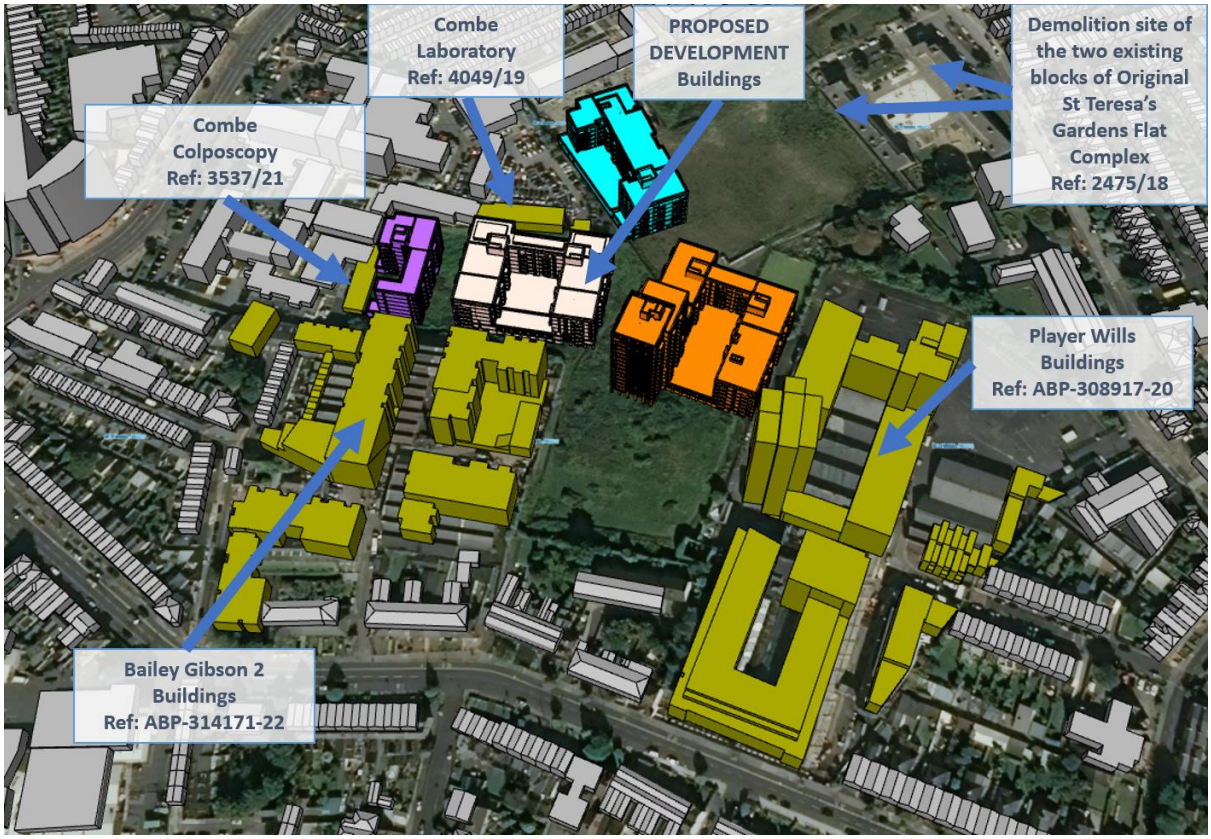


Figure 8-140: Cumulative Buildings

8.2.5.4.1 Wind speeds at pedestrian level

Results of wind speeds and their circulations at pedestrian level of 1.5m above the development ground are presented in the following images to assess wind flows at ground floor level of St. Teresa's Gardens Development.

Wind flow speeds are shown to be within an acceptable range. Higher velocity and recirculation effects are found in the site.

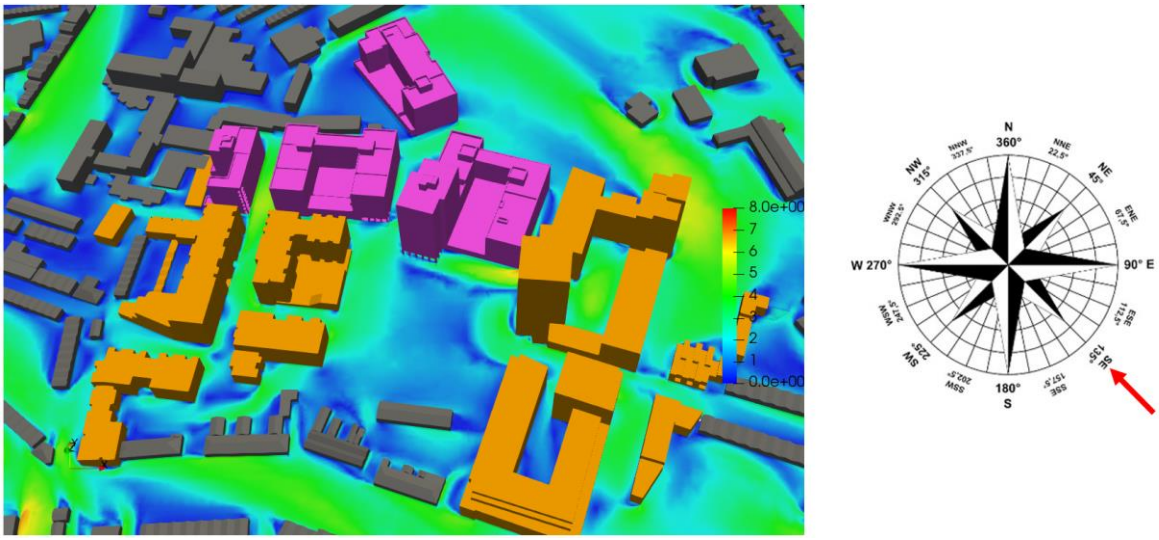


Figure 8-141: Wind at pedestrian level – Cumulative Scenario - direction SE

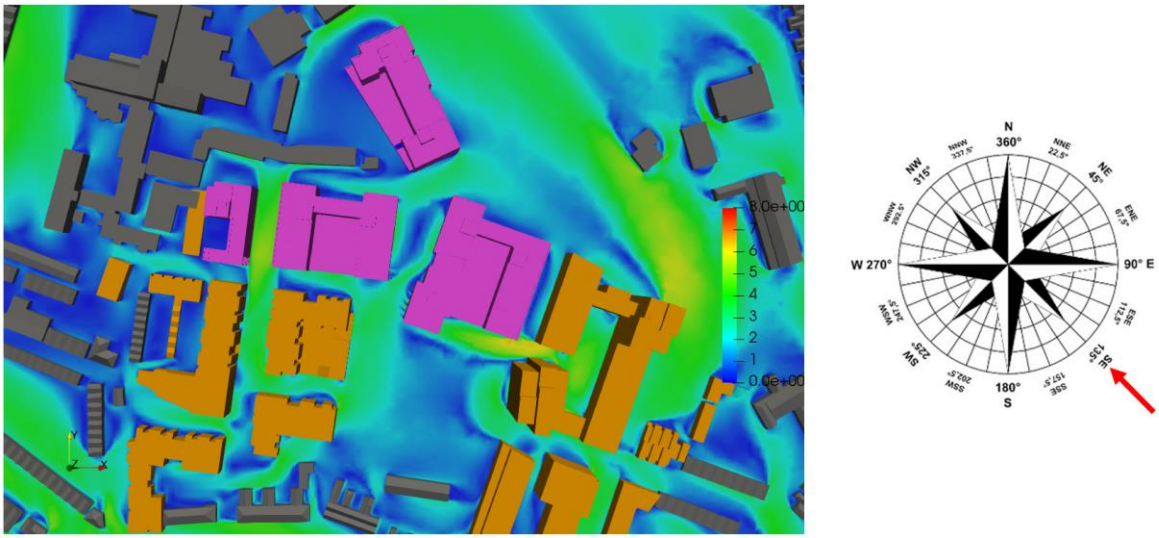


Figure 8-142: Wind at pedestrian level – Cumulative Scenario -Plan View SE

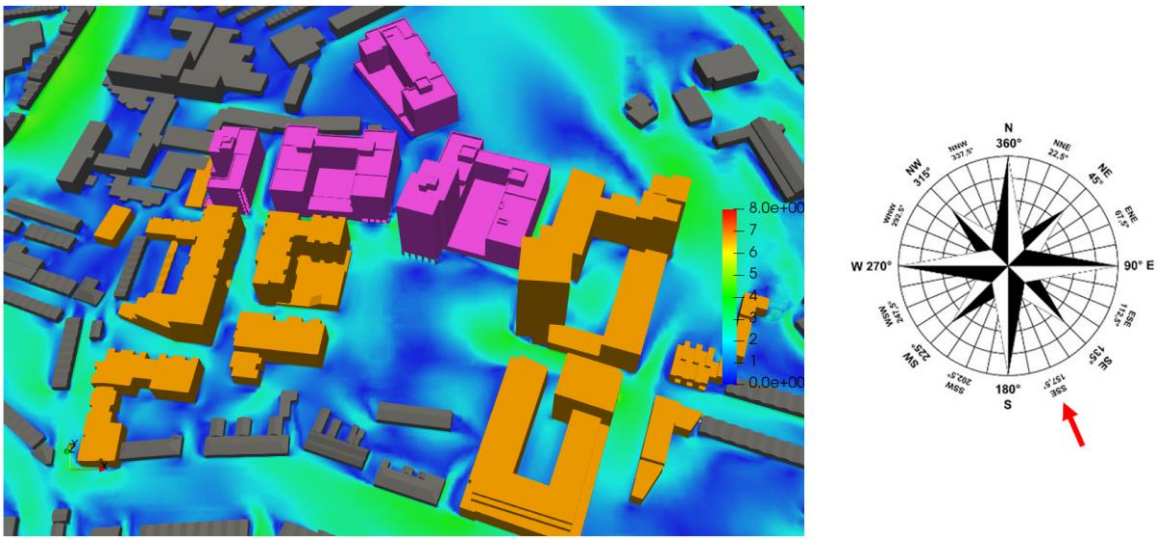


Figure 8-143: Wind at pedestrian level – Cumulative Scenario - direction SSE

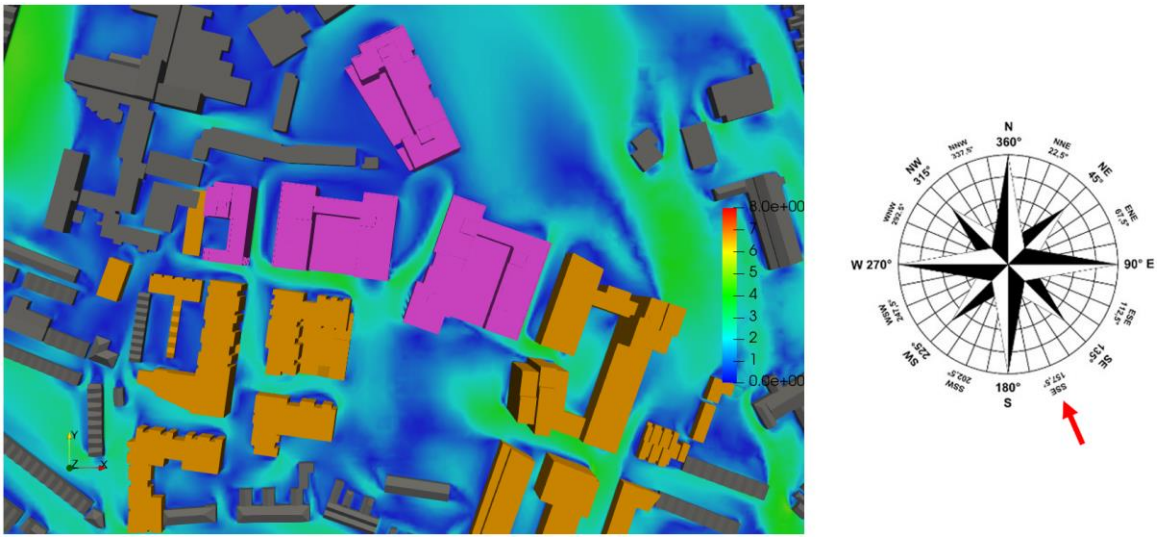


Figure 8-144: Wind at pedestrian level – Cumulative Scenario – Plan view - direction SSE

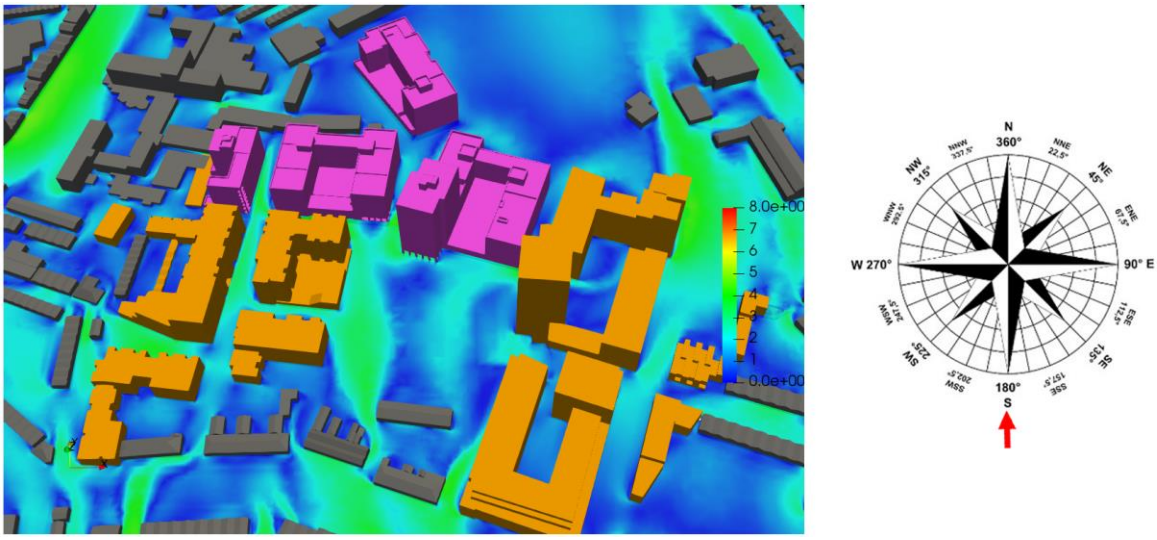


Figure 8-145: Wind at pedestrian level – Cumulative Scenario - direction S

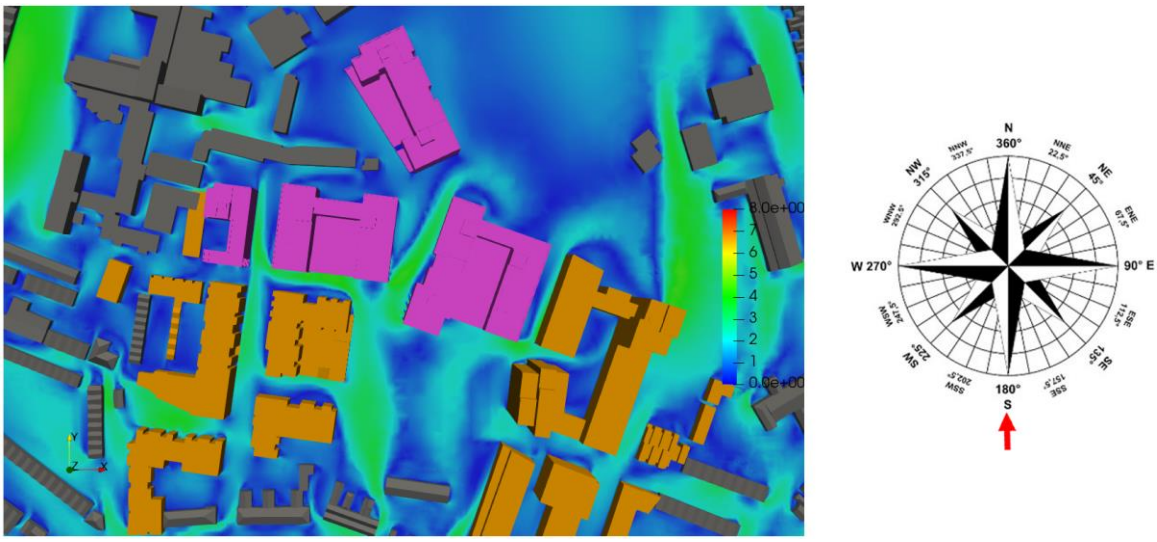


Figure 8-146: Wind at pedestrian level – Cumulative Scenario – Plan view - direction S

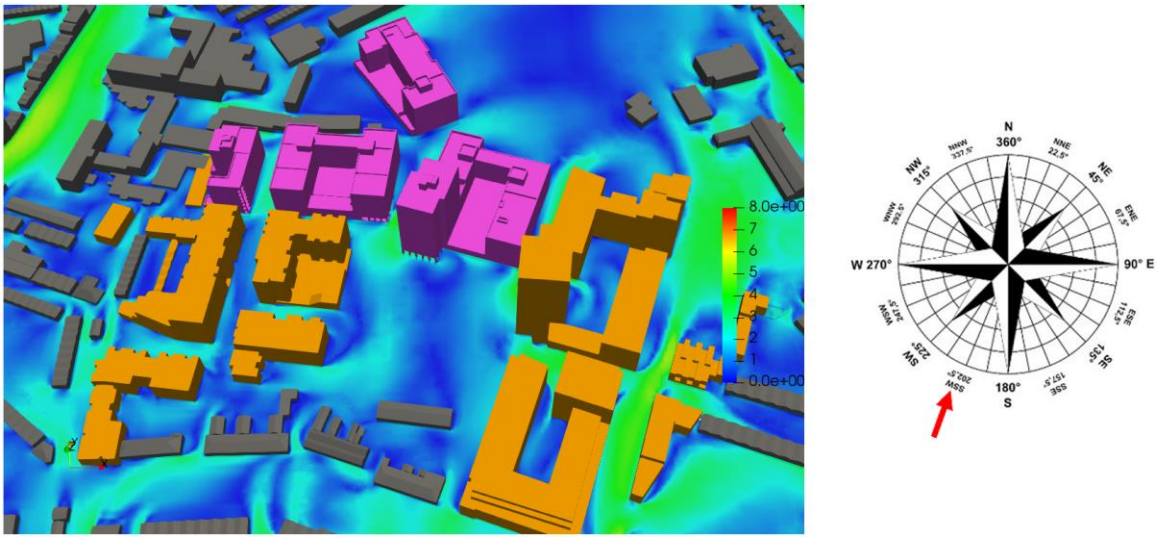


Figure 8-147: Wind at pedestrian level – Cumulative Scenario - direction SSW

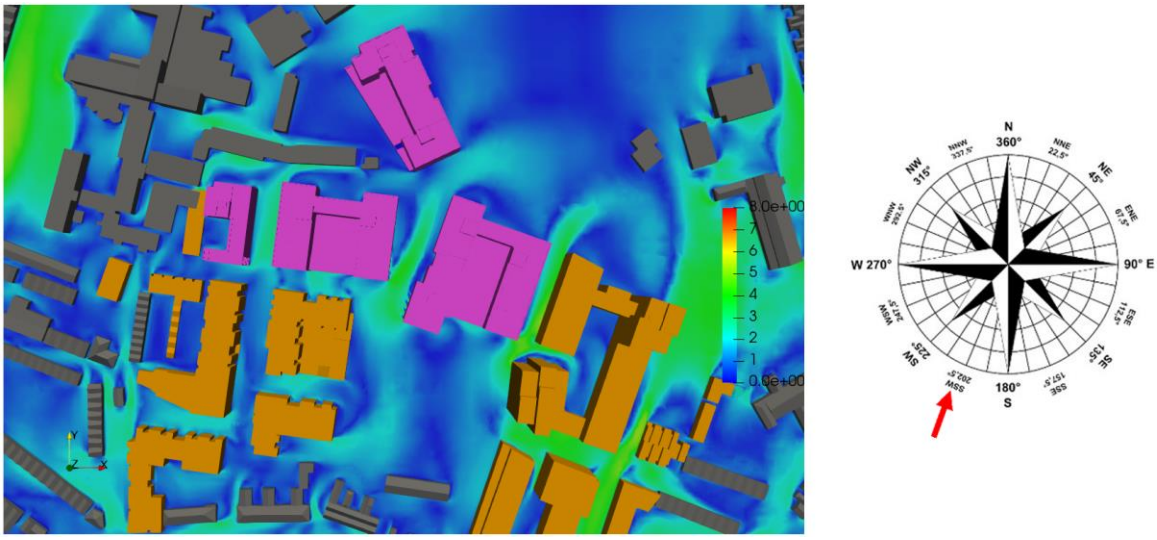


Figure 8-148: Wind at pedestrian level – Cumulative Scenario – Plan view - direction SSW

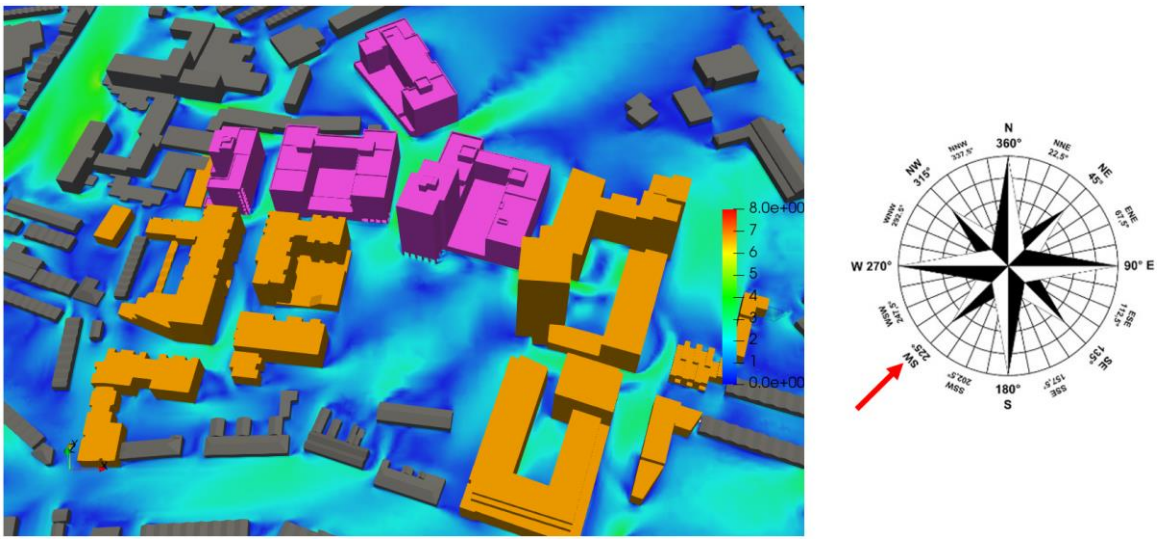


Figure 8-149: Wind at pedestrian level – Cumulative Scenario - direction SW

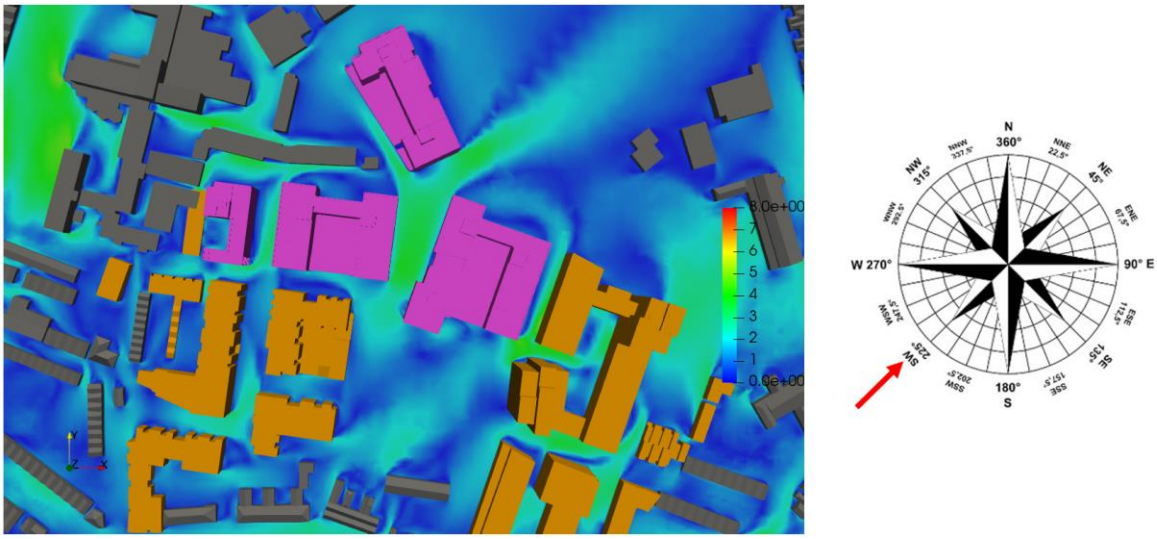


Figure 8-150: Wind at pedestrian level – Cumulative Scenario - Plan view - direction SW

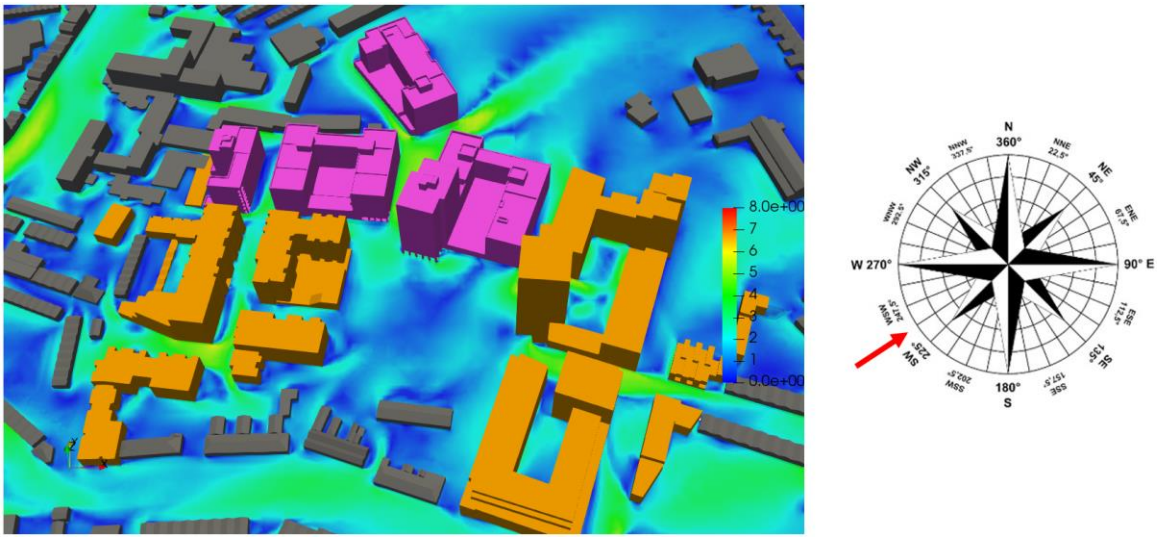


Figure 8-151: Wind at pedestrian level – Cumulative Scenario - direction SW

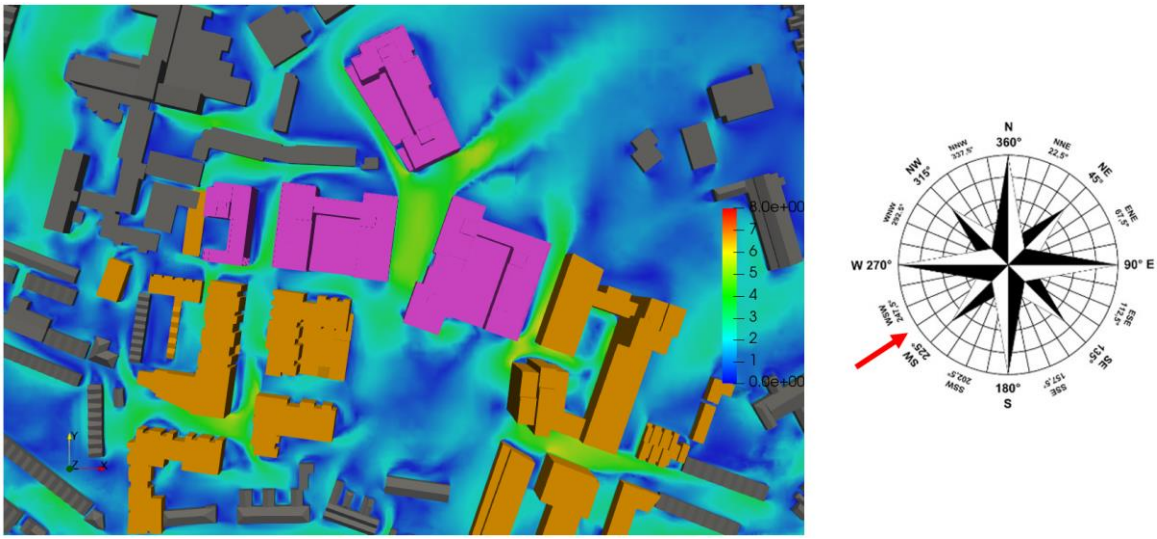


Figure 8-152: Wind at pedestrian level – Cumulative Scenario – Plan view - direction SW

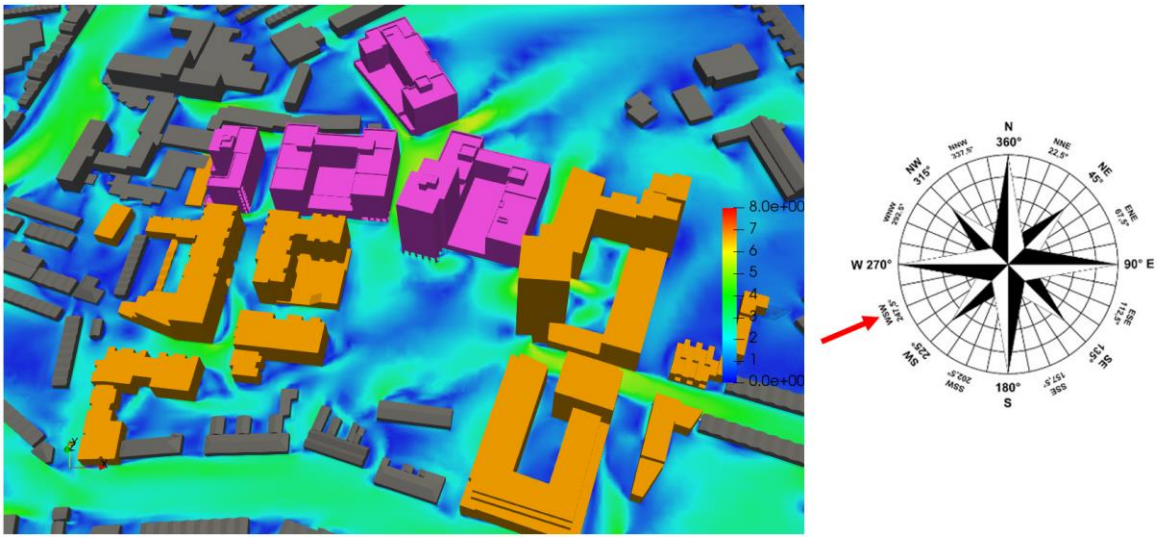


Figure 8-153: Wind at pedestrian level – Cumulative Scenario - direction WSW

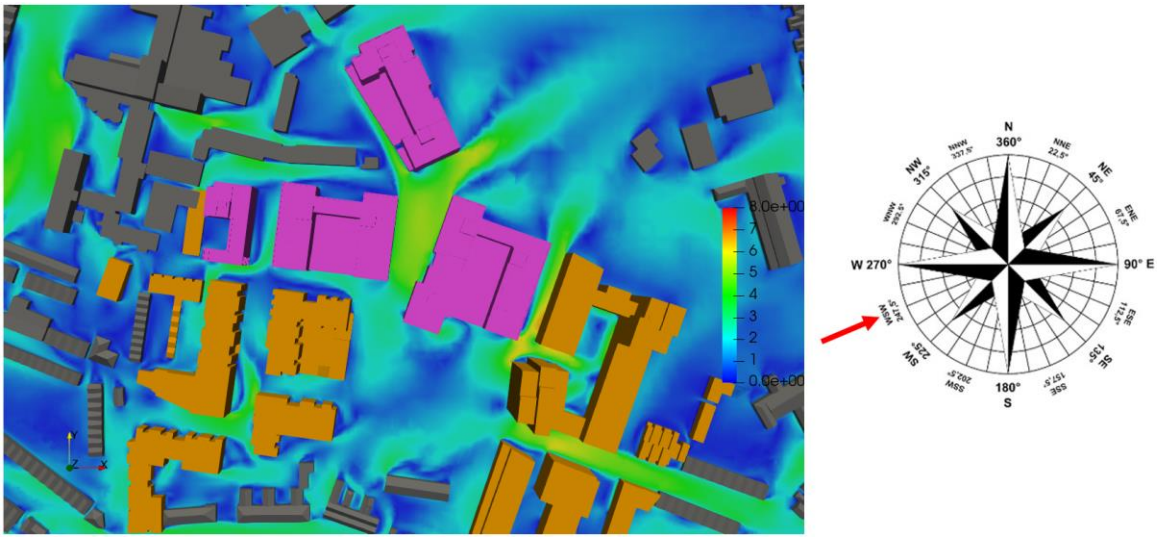


Figure 8-154: Wind at pedestrian level – Cumulative Scenario - Plan view - direction WSW

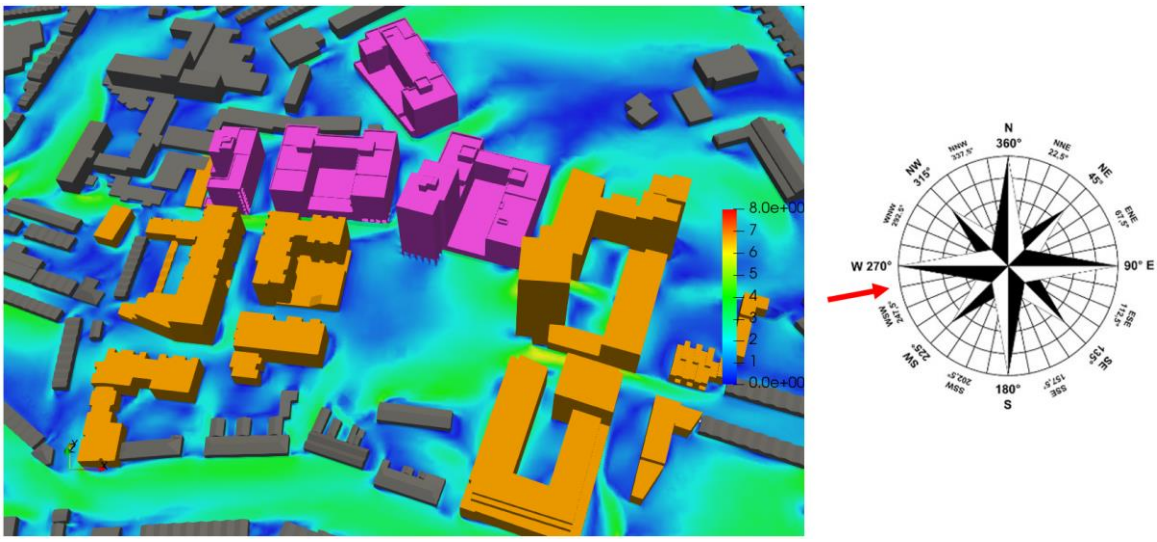


Figure 8-155: Wind at pedestrian level – Cumulative Scenario - direction WSWW

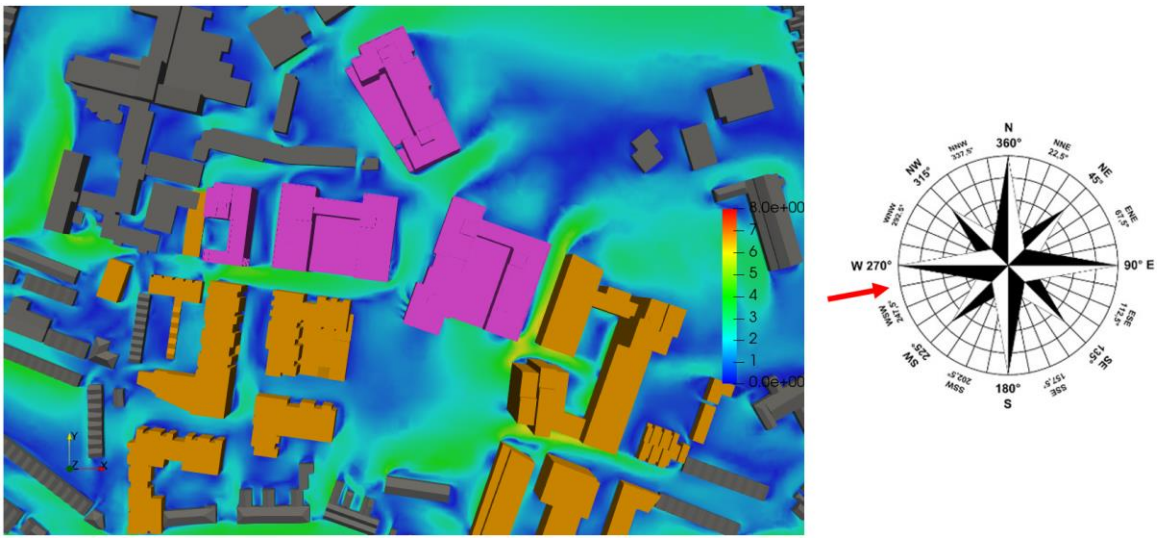


Figure 8-156: Wind at pedestrian level – Cumulative Scenario - Plan view - direction WSWW

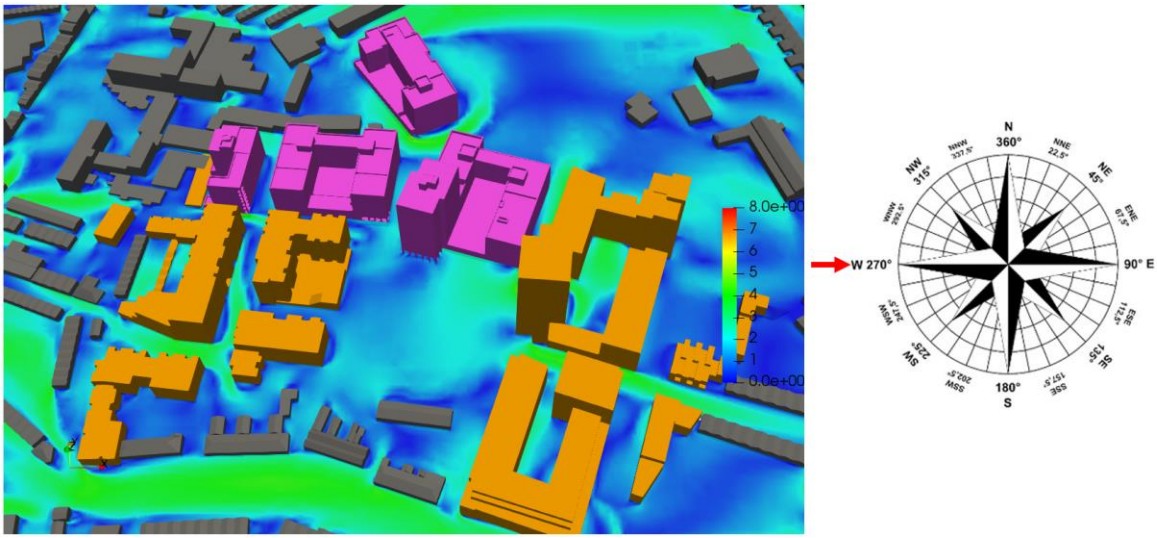


Figure 8-157: Wind at pedestrian level – Cumulative Scenario - direction W

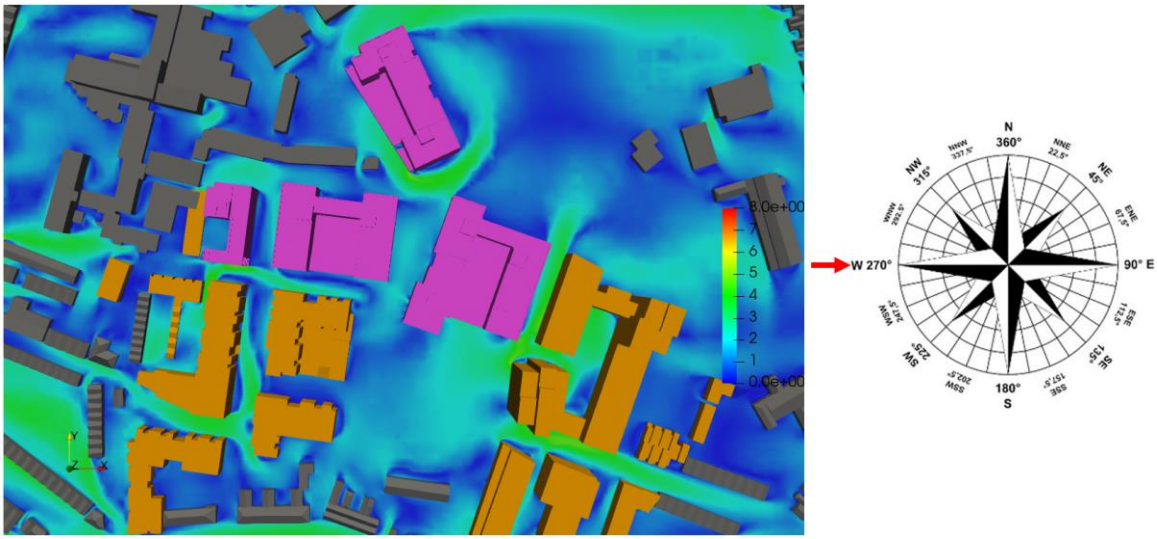


Figure 8-158: Wind at pedestrian level – Cumulative Scenario - Plan view - direction WSWW

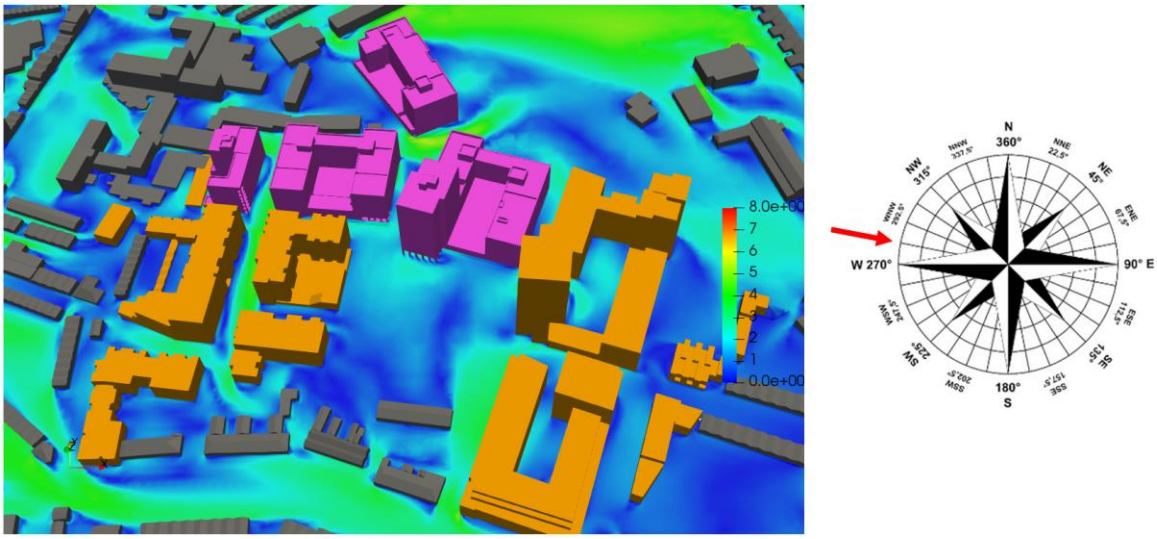


Figure 8-159: Wind at pedestrian level – Cumulative Scenario - direction WWNW

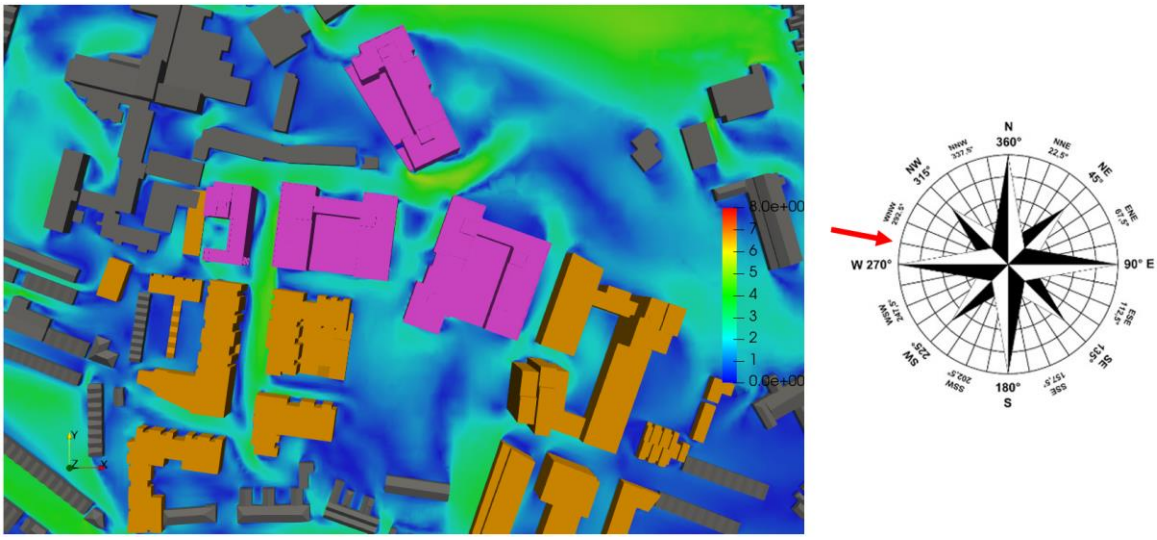


Figure 8-160: Wind at pedestrian level – Cumulative Scenario - Plan view - direction WWNW

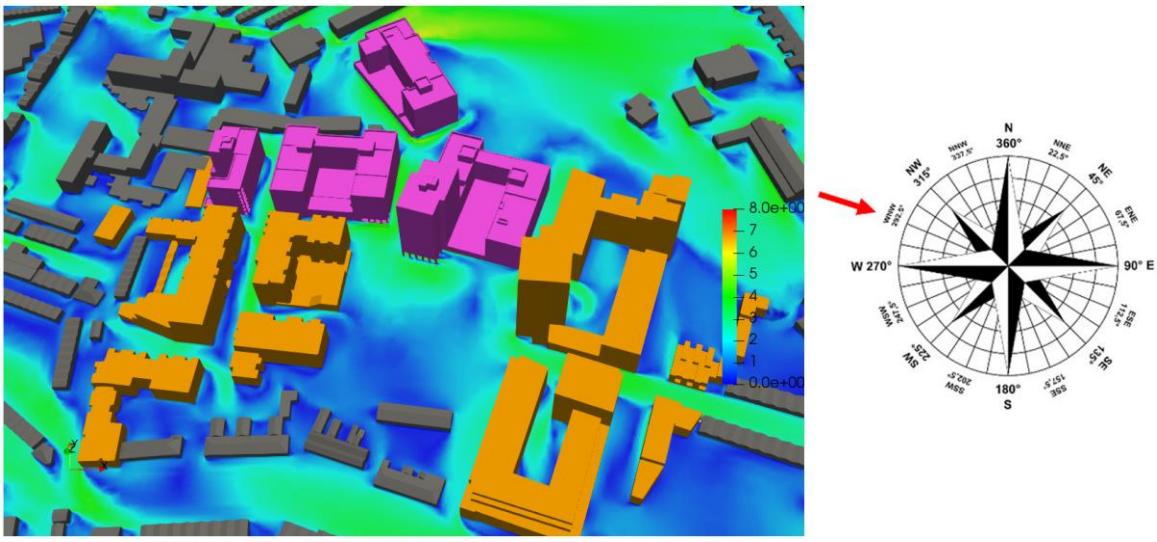


Figure 8-161: Wind at pedestrian level – Cumulative Scenario - direction WNW

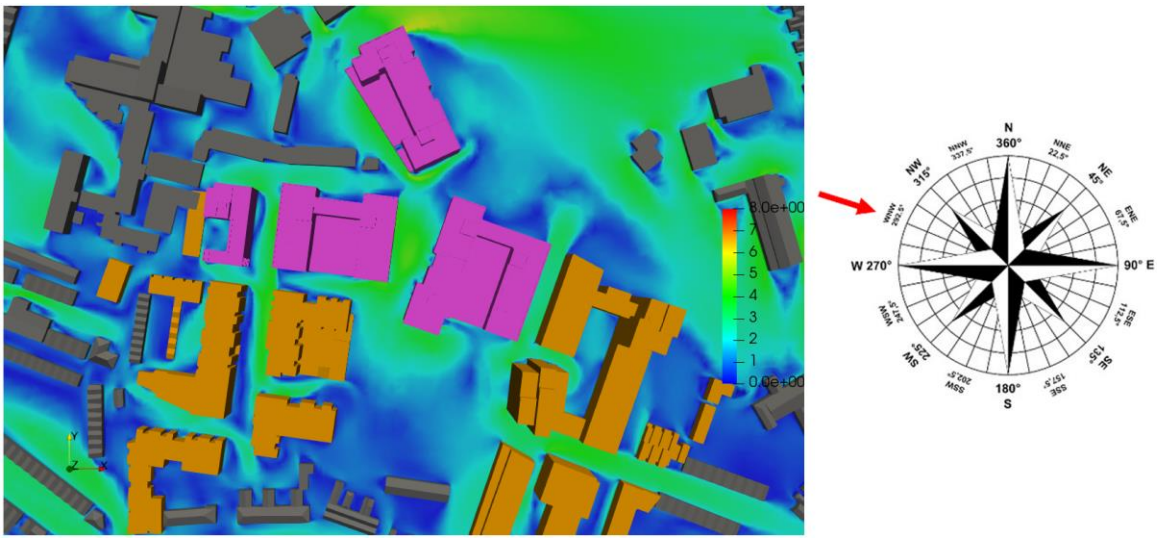


Figure 8-162: Wind at pedestrian level – Cumulative Scenario – Plan view - direction WNW

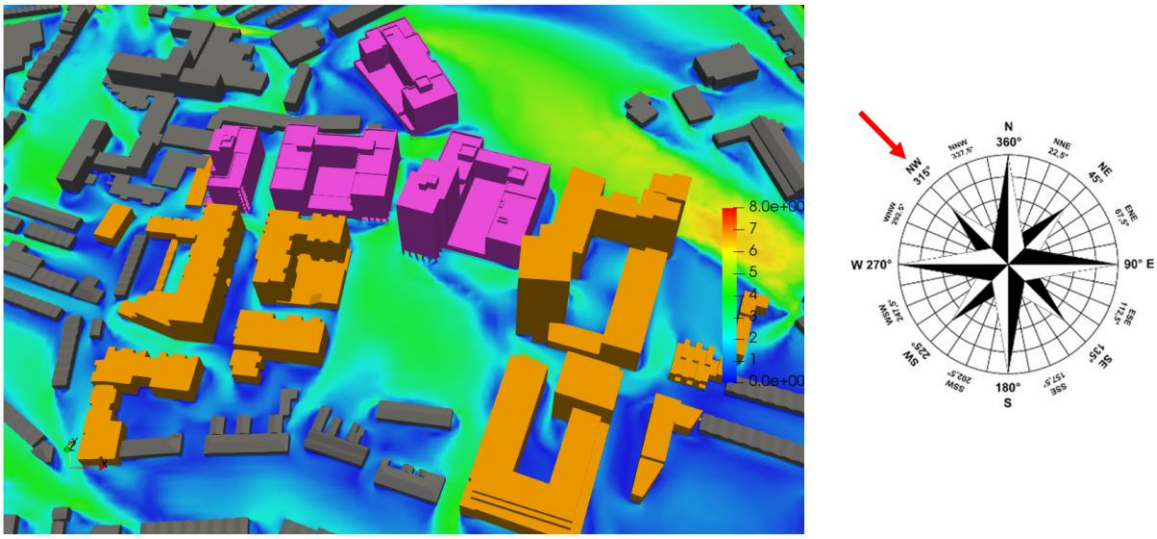


Figure 8-163: Wind at pedestrian level – Cumulative Scenario - direction NW

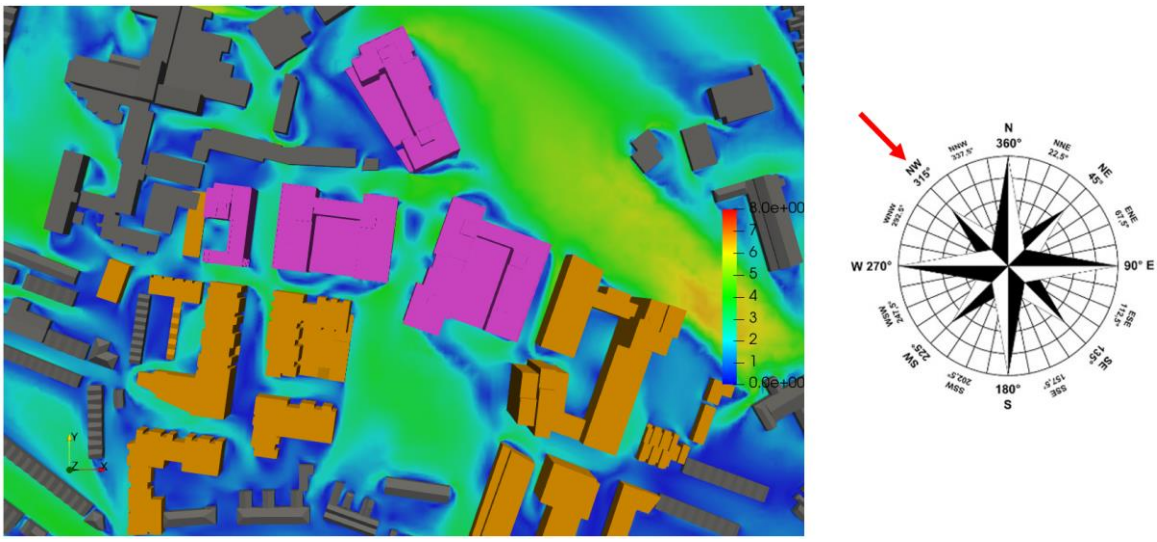


Figure 8-164: Wind at pedestrian level – Cumulative Scenario – Plan view - direction NW

8.2.5.4.2 Wind speeds on sensitive receptors (Balconies-vertical plane)

Results of velocity across the balconies in the vertical plane are presented in the following images.

Some local accelerations can be found on the top-level balconies when the wind is blowing from west-south-west direction. However, these velocities are below the threshold values defined by the acceptance criteria and therefore are not critical for safety. Furthermore, balconies are likely to be used as amenity space mostly during spring/summer season when the wind is calmer.

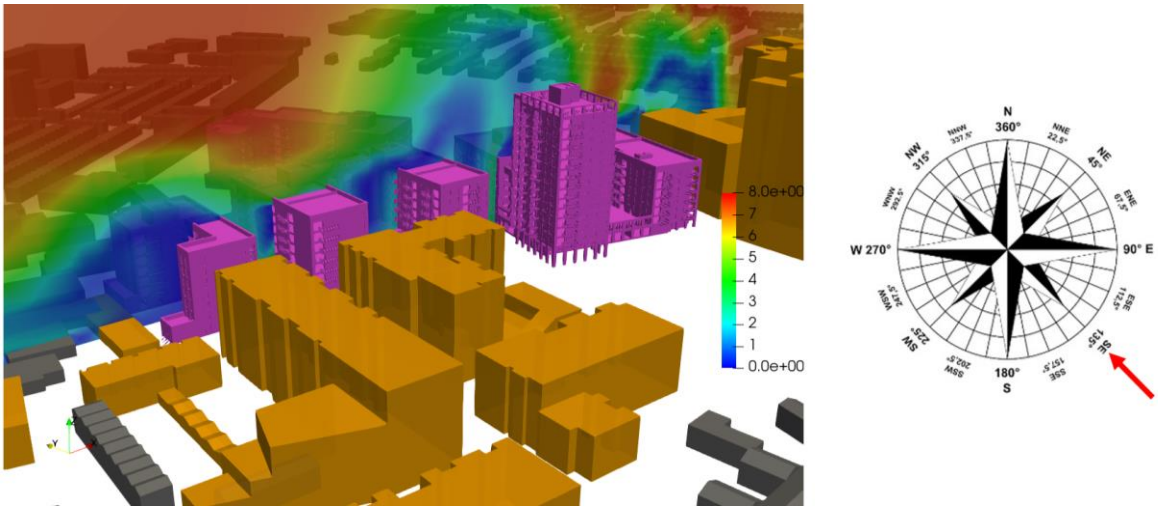


Figure 8-165: Wind across development – Cumulative Scenario - direction SE

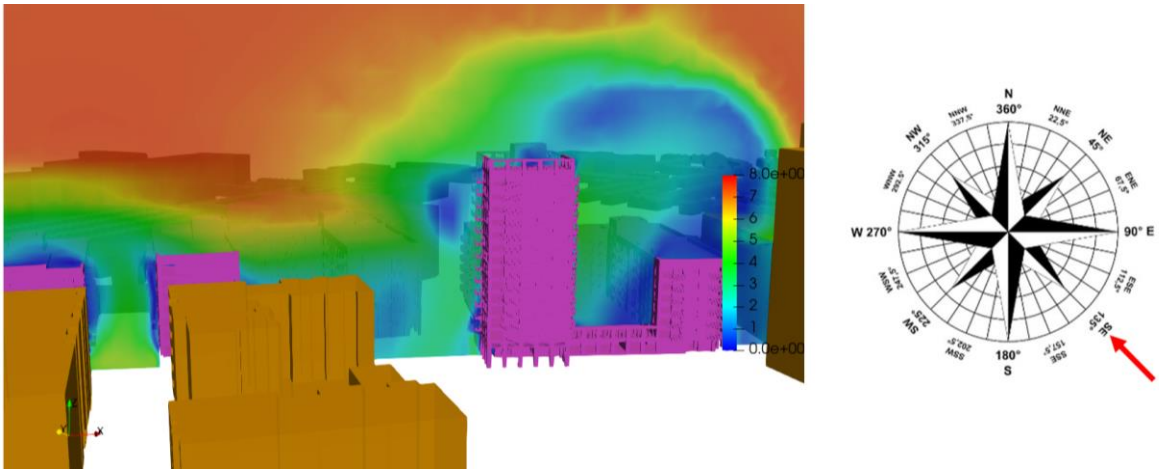


Figure 8-166:Wind across block DCC3 - Cumulative Scenario - direction SE

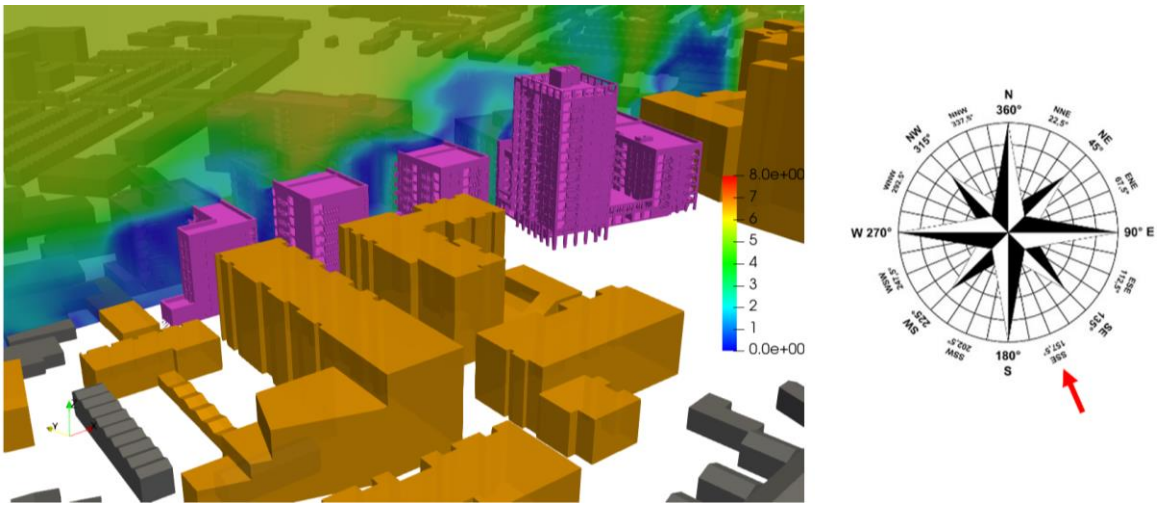


Figure 8-167: Wind across development – Cumulative Scenario - direction SSE

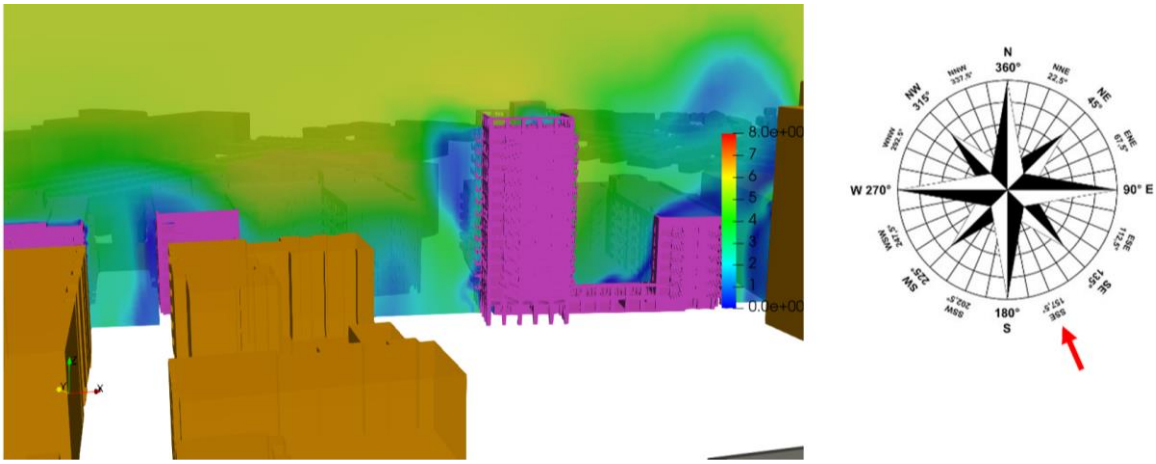


Figure 8-168: Wind across block DCC3 - Cumulative Scenario -direction SSE

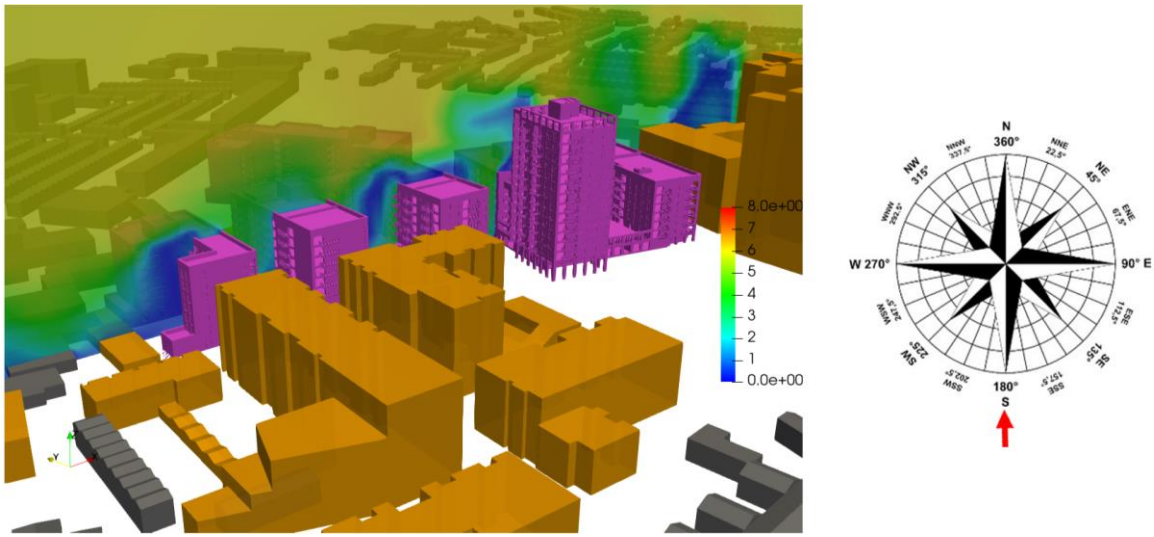


Figure 8-169: Wind across development – Cumulative Scenario - direction S

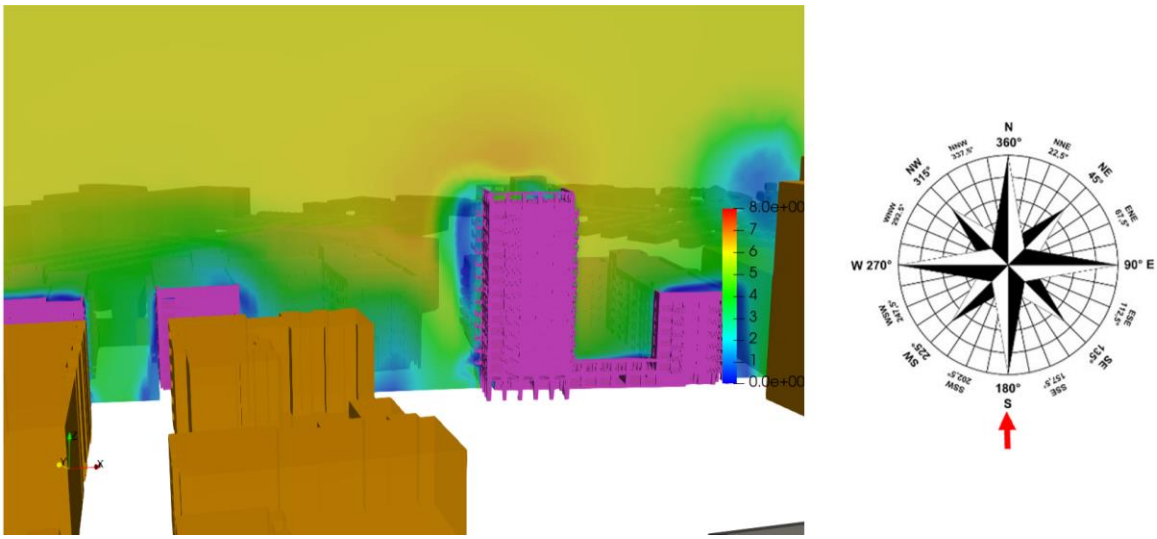


Figure 8-170: Wind across block DCC3 - Cumulative Scenario - direction S

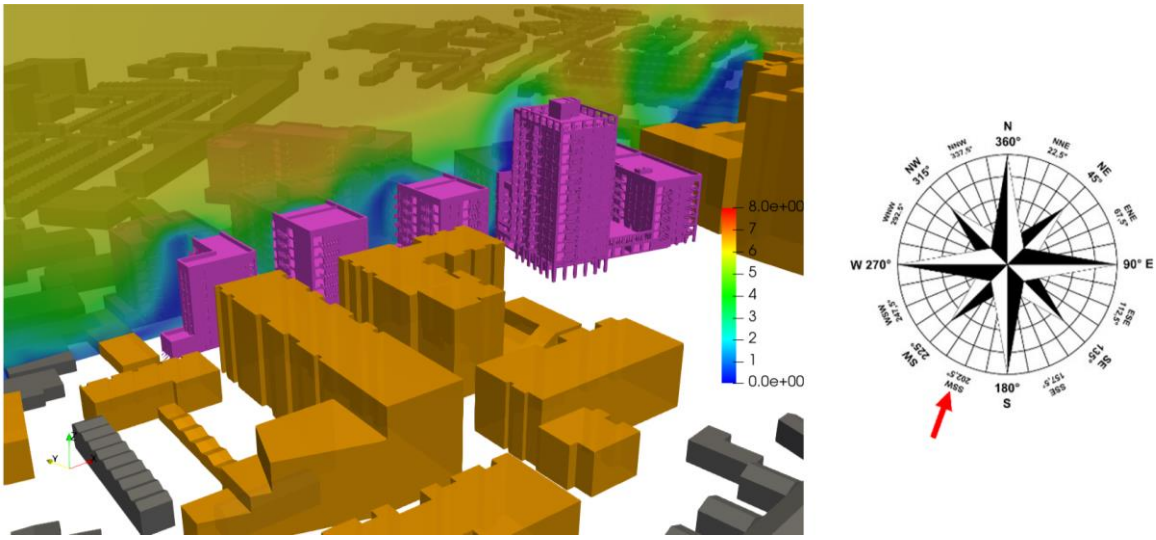


Figure 8-171: Wind across development – Cumulative Scenario - direction SSW

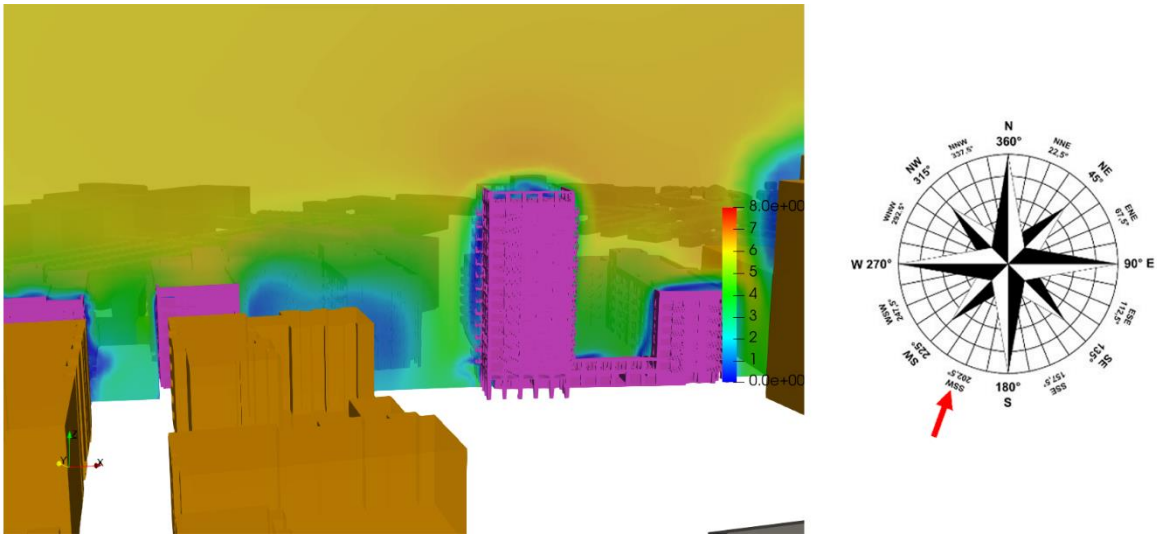


Figure 8-172: Wind across block DCC3 - Cumulative Scenario - direction SSW

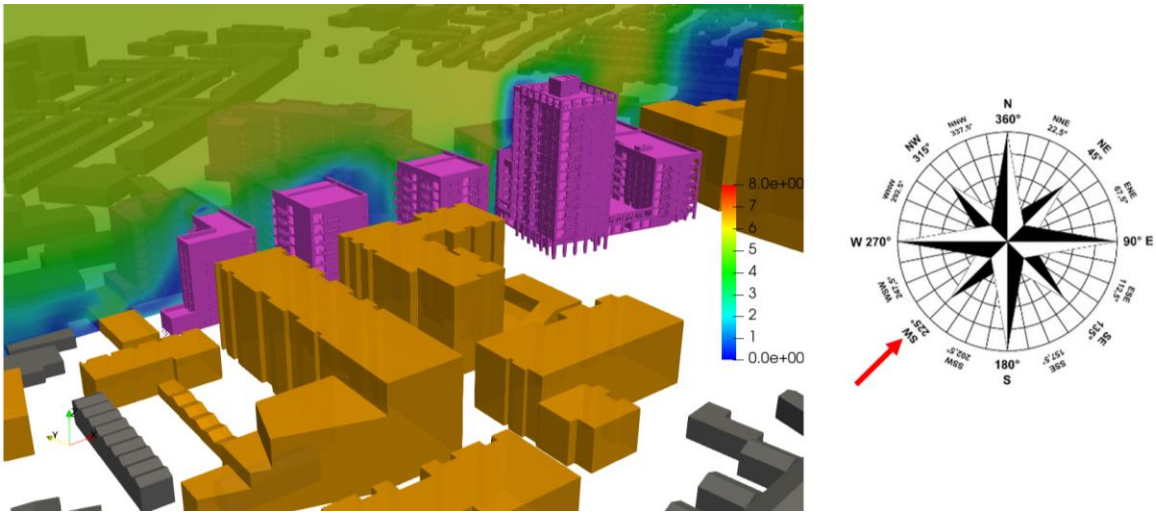


Figure 8-173: Wind across development – Cumulative Scenario - direction SW

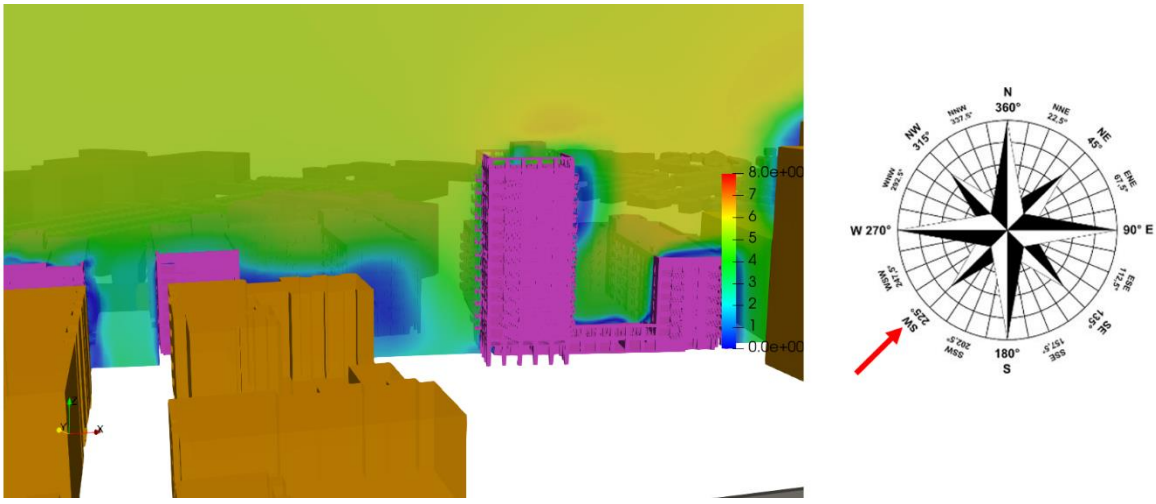


Figure 8-174: Wind across block DCC3 - Cumulative Scenario - direction SW

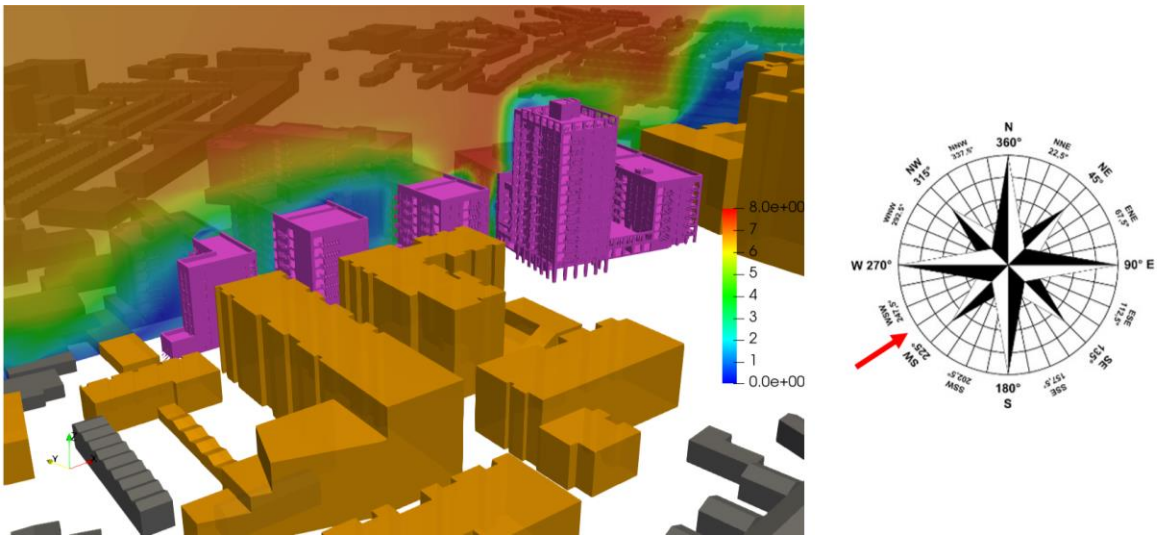


Figure 8-175: Wind across development – Cumulative Scenario - direction SWWSW

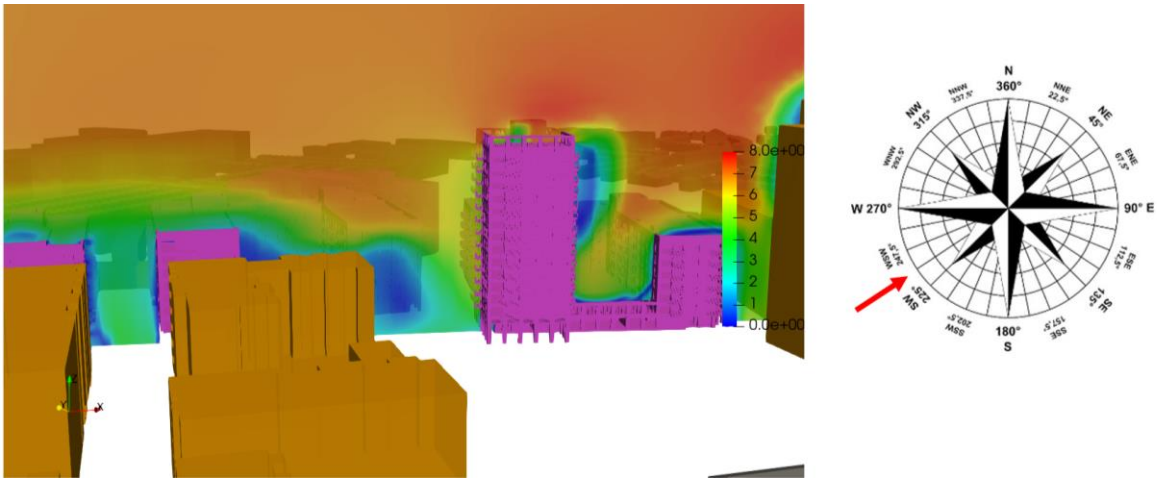


Figure 8-176: Wind across block DCC3 - Cumulative Scenario - direction SWWSW

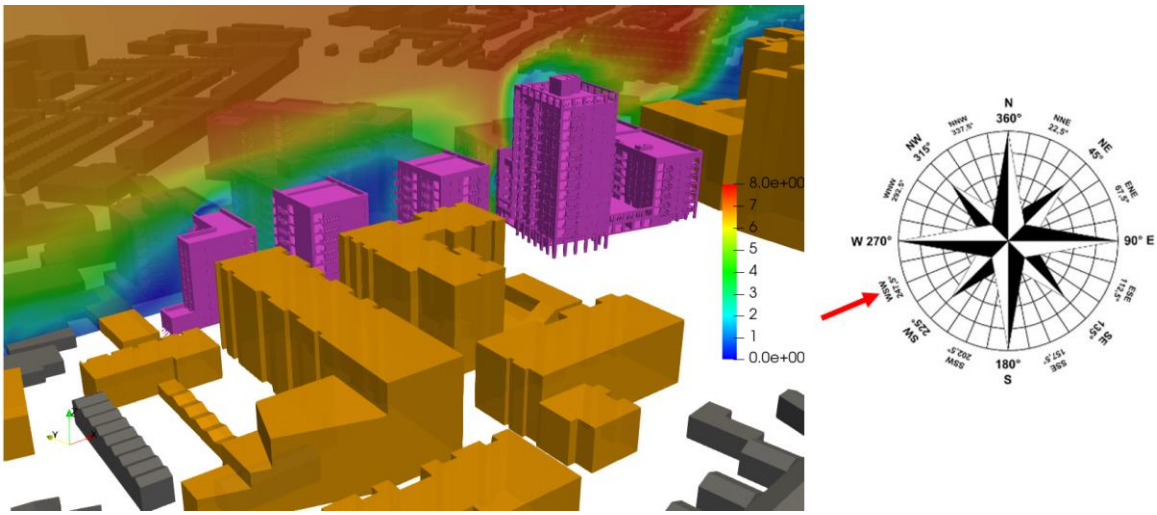


Figure 8-177: Wind across development – Cumulative Scenario - direction WSW

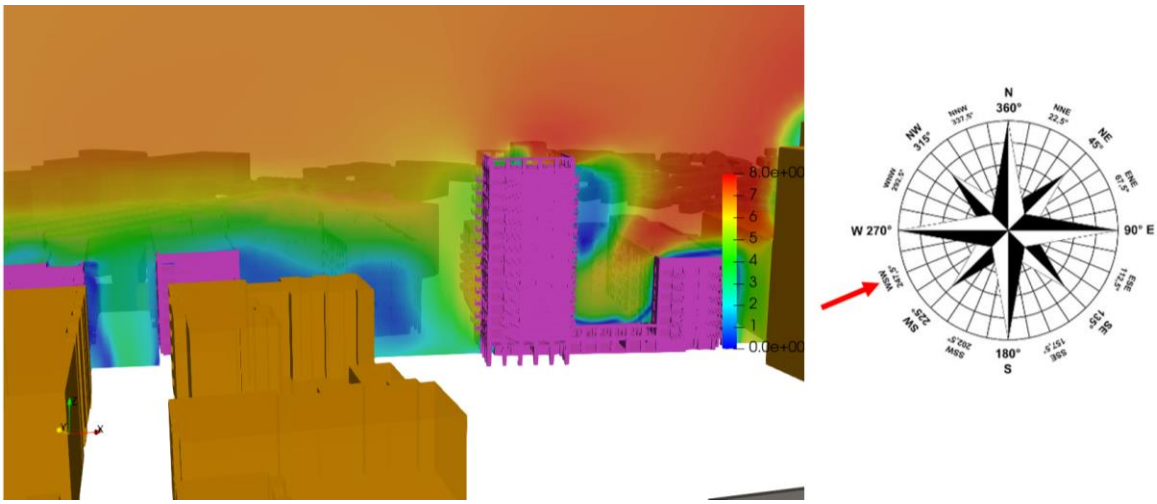


Figure 8-178: Wind across block DCC3 - Cumulative Scenario - direction WSW

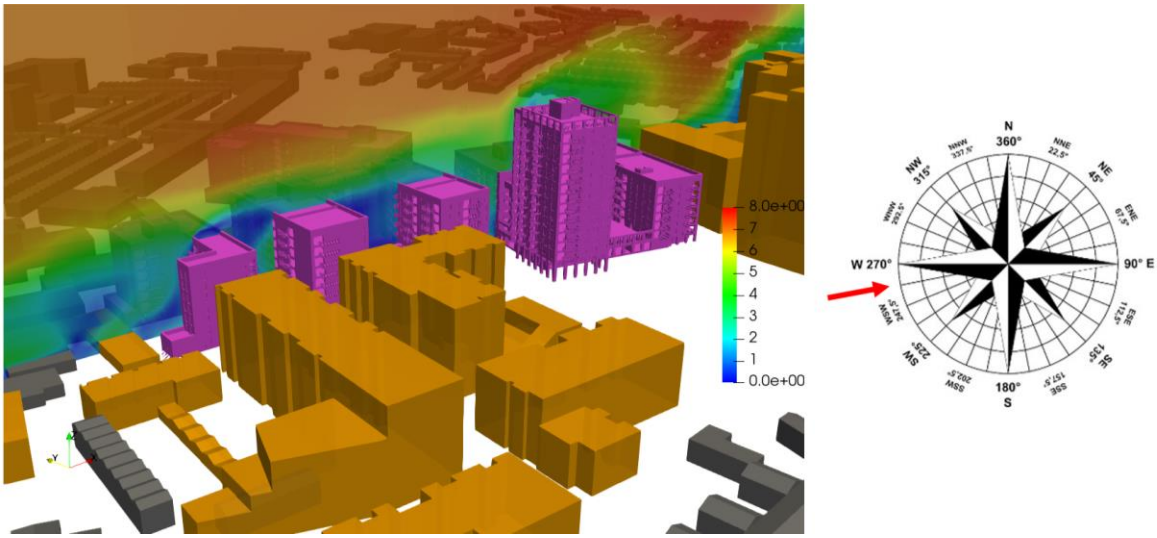


Figure 8-179: Wind across development – Cumulative Scenario - direction WSWW

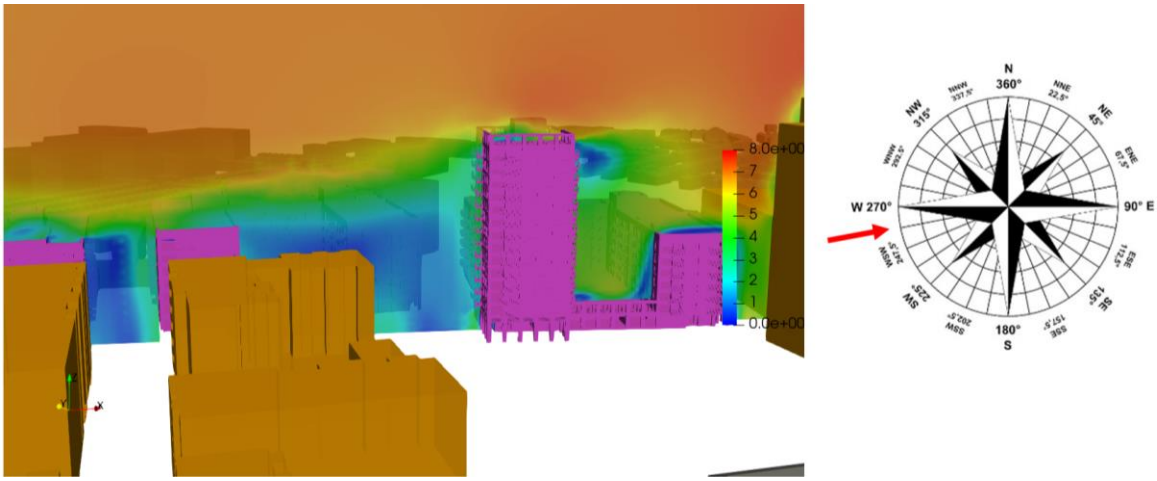


Figure 8-180: Wind across block DCC3 - Cumulative Scenario - direction WSWW

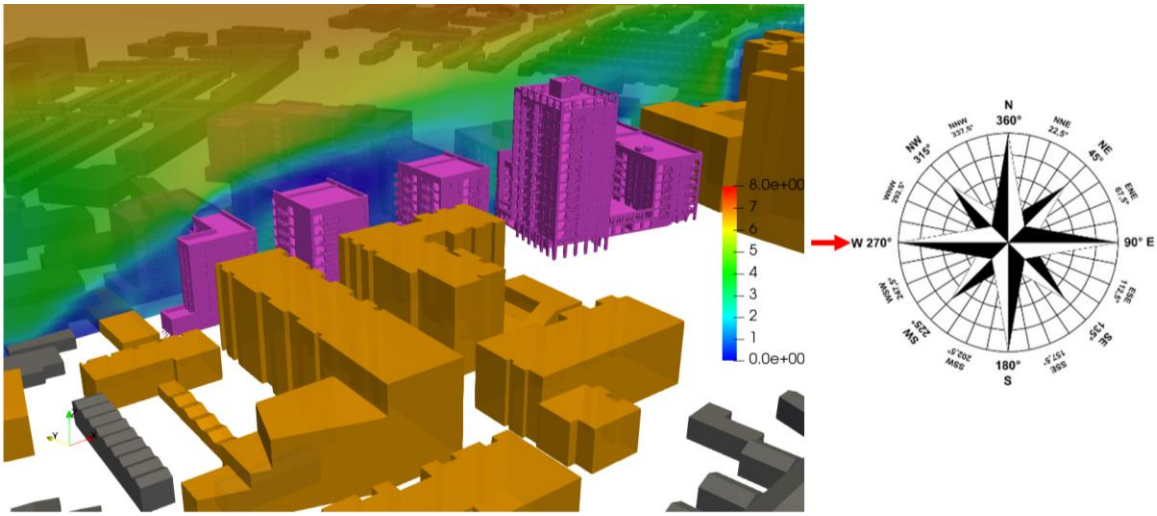


Figure 8-181: Wind across development – Cumulative Scenario - direction W

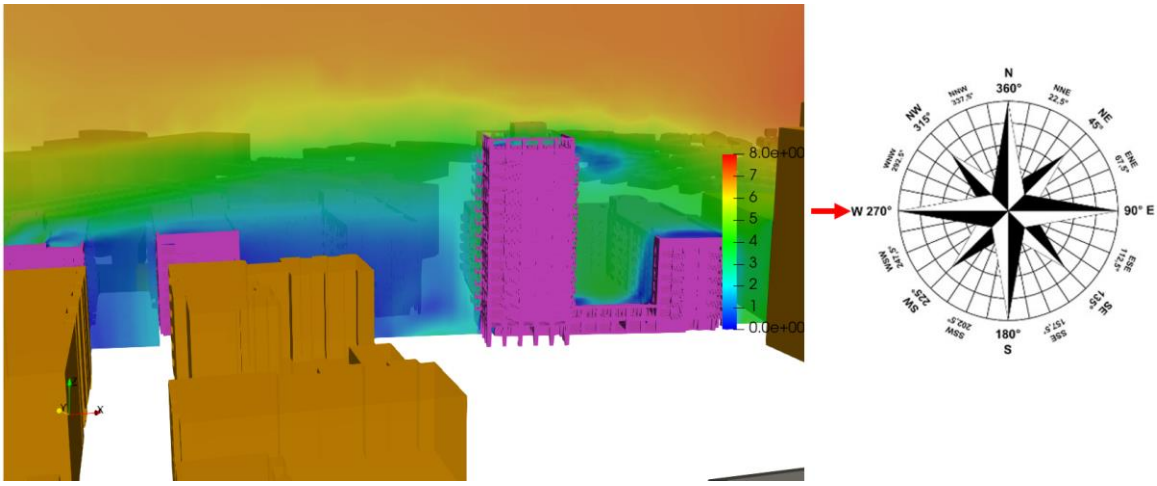


Figure 8-182: Wind across block DCC3 - Cumulative Scenario - direction W

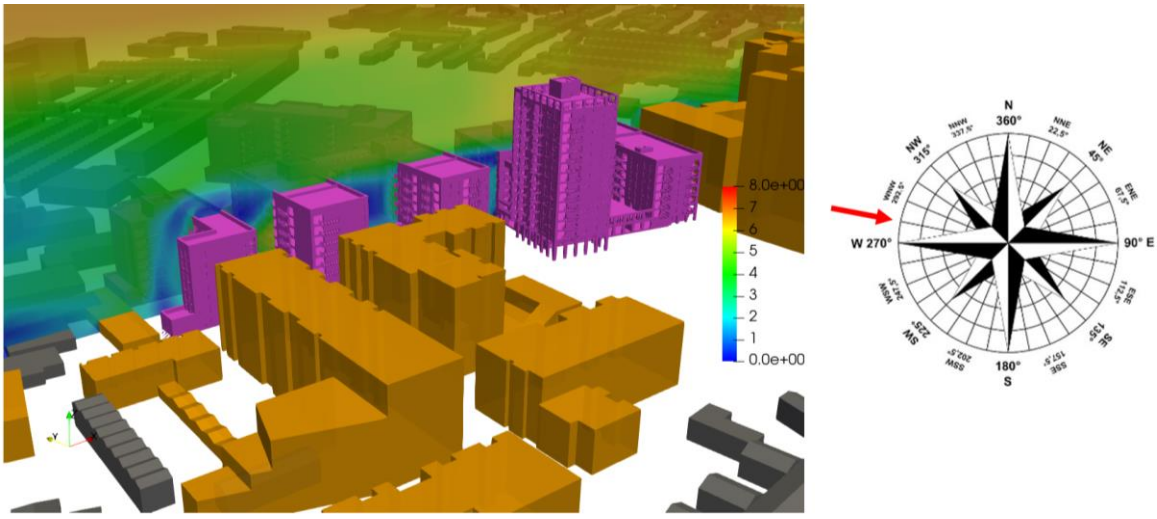


Figure 8-183: Wind across development – Cumulative Scenario - direction WWNW

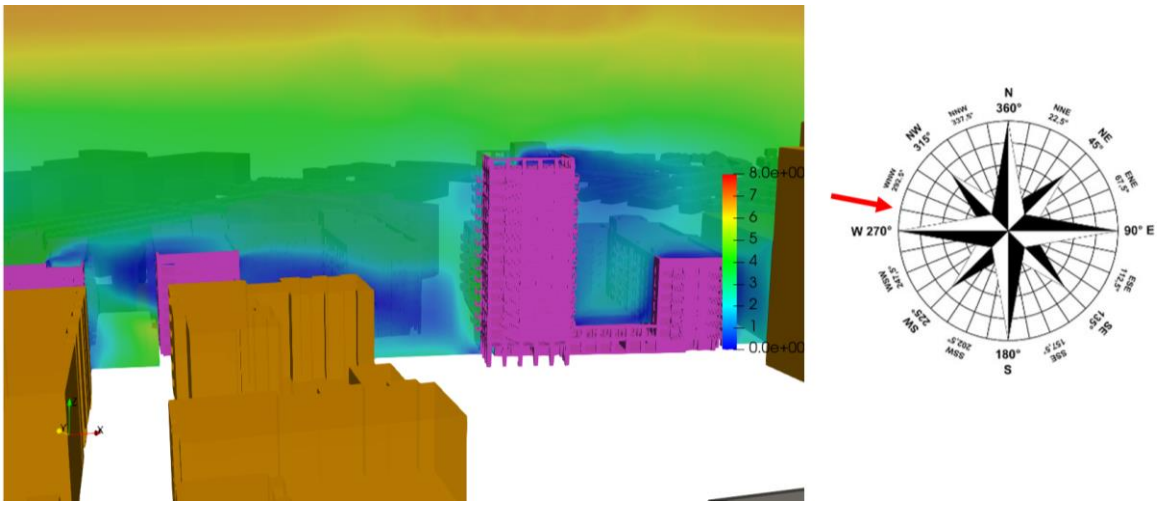


Figure 8-184: Wind across block DCC3 - Cumulative Scenario - direction WWNW

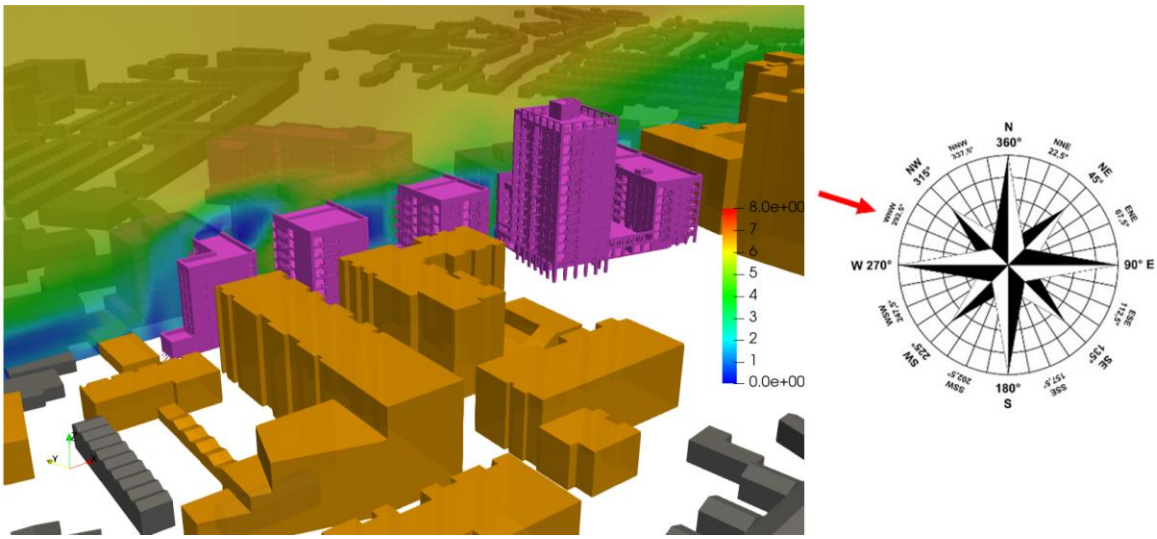


Figure 8-185: Wind across development – Cumulative Scenario - direction WNW

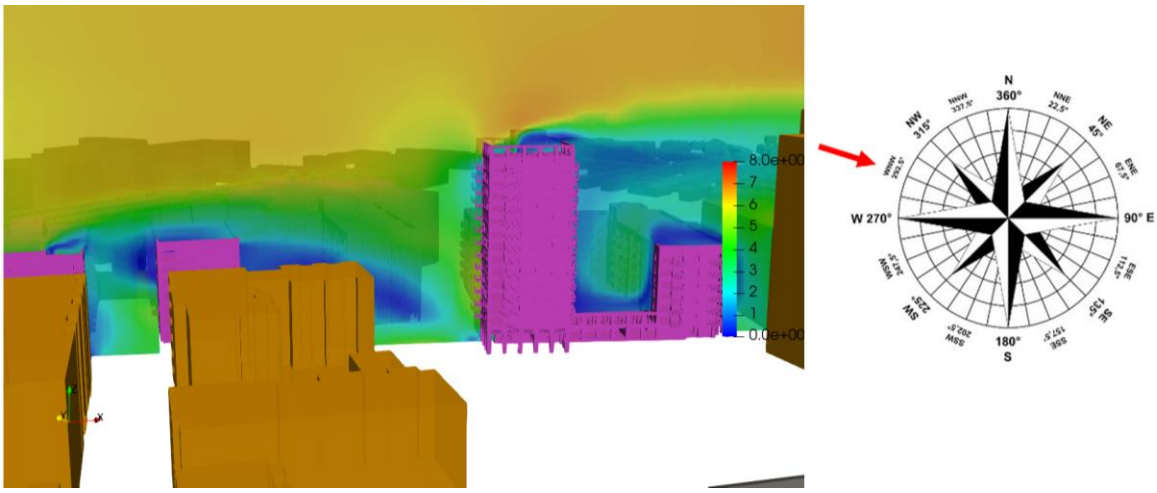


Figure 8-186: Wind across block DCC3 - Cumulative Scenario - direction WNW

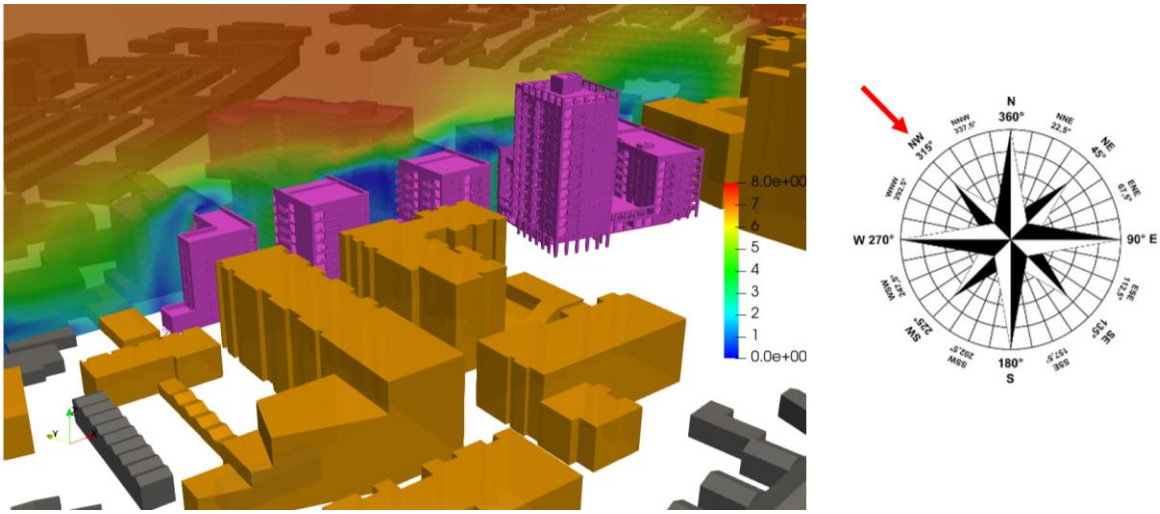


Figure 8-187: Wind across development – Cumulative Scenario - direction NW

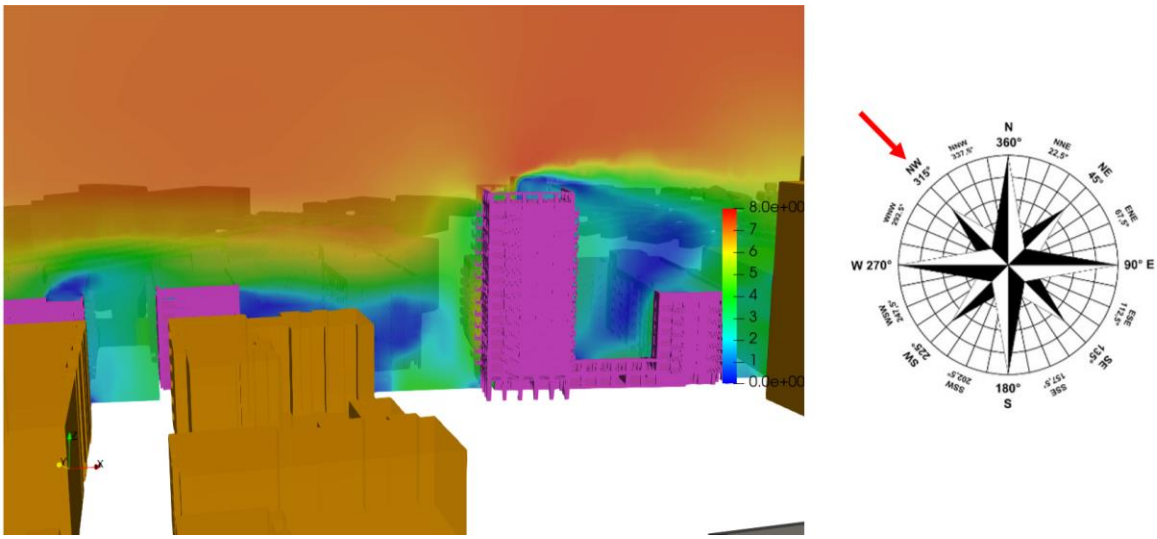


Figure 8-188: Wind across block DCC3 – Cumulative Scenario - direction NW

8.2.5.4.3 Cumulative Scenario Wind Microclimate

The wind flow results simulating the different direction and wind speeds, are combined with wind frequencies of occurrence to obtain comfort ratings at pedestrian level in all areas included within the model. The comparison of comfort ratings with intended pedestrian activities is shown in the Lawson Comfort and Distress Map that follows. The comfort/distress conditions are presented using a colour coded diagram (Figure 8-189) formulated in accordance with the Lawson Criteria.

Figure 8-189: Lawson criteria scale

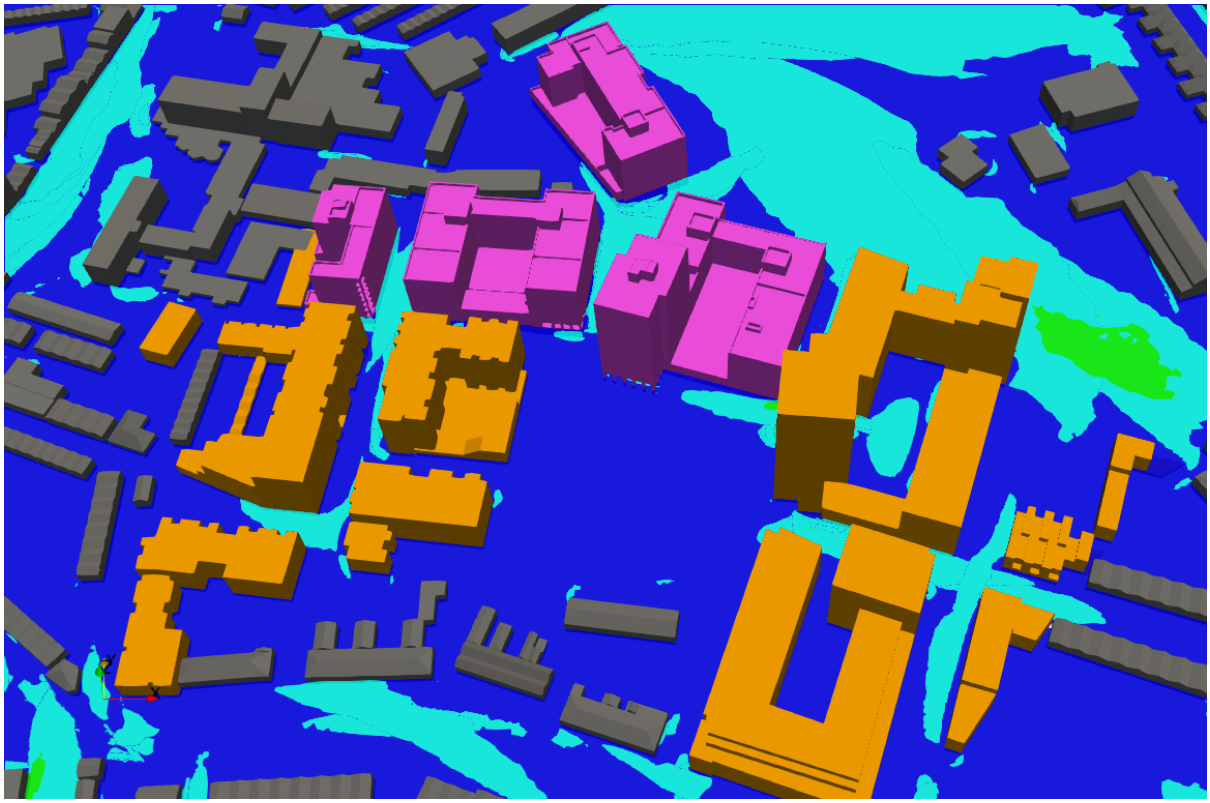


Figure 8-190: Wind comfort-distress map (Lawson Map) - Cumulative scenario

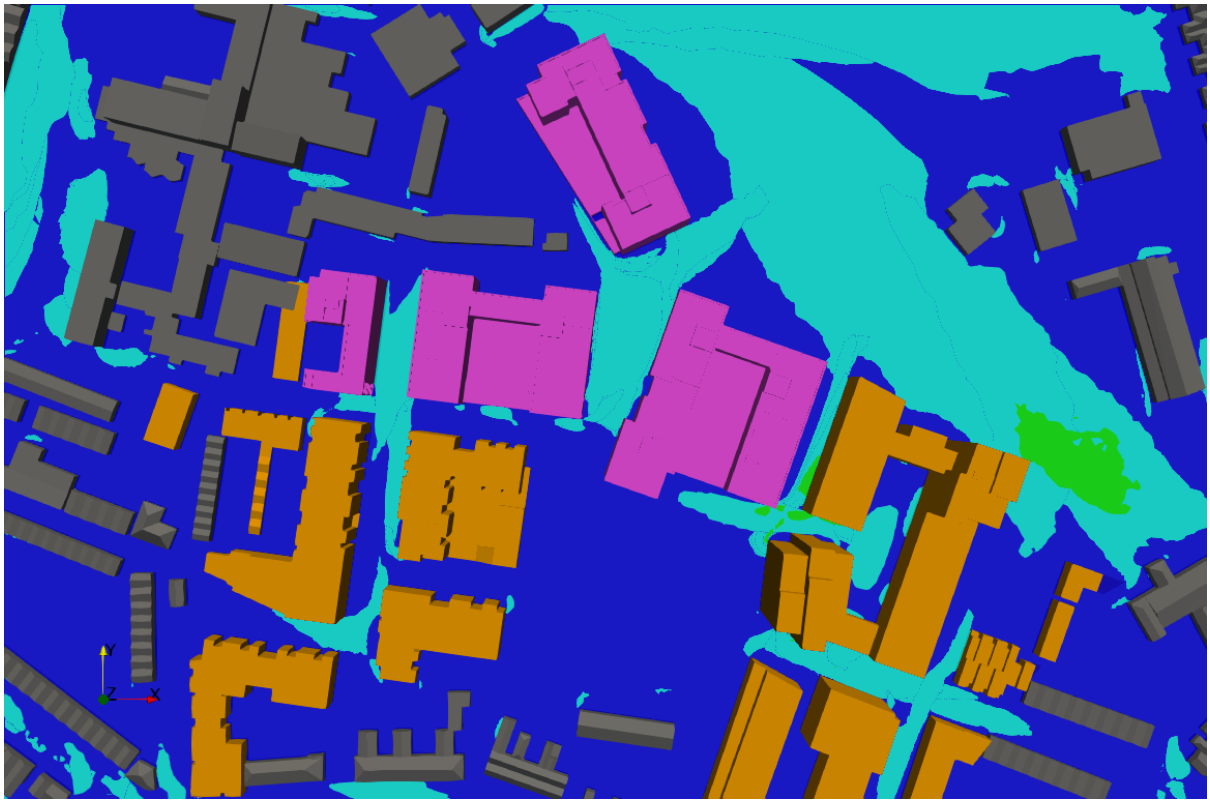


Figure 8-191: Wind comfort-distress map (Lawson Map) - Cumulative scenario- top view

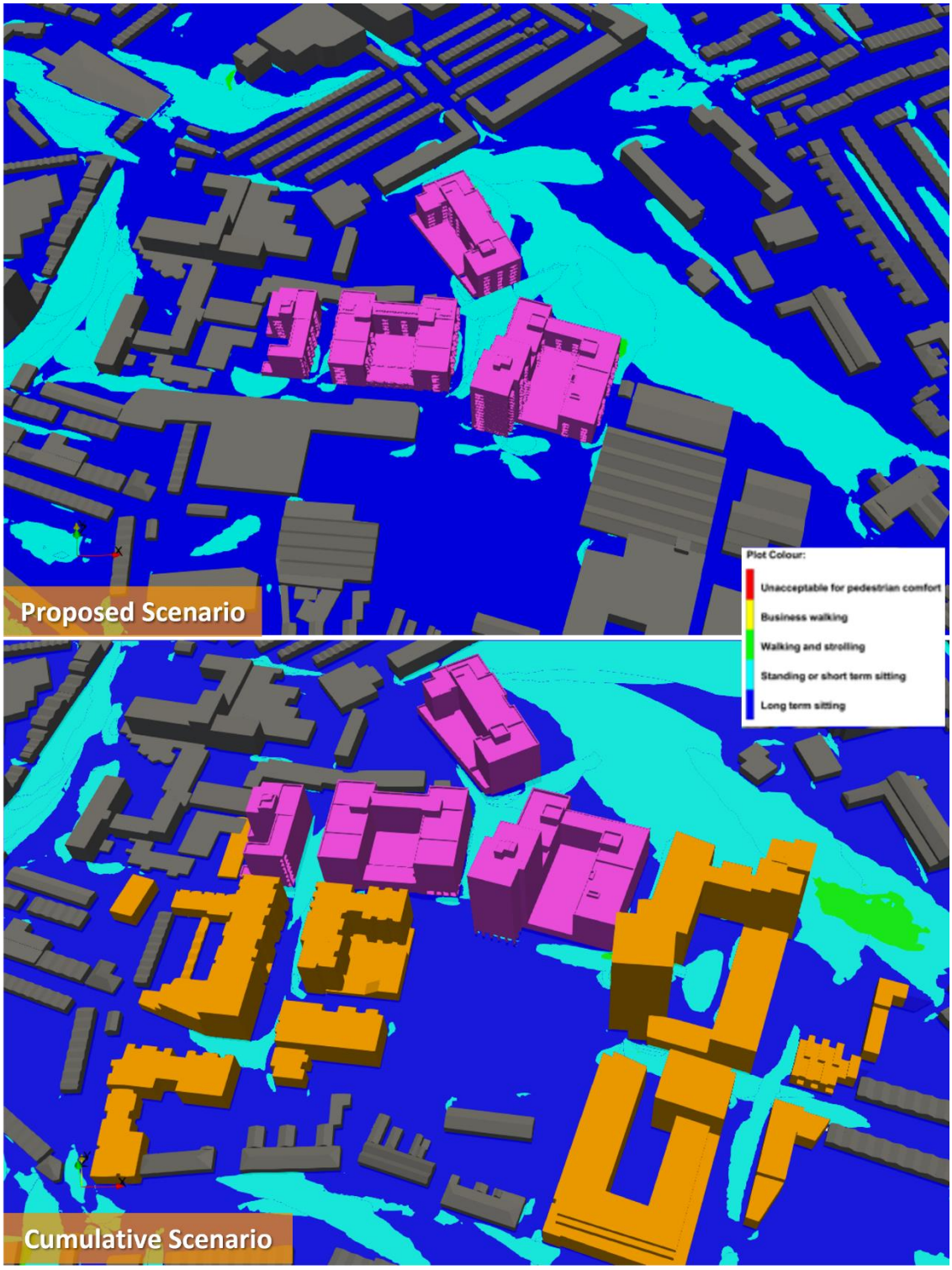


Figure 8-192: Wind comfort/distress map – Proposed versus Cumulative scenario

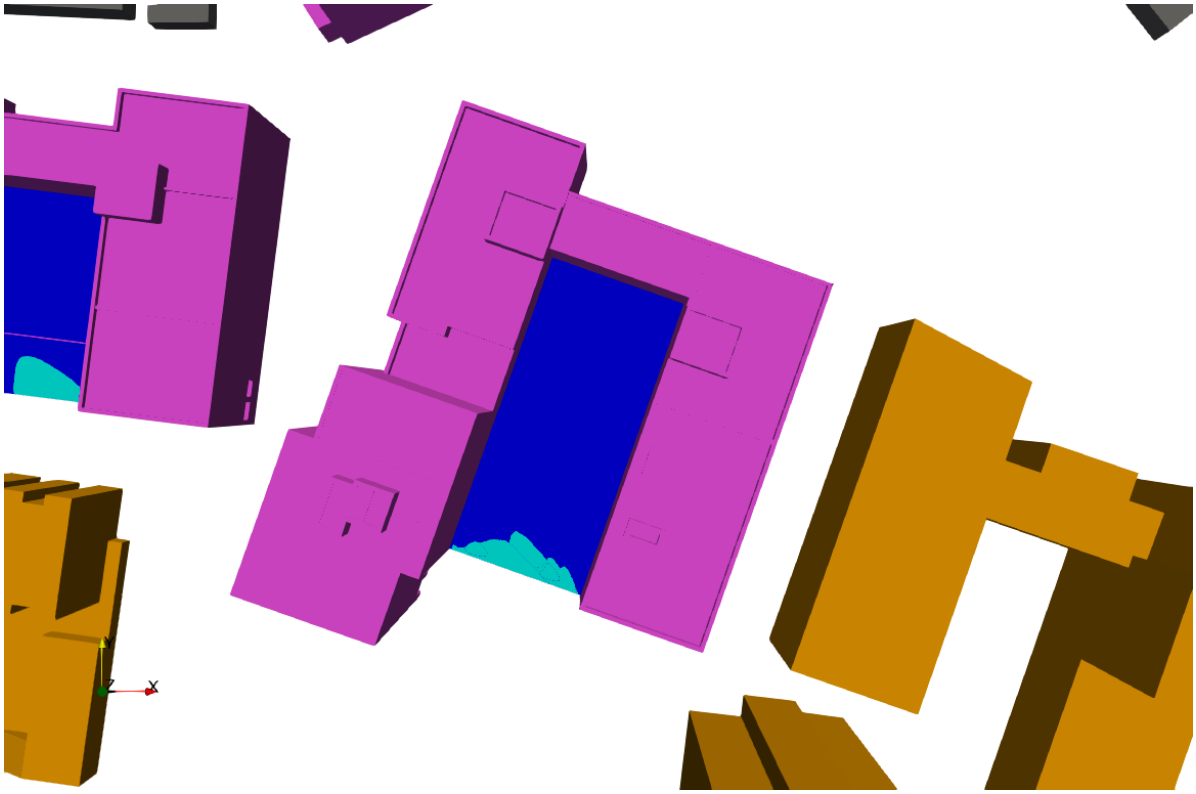


Figure 8-193: Wind comfort-distress map (Lawson Map) - Cumulative scenario-zoom above podium

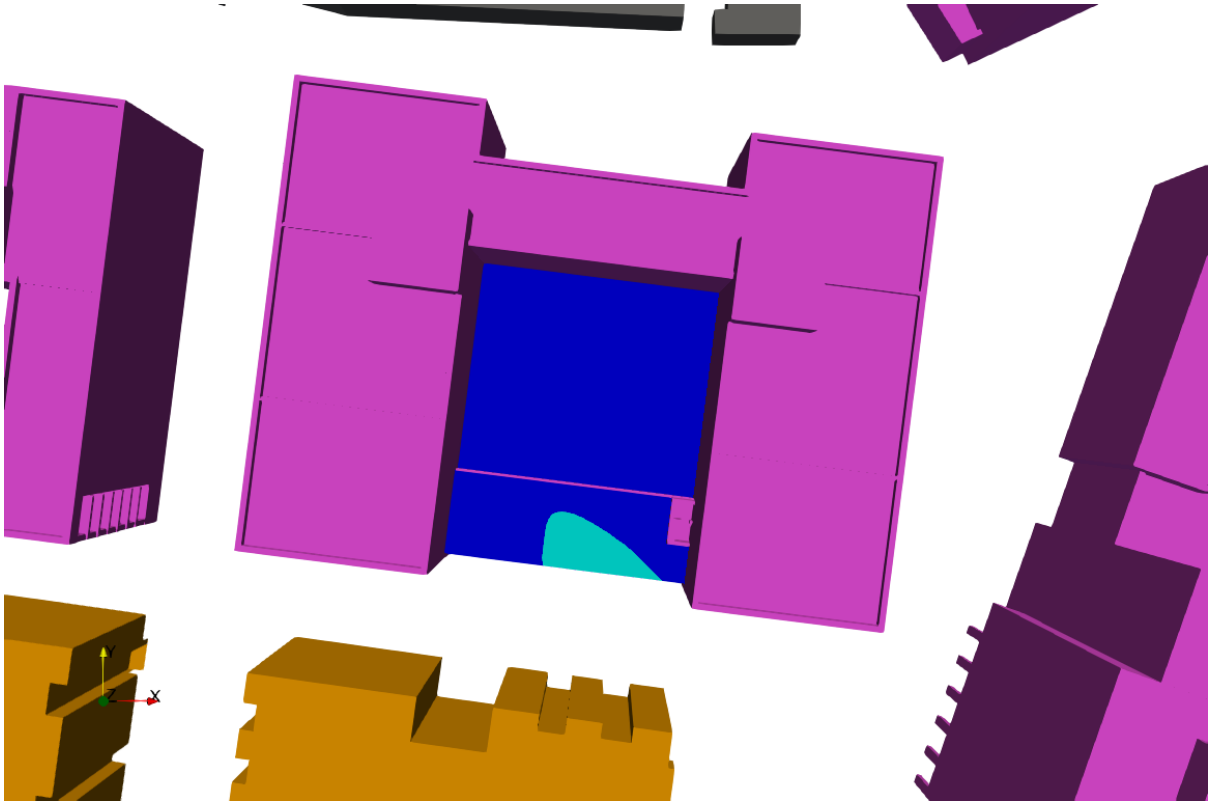


Figure 8-194: Wind comfort-distress map (Lawson Map) - Cumulative scenario-zoom above podium

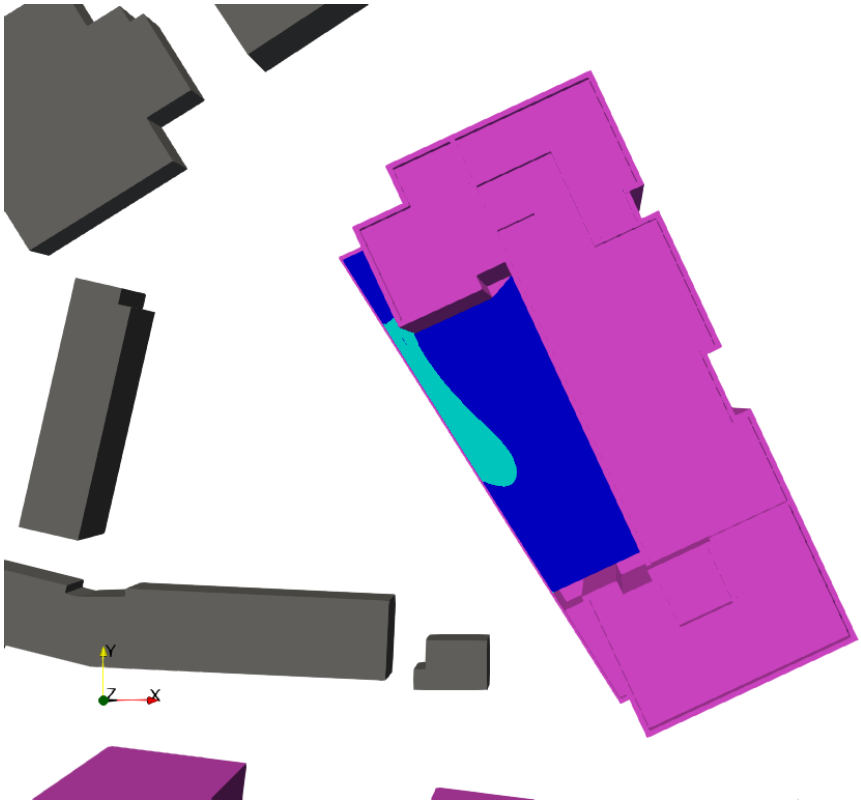


Figure 8-195: Wind comfort-distress map (Lawson Map) - Cumulative scenario-zoom above podium

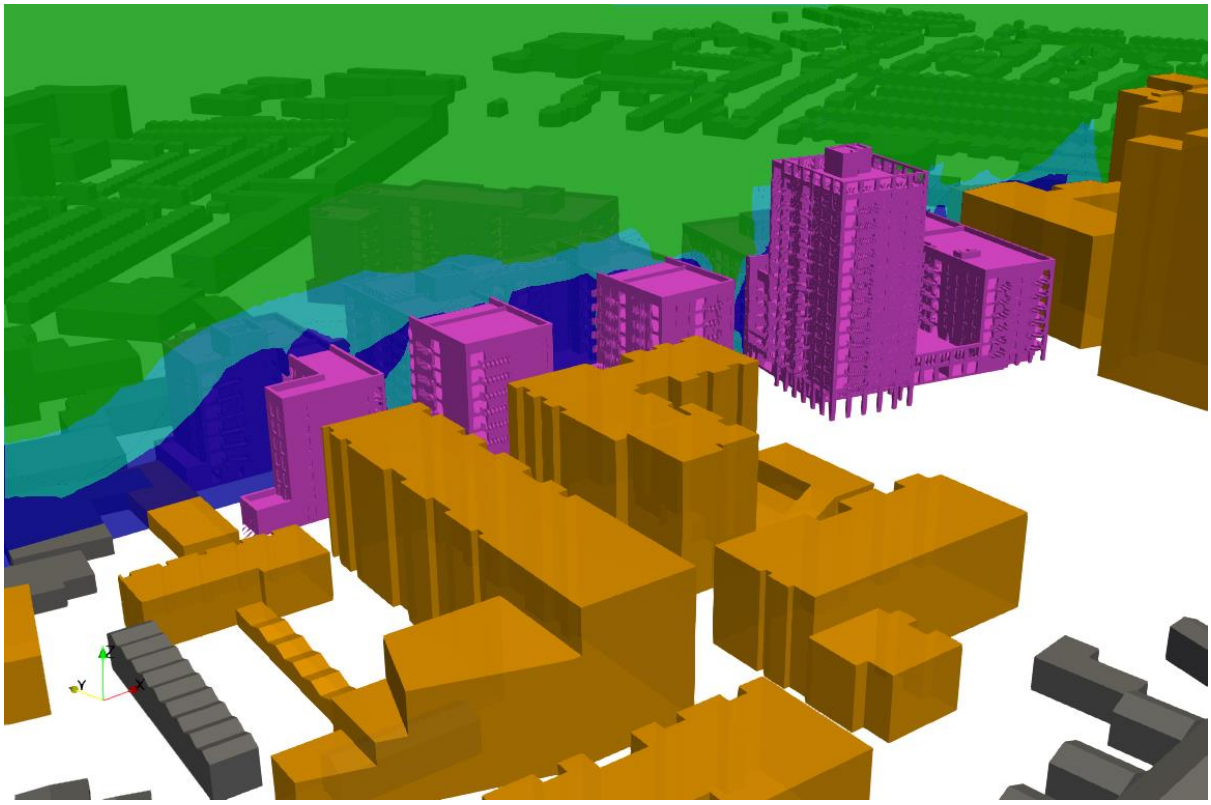


Figure 8-196: Wind comfort-distress map (Lawson Map) - Cumulative scenario vertical view

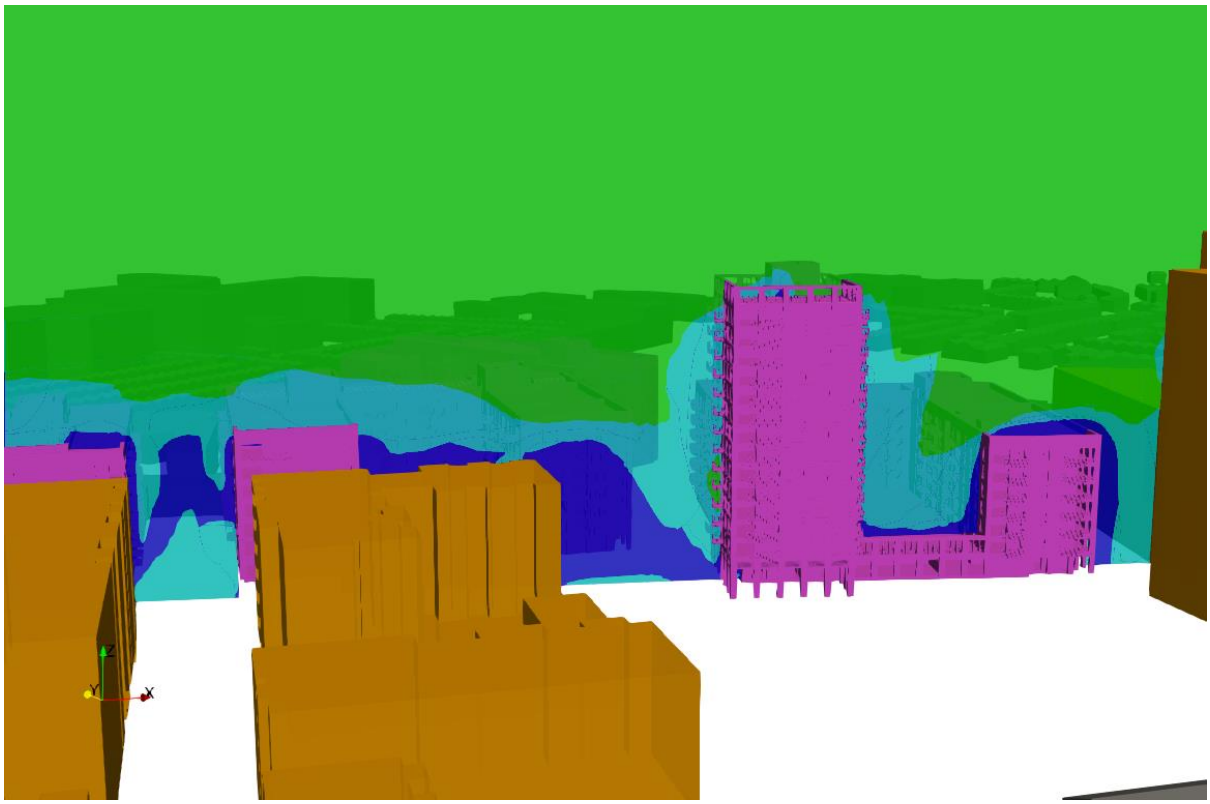


Figure 8-197: Wind comfort-distress map (Lawson Map) - Cumulative scenario vertical view

Table 8-19 indicates the impact and significance of the Proposed Development in a Cumulative Scenario on the on-site receptors (pedestrian areas, roads, entrances) and on the off-site receptors (roads/ pedestrian areas off-site on the north, south, west and east directions).

Figure 8-198 provides a visual comparison of the vertical wind comfort distress map along the balconies (including the tallest building) based on Lawson criteria for the proposed and cumulative scenarios. The proposed building in both scenarios can be seen to provide a calm environment for balcony use and therefore has a beneficial effect on microclimate conditions along the balconies.

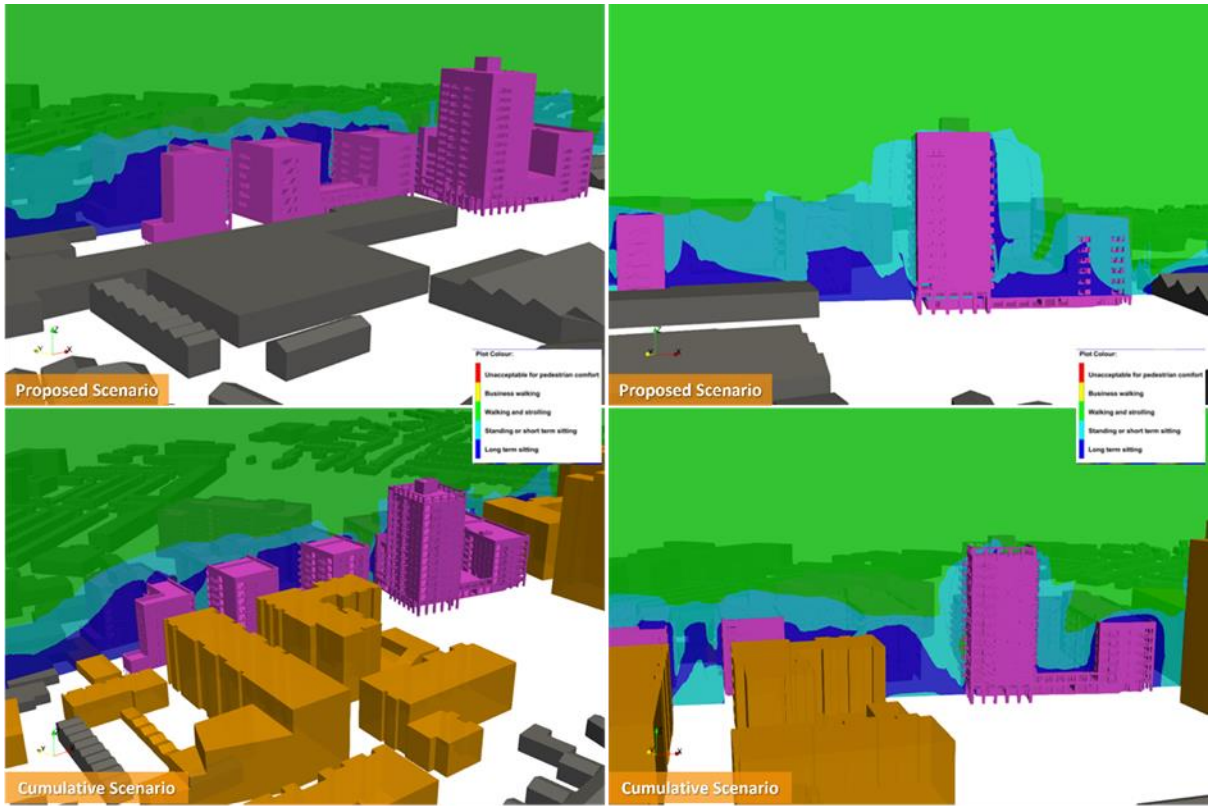


Figure 8-198: Comparison of Wind Comfort effects on balconies for Proposed and Cumulative Scenarios based on Lawson Criteria.

The wind comfort distress map showing the baseline, proposed and cumulative scenarios are illustrated in Figure 8-199. As a result of the Proposed Development construction in conjunction with the permitted development considered in the Cumulative Scenario, the wind on the surrounding urban context is also mitigated when compared with the baseline situation and the proposed scenario in the existing context. The Proposed Development therefore has a beneficial effect on the surrounding wind microclimate and can create comfortable pedestrian areas and public spaces.

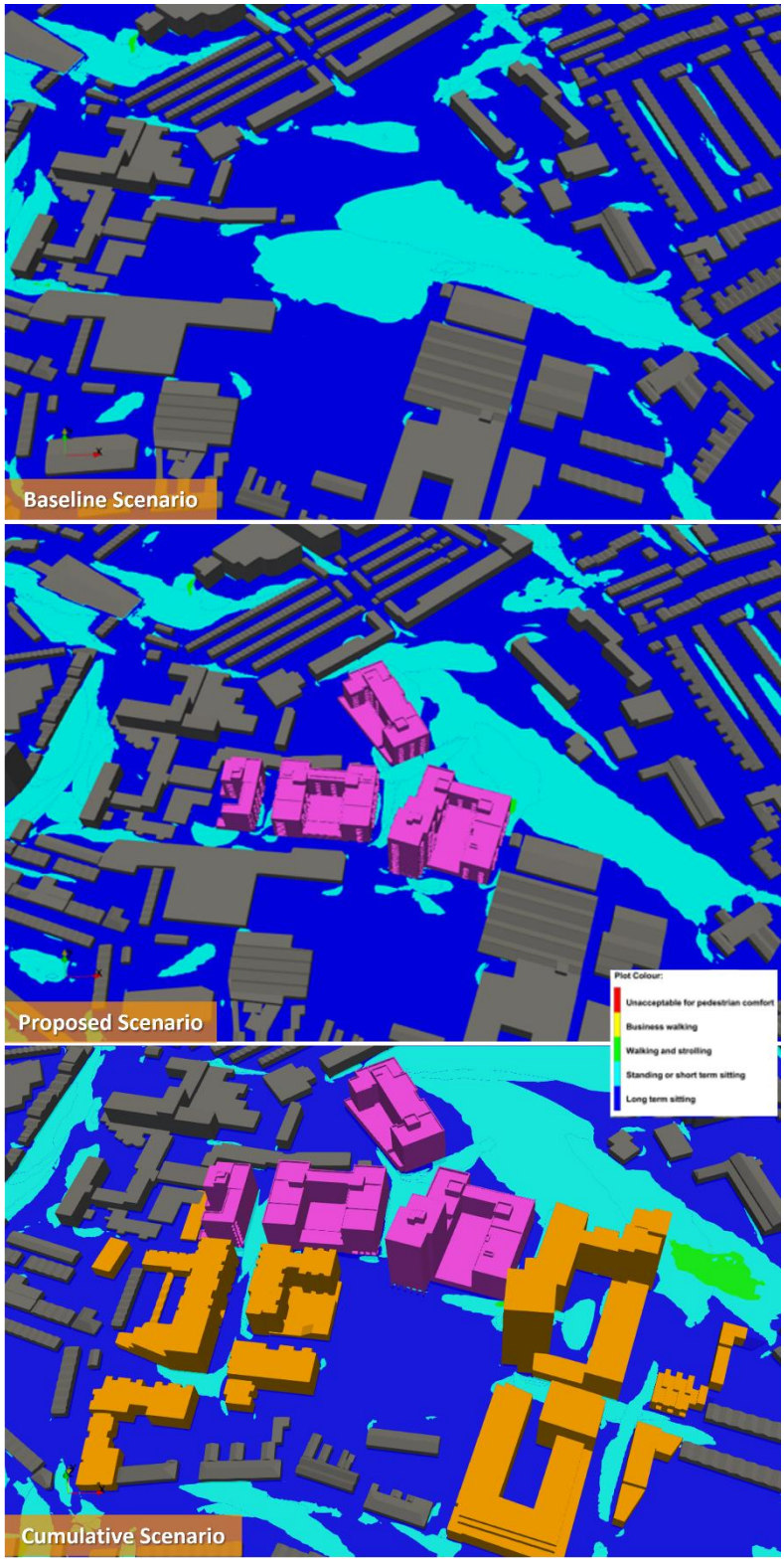


Figure 8-199: Wind comfort/distress map - Baseline versus Proposed versus Cumulative scenario.

Table 8-19: Significance impact of the Proposed Development versus cumulative conditions

Potential Receptors *(on-site)*	**Proposed Development Conditions**	**Cumulative Development Conditions**	**Impact Significance**
Roads	Conditions are calmer than required for the intended pedestrian use (by at least one comfort category in relation to the baseline).	Conditions remain the same as in the proposed scenario	*Negligible*
Entrances	Conditions are "suitable" for the intended pedestrian use.	Conditions remain the same as in the proposed scenario	*Negligible*
Pedestrian circulation areas	Conditions are calmer than required for the intended pedestrian use (by at least one comfort category in relation to the baseline).	Conditions remain the same as in the proposed scenario	*Negligible*
Balconies	Conditions are "suitable" for the intended use. (short/long-term sitting especially in relation to the balconies and considering the wind roses of the spring/summer seasons).	Conditions remain the same as in the proposed scenario	*Negligible*
Ground Amenity areas	Conditions are "suitable" for the intended use. (short/long-term sitting considering the wind roses of the spring/summer season).	Conditions remain the same as in the proposed scenario	*Negligible*
Potential Receptors *(off-site)*	**Proposed Development Conditions**	**Cumulative Development Conditions**	**Impact Significance**
Off-Site Area-North	Conditions become calmer than required for the intended pedestrian use (by at least one comfort category in relation to the baseline).	Conditions remain the same as in the proposed scenario	*Negligible*
Off-Site Area-South	Conditions remain the same as in the baseline scenario.	Conditions remain the same as in the proposed scenario.	*Negligible*
Off-Site Area-East	Conditions remain the same as in the baseline scenario.	Conditions remain the same as in the proposed scenario.	*Negligible*
Off-Site Area-West	Conditions remain the same as in the baseline scenario.	Conditions remain the same as in the proposed	*Negligible*

8.2.5.5 Cumulative Scenario comparison

The results of the wind speeds and patterns formed under the different simulated wind conditions were combined with the frequency of occurrence of the same and an overall wind map was produced (Lawson map) which has shown the suitability of each area to a specific pedestrian activity.

The following table compares the results obtained for the different scenarios along the main receptor points which are numbered from 1 to 14 as reported in Table 8-20 and shown from figures.

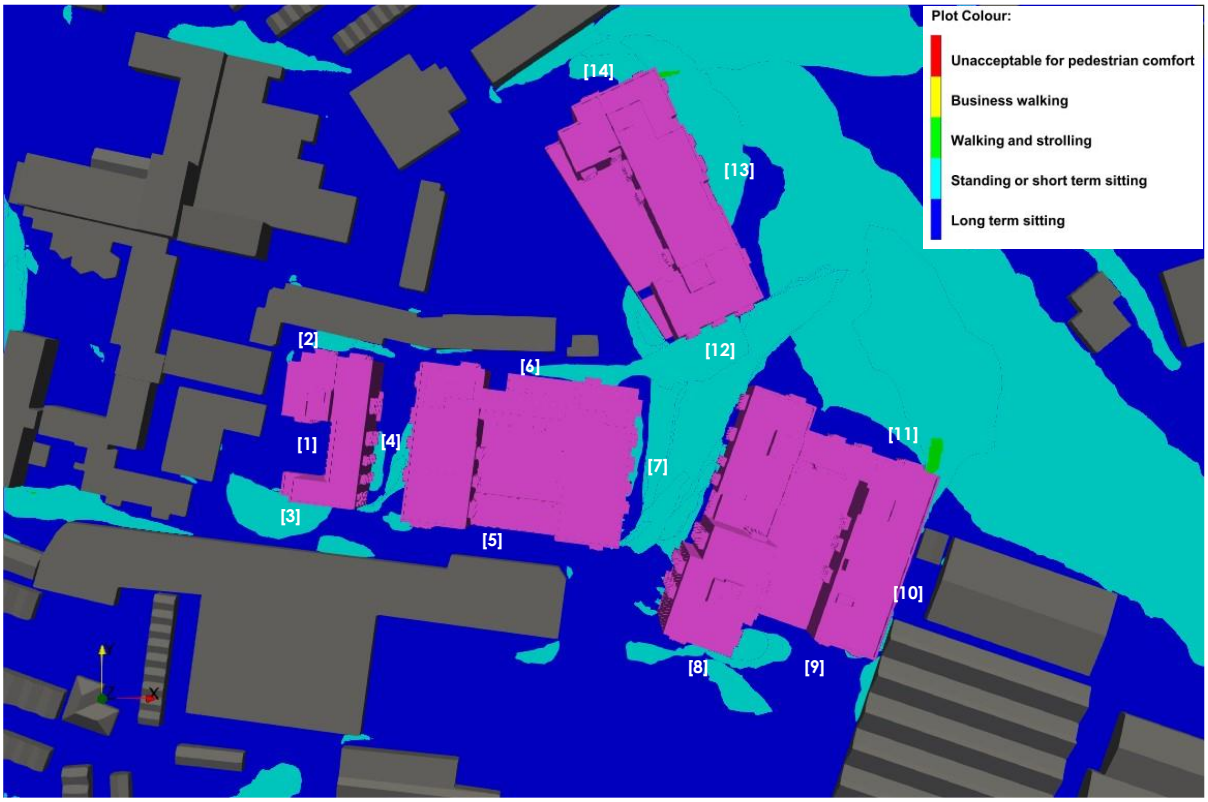


Figure 8-200: Microclimate Comfort maps with Indicated Sensitive receptors (without cumulative buildings)

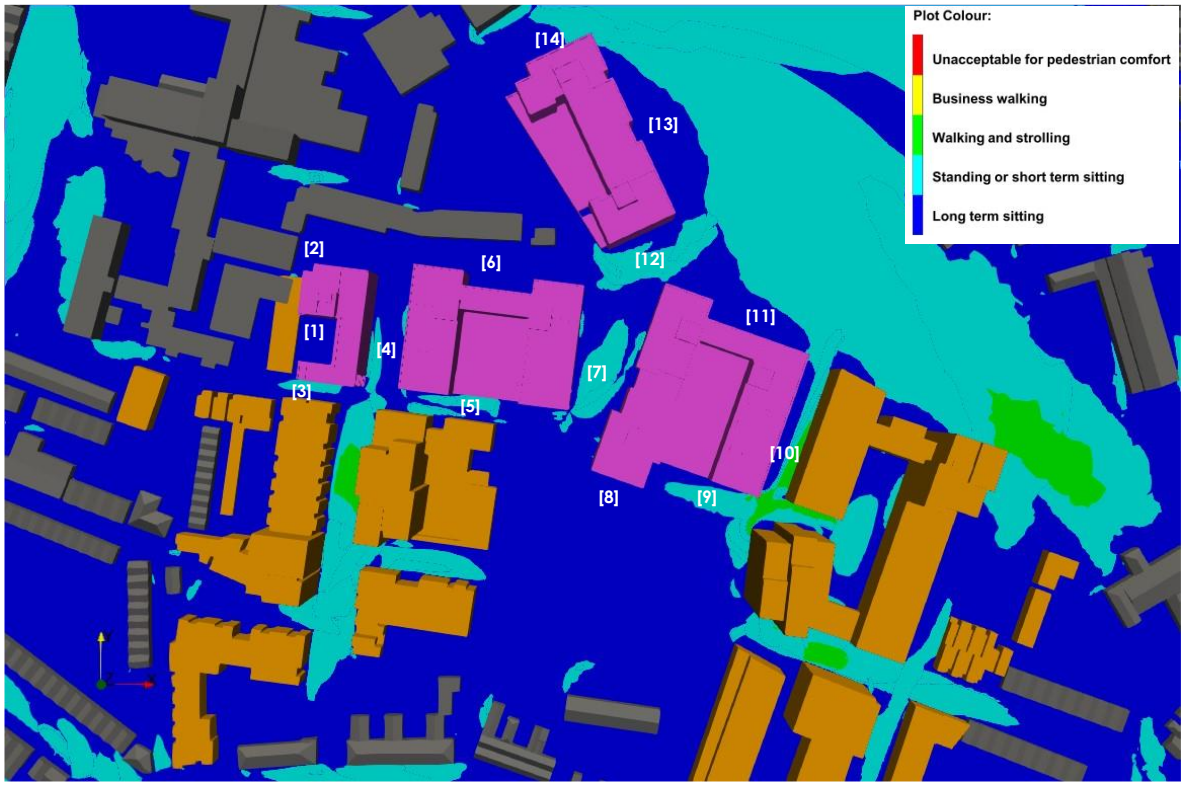


Figure 8-201: Microclimate Comfort maps with Indicated Sensitive receptors (cumulative buildings - Bailey Gibson SHD 1)

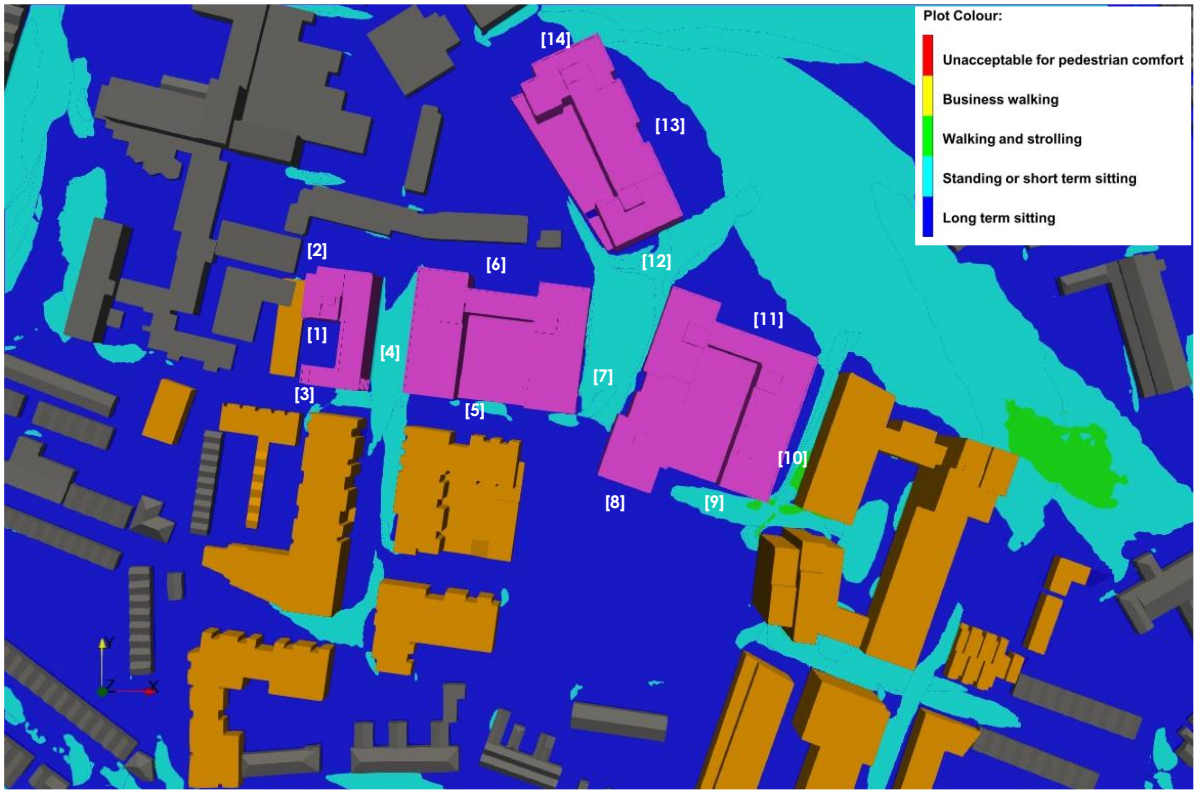


Figure 8-202: Microclimate Comfort maps with Indicated Sensitive receptors (cumulative buildings - Bailey Gibson SHD 2)

Table 8-20: Details of category of comfort achieved at Sensitive Receptors for N.3 Scenarios

	Potential Receptors *(on-site)*	Without Cumulative Buildings **Scenario 1**	Cumulative Buildings (Bailey Gibson SHD 1) **Scenario 2**	Cumulative Buildings (Bailey Gibson SHD 2) **Scenario 3**
1	DCC6 courtyard	L.T. Sitting/Walking	L.T. Sitting/Walking	L.T. Sitting/Walking
2	DCC6 North	S.T. Sitting/Walking	L.T. Sitting/Walking	L.T. Sitting/Walking
3	DCC6 South	S.T. Sitting/Walking	S.T. Sitting/Walking	S.T. Sitting/Walking
4	DCC6 West & DCC5 East	S.T. Sitting/Walking	S.T. Sitting/Walking	S.T. Sitting/Walking
5	DCC5 South	L.T. Sitting/Walking	S.T. Sitting/Walking	S.T. Sitting/Walking
6	DCC5 North	S.T. Sitting/Walking	L.T. Sitting/Walking	L.T. Sitting/Walking
7	DCC5 West & DCC6 East	S.T. Sitting/Walking	S.T. Sitting/Walking	S.T. Sitting/Walking
8	DCC3 Southwest	S.T. Sitting/Walking	L.T. Sitting/Walking	L.T. Sitting/Walking
9	DCC3 Southeast	L.T. Sitting/Walking	S.T. Sitting/Walking	S.T. Sitting/Walking
10	DCC3 West	S.T. Sitting/Walking	Walking	Walking
11	DCC3 North	S.T. Sitting/Walking	L.T. Sitting/Walking	L.T. Sitting/Walking
12	DCC1 South	S.T. Sitting/Walking	S.T. Sitting/Walking	S.T. Sitting/Walking
13	DCC1 West	S.T. Sitting/Walking	L.T. Sitting/Walking	L.T. Sitting/Walking
14	DCC1 North	S.T. Sitting/Walking	L.T. Sitting/Walking	L.T. Sitting/Walking

** L.T: Long term; *S.T: Short term*

As it can be seen from the images comparing the Lawson comfort and distress criteria on the receptor's areas and as detailed in the table of receptors' comfort categories achieved for the different scenarios, these conclusions can be formulated:

- There is not significantly difference between Scenario 2 and 3 regarding level of pedestrian comfort on site, although the CFD results show that overall wind conditions for Scenario 2 is slightly better than Scenario 3.

- Comparing Scenarios 2 and 3, with Scenario 1, there is a decline in the comfort conditions within DCC3 West (for both Scenario 2 and 3) where the comfortable conditions decline from short-term sitting/walking to walking.

- There is an increase from Scenario 2 and Scenario 3 compared to Scenario 1 of the comfort conditions within DCC6 North and DCC5 North where the comfortable conditions change from short-term sitting/walking to long-term sitting/walking.

8.2.5.6 Summary

This section presented the analysis of the wind impact on the microclimate for prediction of pedestrian comfort/distress for Donore Project. The study has identified the possible wind patterns around the area proposed, under mean and peak wind conditions typically occurring in Dublin.

The results of the wind speeds and patterns formed under the different simulated wind conditions were combined with its frequency of occurrence and an overall wind map was produced (Lawson map) which has shown the suitability of each area to a specific pedestrian activity.

The following summary can be made from observing the results of the wind microclimate analysis and comparing the results, under the same wind conditions for the proposed and cumulative scenarios:

- The Proposed Development does not impact or give rise to negative or critical wind speed profiles at the nearby adjacent roads, or nearby buildings when the permitted development has been constructed. Moreover, in terms of distress, no critical conditions were found for “Frail persons or cyclists” and for members of the” General Public” in the surroundings of the development.

- The Proposed Development is designed to be a high-quality environment for the scope of use intended for each area/building (i.e., comfortable, and pleasant for potential pedestrians).

- The assessment of the Cumulative Scenario, similarly to that already displayed with the Proposed Scenario has shown that no area is unsafe, and no conditions of distress are created by the Proposed Development.

8.2.6 Avoidance, Remedial & Mitigation Measures

8.2.6.1 Construction Phase

The wind conditions at the Site would gradually adjust to those of the completed development during the construction phase. During the construction phase no mitigation measures are necessary for the purpose of maintaining a comfortable wind micro-climate for the site. During the construction phase the wind micro-climate are infeed transitioning between the conditions obtained for the baseline scenario to the conditions obtained for the proposed development scenario. As seen in the previous analysis, in both scenarios no area was unsafe in terms of wind acceleration or downdraft/funnelling effects therefore the construction of the

development will not create any unwanted wind impacts in terms of micro-climate in the area of interest.

8.2.6.2 Operational Phase

The landscaping proposed for the development has been considered within the wind analysis carried out and its effect has been beneficial in reducing the wind speed around the development and creating calmer wind condition in areas such the parks and landscaped areas where pedestrian can be comfortable for long-term sitting. Landscaping is simulated as porous zones within the CFD model.

8.2.6.3 "Worst Case" Scenario

8.2.7 Residual Impacts

Wind cannot be eliminated or totally mitigated as it depends on weather conditions which could vary. The data of the historical wind conditions collected and reported in the previous sections, show that the wind speeds likely to occur on the Proposed Development site are below critical values and that pleasant and comfortable microclimate can be maintained for most of the time and under the most frequent wind scenarios.

Gusts and storms can still occur however, and they can create unpleasant and sometimes unsafe conditions. The pedestrian activities concerning the Lawson Comfort and Distress Criteria are not in general carried out during those weather conditions.

Having considered the above, no further changes to the development design and further increasing of the landscaping is suggested, as safety and pedestrian comfort is maintained in accordance with Lawson Comfort and Distress Criteria.

8.2.8 Monitoring

8.2.8.1 Construction Phase

There is no requirement to monitor wind impact during construction phase for pedestrian comfort and distress as the designated amenity areas will not be in use during this phase of the project and pedestrians are not accessing construction sites.

8.2.8.2 Operational Phase

The development has been designed to conform to acceptable Lawson Criteria for Comfort and Distress in accordance with the Wind Beaufort Scale and considering the historical wind conditions of the site, there is no further element to monitor for this scope as far as the landscaping is maintained in place as designed.

8.2.9 'Do-Nothing' Effect

In case the development will not be constructed, the following ae discussed:

- (A) The scenario where the proposed development is not constructed and the site is being built out as per the existent permissions and,

- (B) The scenario where the proposed development and the permitted ones are not constructed and the site is being built out as per the zoning under the Development Plan,

For the case defined by point (A) the wind conditions on the site will be in line with those obtained with the Baseline scenario for the areas upstream to the proposed development, when considering the prevailing wind directions. In this case both the permitted and proposed developments of Bailey Gibson SHD1 and SHD2 are upstream for all the ranges of critical wind flows coming from East-South-East up to West -South -West therefore the conditions on the site will be in line with those previously obtained for the Cumulative Scenario 1 and 2. For the area downstream of the proposed development, then, in the event of the development not being constructed, the conditions are similar to those obtained for the baseline Scenario in the same location. Table 8-21 shows a summary of expected comfort conditions on different receptors if the conditions defined in point (A) occurs during the years.

Table 8-21: *Significance impact of the 'Do-nothing' scenario – Existing environment without the proposed development*

	Potential Receptors *(on-site)*	Cumulative Buildings (Bailey Gibson SHD 1)	Cumulative Buildings (Bailey Gibson SHD 2)
1	DCC6 courtyard	L.T. Sitting/Walking	L.T. Sitting/Walking
2	DCC6 North	L.T. Sitting/Walking	L.T. Sitting/Walking
3	DCC6 South	S.T. Sitting/Walking	S.T. Sitting/Walking
4	DCC6 West & DCC5 East	S.T. Sitting/Walking	S.T. Sitting/Walking
5	DCC5 South	S.T. Sitting/Walking	S.T. Sitting/Walking
6	DCC5 North	L.T. Sitting/Walking	L.T. Sitting/Walking
7	DCC5 West & DCC6 East	S.T. Sitting/Walking	S.T. Sitting/Walking
8	DCC3 Southwest	L.T. Sitting/Walking	L.T. Sitting/Walking
9	DCC3 Southeast	S.T. Sitting/Walking	S.T. Sitting/Walking
10	DCC3 West	Walking	Walking
11	DCC3 North	L.T. Sitting/Walking	L.T. Sitting/Walking
12	DCC1 South	S.T. Sitting/Walking	S.T. Sitting/Walking
13	DCC1 West	L.T. Sitting/Walking	L.T. Sitting/Walking
14	DCC1 North	L.T. Sitting/Walking	L.T. Sitting/Walking

For the case defined by point (B) the wind conditions on the site will be in line with those obtained with the Baseline scenario wind microclimate. In particular, the wind patterns on the site and it's the surrounding (existing and topography) are within tenable conditions and in

general comparable to the wind speed of the undisturbed flow for the direction considered. No area is unsafe within the site even if the Proposed Development is not constructed and no conditions of distress are noticeable in the existing environment under the local wind climate.

The area of the proposed site remains usable for walking and short-term sitting, the roads in the surrounding are usable for their intended scope, the table of the significance impact of the "Do-nothing scenario" provides a summary of the comfort categories, related to existing receptors on-site and off-site.

Table 8-22: *Significance impact of the 'Do-nothing' scenario – Existing environment without the proposed development*

Potential Receptors *(on-site)*	**(Do-nothing scenario) (B)**
Roads	Conditions are "suitable" for the intended pedestrian use.
Entrances	Not applicable
Pedestrian circulation areas	On the location designated for this use conditions are "suitable" for the intended pedestrian use.
Balconies	Not applicable
Podium areas	Not applicable
Potential Receptors *(off-site)*	**(Do-nothing scenario) (B)**
Off-Site Area-North	Conditions are suitable for the pedestrian activity intended.
Off-Site Area-South	Conditions are calmer than required for the intended pedestrian use (by at least one comfort category).
Off-Site Area-East	Conditions are calmer than required for the intended pedestrian use (by at least one comfort category).
Off-Site Area-West	Conditions are calmer than required for the intended pedestrian use (by at least one comfort category).

8.2.10 Difficulties Encountered When Compiling

No difficulties were encountered in compiling this chapter.

8.2.11 References

- Wind Microclimate Guidelines for Developments in the City of London '(August 2019)
- BRE Digest (DG) 520, "Wind Microclimate Around Buildings" (BRE, 2011).
- Building Aerodynamics, Tom Lawson Fr.Eng. Imperial College Press, (2001)
- Computational Fluid Dynamics for Urban Physics: Importance, scales, possibilities, limitations and ten tips and tricks towards accurate and reliable simulations. Building and Environment. B.Brocken (2015).

- CFD simulation for pedestrian wind comfort and wind safety in urban areas: General decision framework and case study for the Eindhoven University campus. Environmental Modelling and Software, 30, pp.15–34. Blocken, B., Janssen, W.D. and van Hooff, T., (2012).
- Best Practice Guidelines for the CFD Simulation of Flows in the Urban Environment, University of Hamburg. Franke, J., Hellsten, A., Schlunzen, H., Carissimo, B, Ed. (2007).

9 NOISE & VIBRATION

9.1 Introduction

This chapter identifies and assesses the potential noise and vibration impacts and related effects arising from the Proposed Development at Donore Avenue, Dublin 8.

9.1.1 Quality Assurance and Competence

This Chapter was written by Ms. Siobhan Maher, whose qualifications include a B.Sc. in Analytical Science, M.Tech. in Environmental Management and a post graduate Diploma in Acoustics and Noise Control Engineering. Ms. Maher is a full Member of the Institute of Acoustics (MIOA) since 2003 and is also a Member of the Association of Acoustic Consultants Ireland (AACI).

Ms. Maher is the Managing Director of Redkite Environmental with over 20 years of experience providing environmental consultancy and environmental assessment services to business, industry and public sectors. In the area of acoustics, she has experience in a range of areas including noise and vibration impact assessment for new and Proposed Developments, environmental noise monitoring and prediction modelling and development of mitigation measures for noise abatement and control.

9.1.2 Description of the Proposed Development

The Proposed Development will consist of the construction of a residential scheme of 543 no. apartments on an overall site of 3.26 ha (GFA of c. 53,227 sqm) containing the following mix of apartments:

- 225 No. 1 bedroom apartments (36 no. 1-person & 189 no. 2-person)
- 274 No. 2 bedroom apartments (including 52 No. 2 bed 3 person apartments and 222 No. 2 bed 4 person apartments)
- 44 No. 3 bedroom 5-person apartments
- A retail/café unit (168 sq.m.), mobility hub (52 sq.m.) and 952 sq.m. of community, artist workspace, arts and cultural space, including a creche, set out in 4 No. blocks.

The breakdown of each block will contain the following apartments:

- Block DCC1 comprises 111 No. apartments in a block of 6-7 storeys;
- Block DCC 3 comprises 247 No. apartments in a block of 6-15 storeys;
- Block DCC5 comprises 132 No. apartments in a block of 2-7 storeys;
- Block DCC6 comprises 53 No. apartments in a block of 7 storeys;

The Proposed Development will also provide for public open space of 3,408 sqm, communal amenity space of 4,417 sqm and an outdoor play space associated with the creche. Provision of private open space in the form of balconies or terraces is provided to all individual apartments.

The Proposed Development will provide 906 no. residential bicycle parking spaces which are located within secure bicycle stores. 5% of these are over-sized spaces which are for large bicycles, cargo bicycles and other non-standard bicycles. In addition, 138 spaces for visitors are distributed throughout the site.

A total of 79 no. car parking spaces are provided at undercroft level. Six of these are mobility impaired spaces (2 in each of DCC1, DCC3 & DCC5). 50% of standard spaces will be EV fitted. Up to 30 of the spaces will be reserved for car sharing (resident use only). A further 15 no. on-street spaces are proposed consisting of:

- 1 no. accessible bay (between DCC5 & DCC6)
- 1 no. short stay bay (between DCC5 & DCC6)
- 1 no. crèche set-down / loading bay (between DCC5 & DCC6)
- 1 no. set-down / loading bay (northern side of DCC5)
- 1 no. set-down/loading bay (northern side of DCC 3)
- 10 no. short stay spaces (north-east of DCC1)

In addition, 4 no. motorcycle spaces are also to be provided.

Vehicular, pedestrian and cyclist access routes are provided from a new entrance to the north-west from Margaret Kennedy Road. Provision for further vehicular, pedestrian and cyclist access points have been made to facilitate connections to the planned residential schemes on the Bailey Gibson & Player Wills sites for which there are extant permissions (Ref. No.'s ABP-307221-20 & ABP-308917-20).

The development will also provide for all associated ancillary site development infrastructure including site clearance & demolition of boundary wall along Margaret Kennedy Road and playing pitch on eastern side of site and associated fencing/lighting, the construction of foundations, ESB substations, switch room, water tank rooms, storage room, meter room, sprinkler tank room, comms room, bin storage, bicycle stores, green roofs, hard and soft landscaping, play equipment, boundary walls, attenuation area and all associated works and infrastructure to facilitate the development including connection to foul and surface water drainage and water supply.

9.2 Study Methodology

The overall assessment approach utilised in this chapter in accordance with best scientific knowledge is as follows:

- A desk-based study and site-specific sound survey have been undertaken to characterise the receiving environment.
- The Zone of Influence (ZoI) for potential noise and vibration impacts has been identified based on-site visits and desk-based study.
- A range of acceptable noise and vibration criteria for assessment have been developed for both the construction and operational phases based on the best practice standards and guidance.
- Noise predictive calculations, impact magnitude rating and significance of effects have been completed for the construction phase at existing Noise Sensitive Locations (NSLs) potentially affected. Activities assessed include the use of heavy machinery and also construction traffic on local roads.
- Empirical data with regards to potential vibration impacts during the construction phase has been reviewed.

- The potential noise exposure of existing NSLs to fixed plant and transportation noise sources associated with the operational phase of the development has been assessed.

- The potential noise exposure of future residents to transportation and any other noise sources has been assessed.

- A schedule of mitigation measures has been developed to minimise, where necessary, identified impacts and effects.

9.2.1 Characterisation of the Existing Soundscape

The existing soundscape has been characterised by site specific sound monitoring and desk-based study in accordance with best scientific knowledge.

Construction noise is greatest within 40m of development but can extend out to 300m, depending on factors such as site specifics. Due to the enclosed nature of the site of the Proposed Development, the ZoI is determined as extending to the site boundaries and immediate adjacent Noise Sensitive Locations (NSLs) and potentially vibration sensitive receptors overlooking the site. Donore Avenue is also within the Zone of Influence in terms of potential traffic noise impact during both the short-term construction phase and the longer-term operational phases of development.

9.2.1.1 Site-specific Survey

Site visits were undertaken on the 15 – 16th of September 2021, the 16th of June 2022 and the 13 -14th October 2022Sound monitoring was undertaken during the visits conducted on the 15 – 16th September 2021 and the 13 – 14th October 2022 at a number of Noise Monitoring Points (NMPs).

The measurement methodology followed was in accordance with the recommendations of the following documents recognised as best scientific knowledge:

- International Standards Organisation Document: ISO 1996 Acoustics – Description, Measurement and Assessment of Environmental Noise, Part 1, Basic Quantities and Assessment Procedures (2016) and Part 2 Determination of Sound Pressure Levels (2017), and,
- The EPA Guidance Note for Noise: License Applications, Surveys and Assessments in Relation to Scheduled Activities, (NG4), revised January 2016.

Ambient monitoring was undertaken at the locations as described in Table 9.1 and as illustrated in Figure 9.1. The locations were chosen to be representative of existing Noise Sensitive Locations (NSLs) most likely to be affected by the proposed development, to characterise the existing soundscape and also to facilitate the assessment of exposure of future residents to airborne noise.

Figure 9-1: Locations of Noise Monitoring Points (NMPs), NSLs and closest VSLs (Blue boxes represent new buildings not shown on aerial photography)

Table 9-1: Noise Monitoring Points

Location	Grid Ref.	Description
NMP1	314171E; 232906N	Site boundary with the Coombe Women and Infants University Hospital. Within the portion of the development site currently used as the construction compound for the new National Cervical Screening Laboratory. This location was chosen to assess the noise exposure risk for future residents.
NMP2	314303E; 232956N	50m from Donore Youth and Community Centre (now closed) and 130m approx. from completed residential development on Margaret Kennedy Road. Representative of noise levels at new apartments on Margaret Kennedy Road facing into the site (NSL2) and also 2-storey house on church grounds (NSL4).
NMP3	314233E; 232788N	Western boundary with old Player's factory. Existing 2-storey residential 50m to south (NSL3).

The parameters measured during the survey are principally L_{Aeq}, L_{A90}, L_{A10}, L_{Amax} and L_{Amin}.

Survey personnel noted all primary noise sources contributing to the ambient sound environment. Detailed field notes were recorded during the survey.

Photographs of NMPs 1- 3 are shown in Figure 9-2.

Plate 9.1 NMP1

Plate 9.1: NMP1

Plate 9.2: NMP2

Plate 9.3: NMP3

Figure 9-2: NMPs 1- 3

Weather Conditions

Overall weather conditions prevailing during the surveys (15th – 16th September 2021 & 13 - 14th October 2022) were suitable for noise monitoring.

September 2021:

Temperatures ranged from 10 - 20°C. Windspeeds were gentle at 2 - 3 m/sec on average. No rainfall occurred.

October 2022:

Temperatures ranged from 10 - 16°C. Windspeeds were gentle at 3 – 5 m/sec on average. No rainfall occurred. Wind direction was south/southwesterly.

Equipment

Sound measurement was carried out using Type 1 Sound Level Meters and associated hardware (calibrators and tripods, outdoor kits etc) and software. Further details of the monitoring equipment used are set out in Table 9.2.

Table 9-2: Monitoring Equipment

Instrument Type	Manufacturer	Model Number	Serial Number
Sound Level Meters	Bruel & Kjaer NTi	2250-L XL2-TA	3002367, 3001350, 3008423 A2A-08898-E0, A2A-16311-E0
Acoustic Calibrator	Bruel & Kjaer Larson Davis	4231 CAL200	2022652 11728

The SLMs including the microphones and the calibrators have been independently externally calibrated in accordance with standard procedures.

The microphones were placed in open areas >3.5m from reflecting surfaces and a minimum of 1.2m above ground level. At the 24-hour unattended monitoring location (NMP1), the microphone was placed at 4m above ground level (Refer to Plate 9.1). The unattended meter was placed within a secure location in an existing construction compound on site related to the new National Cervical Screening Laboratory at the Coombe Women and Infants University Hospital Laboratory Building (Planning File Ref. No. 4049/19). The meters were calibrated before and after use. The observed drift during measurement was within acceptable limits. The sound levels were measured using the A-weighted network, and a fast-sampling interval.

9.2.1.1 *Desk-based Study*

As part of the desk-based study, the baseline sound surveys contained within the EIARs prepared for the adjoining Bailey Gibson permission (Ref. ABP-307221-20) and Player Wills

permission (ABP-308917-20) sites were reviewed as part of the characterisation of the baseline environment.

These surveys were completed in 2019 and are considered to be valid for use in supporting the site-based surveys for the following reasons:

- The surveys were completed pre-COVID, and,
- The general area of the proposed development(s) is well established with no significant new sources introduced in the intervening period.

In addition, transportation noise mapping from the Dublin Agglomeration Third Environmental Noise Action Plan (NAP), December 2018 – 2023 available on the EPA's website https://gis.epa.ie/EPAMaps/ has been reviewed as part of the desk-based study.

9.2.2 Impact Assessment

The following guidance and standards are deemed most appropriate in accordance with best scientific knowledge and therefore have been used in the setting of suitable noise and vibration criteria, prediction calculations and assessment of impacts and effects on human beings:

- BS5228-1:2009 +A1:2014: Code of Practice for Noise and Vibration Control on Construction and Open Sites: Part 1: Noise and Part 2: Vibration.
- BS 7385: 1993: Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration.
- BS6472-1:2008: Guide to evaluation of human exposure to vibration in buildings. Vibration sources other than blasting.
- BS8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings.
- Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes, March 2014.
- Guidelines for Environmental Noise Impact Assessment, Institute of Environmental Management and Assessment (IEMA), Version 1.2, November 2014
- ISO 9613.-2 – 1996 Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation.
- UK Highways Agency Design Manual for Roads and Bridges, Sustainability and Environmental Appraisal, LA11, Noise and Vibration, Rev 2, May 2020.
- World Health Organisation (WHO) Environmental Noise Guidelines for the European Region, 2018.

In addition to the above specific noise and vibration guidance documents, the Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA May 2022) were taken account of in the preparation of this chapter.

The UK ProPG: Planning & Noise, New Residential Development, May 2017[3] was used as guidance in completing the assessment of exposure of future residential to airborne noise from transportation sources. This document outlines a systematic risk based, 2 stage approach for evaluating noise exposure on prospective sites for residential development. Stage 1 comprises an initial noise risk assessment of sites proposed for residential development considering either measured and/or predicted noise levels. A site is then characterised as negligible to high risk in terms of exposure to noise of future residents. A full stage 2 assessment, including implementing a good acoustic design process, is triggered depending on the existing ambient noise environment and findings of the Stage 1 Noise Risk Assessment.

9.2.3 Definitions

L_{Aeq} is the A – weighted equivalent continuous sound level – the sound level of a steady sound having the same energy as a fluctuating sound over a specified measurement period.

L_{A10} is the A-weighted noise level which is exceeded for 10% of the specified measurement period. This gives an indication of the upper limit of fluctuating noise such as that from road traffic.

L_{A90} is the A-weighted noise level exceeded for 90% of the measurement period and is useful in providing an indication of the background noise level experienced over the measurement period.

L_{AFmax} is the maximum A-weighted noise level measured during a cycle with a fast time weighting.

L_{AFmin} is the minimum A-weighted noise level measured during a cycle with a fast time weighting.

L_{ASmax} is the maximum A-weighted noise level measured during a cycle with a slow time weighting.

L_{day} Day equivalent level**:** A-weighted, Leq. Sound Level, measured over the 12-hour period 07.00 - 19.00 hours

L_{den} Day-evening-night level. It is a descriptor of noise level based on energy equivalent noise level (Leq) over a whole day with a penalty of 10 dB(A) for night-time noise (23.00-07.00) and an additional penalty of 5 dB(A) for evening noise (i.e.19.00-23.00).

L_{night} Night equivalent level**:** Leq. A-weighted, Sound Level, measured overnight 23.00 – 07.00 hours.

$L_{Aeq,16\ hours,}$ 16-hour equivalent level: Leq. A-weighted, Sound Level, measured from 07.00 – 23.00 hours.

[3] This document was prepared by a working group comprising members of the UK Association of Noise Consultants (ANC), the Institute of Acoustics (IOA) and the Chartered Institute of Environmental Health (CIEH). Although not a government document, since its adoption, it has been generally considered as a best practice guidance for assessing inward noise risk for new residential development.

L_{Ae} See SEL below.

SEL – Single Event Level - the dB(A) level which if it lasted for one second would produce the same A-weighted sound energy as the actual event. Also referred to as L_{Ae}.

The "A" suffix denotes sound levels that have been "A-weighted" in order to account for the non-linear nature of human hearing to sounds of different frequencies.

9.3 The Existing and Receiving Environment (Baseline Situation)

The site of the Proposed Development is located within an urban city environment. However, due to its enclosed nature and set-back from major roads and associated road traffic noise, it is quieter than expected for a city location. Traffic noise is audible as a distant source punctuated by occasional sources such as ambulance sirens.

It is outside the designated Noise Zones for aircraft noise as set out in Variation No. 1 to the Fingal Development Plan, 2017-2023 adopted in December 2019. Section 8.5.7 of the draft Fingal Development Plan, 2023 -2029 notes the following in relation to airport noise and noise zones:

"The noise zones relating to Dublin Airport were updated in 2019 in order to allow for more effective land-use planning for development within airport noise zones. The updated policies relating to development within noise zones are set out in Variation no. 1 of the Fingal Development Plan 2017 – 2023 and these will apply in the draft Plan."

The adopted Dublin City Development Plan 2022 -2028 refers to the above Plan as Fingal County Council are the designated authority with regards to aircraft noise zoning. Parts of Dublin City fall within the designated Noise Zones for air-craft noise.

The site is not proximate to any major rail lines.

The nearest existing NSLs to the site are as follows:

- NSL1 – the new National Cervical Screening Laboratory associated with the Coombe Women and Infants University Hospital. Construction of this building commenced in 2021 and is near completion based on the visit completed in October 2022. This lab will be used for training, education and research. This is also a potential vibration sensitive location (VSL1) due to the equipment that may be in use;
- New apartments on Margaret Kennedy Road bounding the site to the north (NSL2 on Figure 9.1);
- Existing mature 2-storey residential development set back and off the South Circular Road (NSL3), and,
- A 2-storey parochial house (NSL4 on Figure 9.1).

All of the above NSLs are set-back from major routes and face into the site of the Proposed Development.

Developments on the adjacent Bailey Gibson and Players Wills sites may also constitute NSLs if they are built and occupied prior to the development of the Proposed Development site.

9.3.1 Transportation Mapping

Dublin City Council, Dun Laoghaire Rathdown, Fingal and South Dublin County Councils have jointly prepared an Environmental Noise Action Plan, 2018 - 2023 for the Dublin Agglomeration. Related transportation noise mapping is available on the EPA's website https://gis.epa.ie/EPAMaps/.

Figures 9-3 and 9-4 re-produce the road noise mapping in the vicinity of the site.

The Proposed Development site is located relatively close to the city centre in an area enclosed by existing buildings which screen it from busy road transportation routes such as Dolphin's Barn Street and South Circular Road. Therefore, as indicated by the mapping, the site is relatively unaffected by road transportation noise. During all site visits in September 2021, June and October 2022, traffic noise was noted as distant within the site.

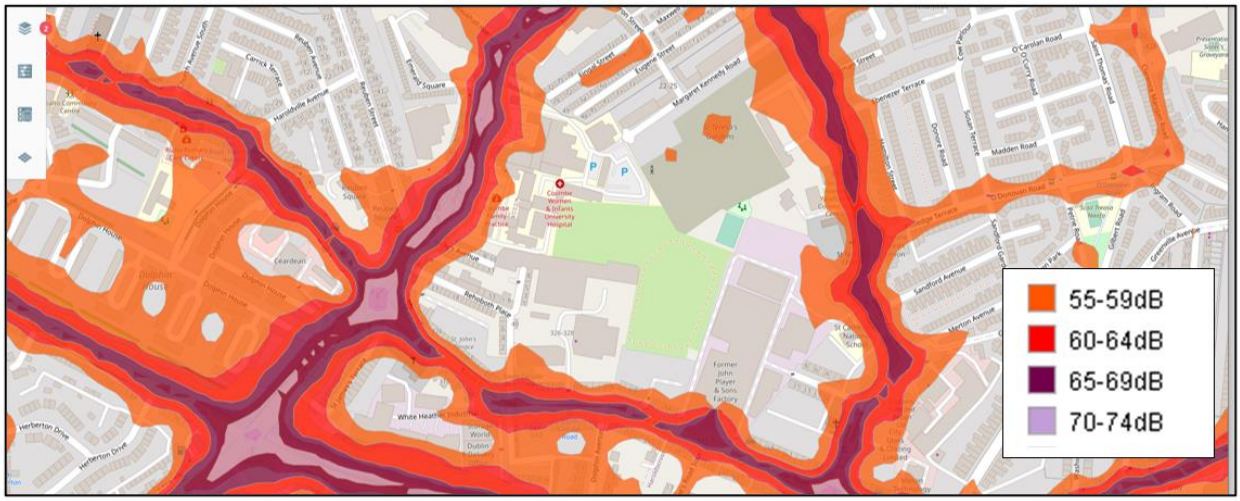


Figure 9-3: L_{den} Road Traffic Noise (Source: https://gis.epa.ie/EPAMaps/)

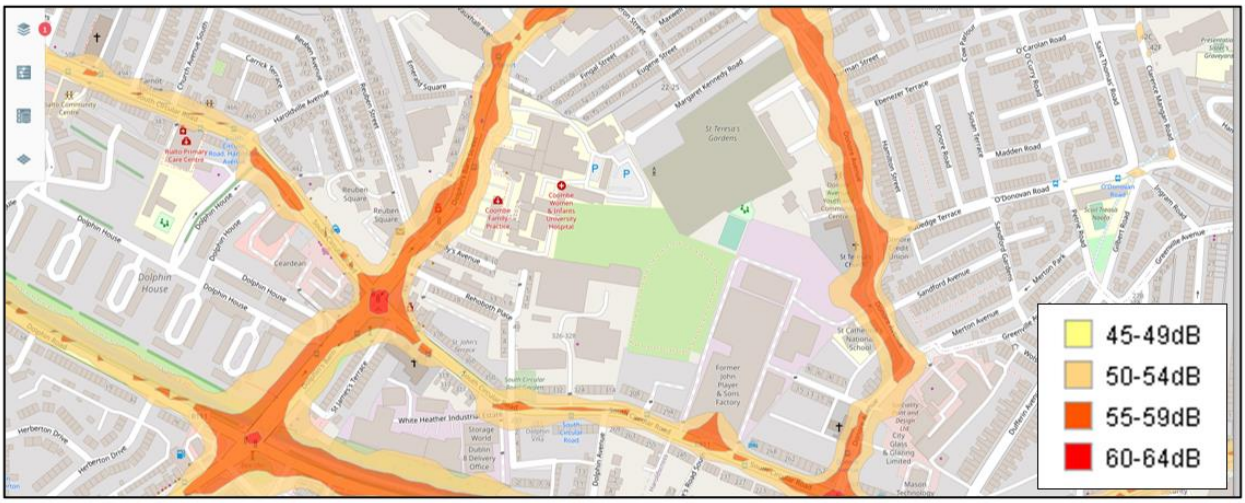


Figure 9-4: L_{night} Road Traffic Noise (Source: https://gis.epa.ie/EPAMaps/)

9.3.2 Adjoining Site Surveys

Sound monitoring was completed on, or in proximity to, the adjoining Bailey Gibson and Player Wills sites at the locations indicated on Figure 9-5.

Figure 9-5: Locations of Noise Monitoring Points on Adjacent Sites

Attended noise surveys during the daytime were carried out at AN1 - AN3 on Tuesday 18th June 2019. Sound level measurements were completed over 15-minute periods on a cyclical basis at each measurement location.

Unattended monitoring was completed at UN1 and UN2 between 10.00 hrs on Thursday 20th June and 07.00hrs on Monday 24th June 2019. Both of these locations are more relevant to the assessment of traffic noise exposure of future residents of the Player Wills site where that development is proximate to the South Circular Road and Donore Avenue respectively. However, the monitoring does provide an overview of exposure of existing NSLs at these locations and will also be relevant to assessment of construction and long- term traffic noise impacts associated with the Proposed Development.

The summary findings from both EIARs are presented in Table 9.3:

Table 9-3: Summary Results of Monitoring at Adjacent Sites

Date/ Time	Parameter				Subjective Impressions
	$L_{Aeq,t}$	$L_{A10,t}$	$L_{A90,t}$	L_{AFmax}	
AN1 – Rehoboth Avenue (boundary with Bailey Gibson site, southwest of the Proposed Development site)					
18/6/2019					
11.54	50	52	43	75	Distant traffic noise, birdsong, church bells, distant construction noise.
13.09	45	48	42	75	
15.01	49	48	42	68	
AN2 – Rear of houses off South Circular Road (boundary with Bailey Gibson site, southwest of the Proposed Development site)					
18/6/2019					
11.30	54	58	44	78	Distant traffic noise, birdsong, woodchopper during #2, distant construction noise.
12.46	56	59	41	76	
14.34	54	58	43	79	
AN3 (St Catherine's Avenue boundary with Player Wills site, southeast of the Proposed Development site)					
18/6/2019					
12.20	44	47	37	68	Distant road traffic and birdsong main contributors. Intermittent and distant construction noise also listed as present.
14.09	46	52	41	67	
15.25	46	48	41	62	

At UN1, the following was noted in the Player Wills site EIAR:

"During daytime periods, average noise levels were in the range of 60 – 62 dB $L_{Aeq,15min}$ and 46 – 47 dB $L_{A90,15min.}$ During night-time periods, average noise levels were in the range of 57 – 59 dB $L_{Aeq,15min}$ and 39 – 41 dB $L_{A90,15min.}$ These noise levels are considered representative of an urban area near a major route."

At UN2, the following was noted in the Player Wills site EIAR:

"During daytime periods, average noise levels were in the range of 52 – 57 dB $L_{Aeq,15min}$ and 45 – 47 dB $L_{A90,15min.}$ During night-time periods, average noise levels were in the range of 45 – 47 dB $L_{Aeq,15min}$ and 36 – 41 dB $L_{A90,15min.}$ These noise levels are considered representative of an urban area."

Both of the locations, UN1 and UN2 are estimated as within 20m of the South Circular Road and Donore Avenue respectively.

9.3.3 Site Specific Surveys

The summary findings of the ambient sound surveys at the site specific NMPs 1-3 as indicated on Figure 9-1, are presented in Tables 9-4 and 9-5 and in Figure 9-6. Measurement intervals were 30 minutes at attended locations NMP 2 and 3 and up to 24 hours at NMP1. This is

considered sufficient based on the enclosed nature of the site, road traffic as a continuous source dominating the area and the availability of desk-based data.

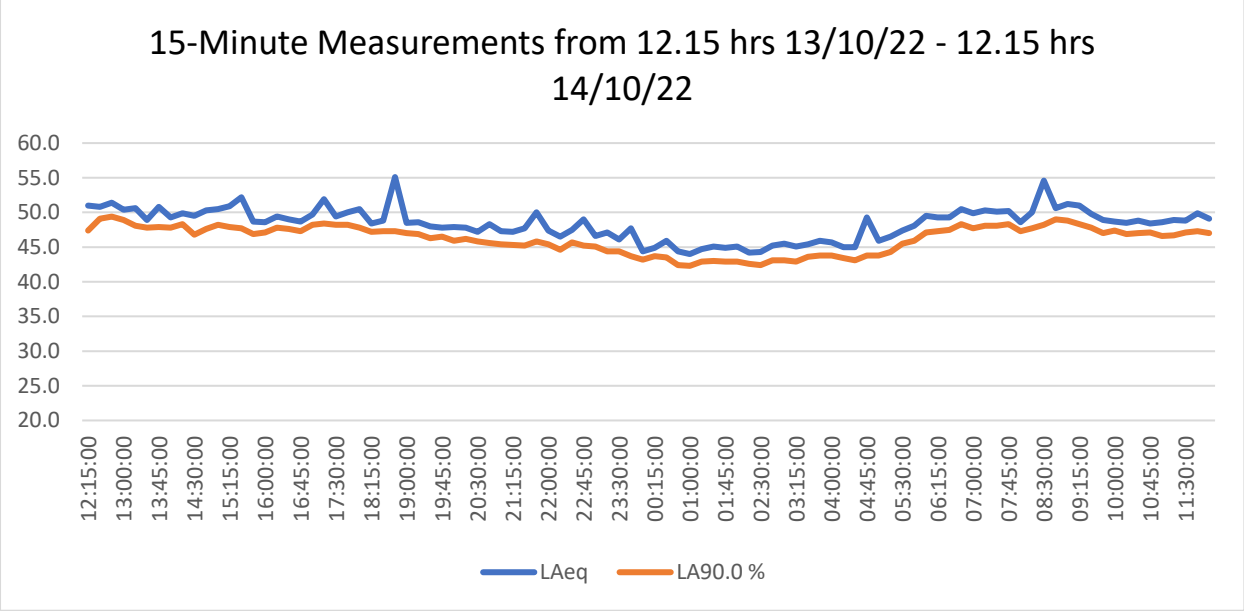


Figure 9-6: Summary Chart of Measurement at NMP1

L_{night} is calculated as 47dB from the data collected at NMP1.

L_{day} and $L_{Aeq,16hr}$ are both 50 dB. $L_{evening}$ is 48 dB.

The count for night-time L_{Amax} values over 60 dB recorded in 15-minute intervals was <10 events. L_{Amax} values exceeding 60 dB that did occur were related to ambulance sirens and occurred early in the night.

L_{den} is calculated as 54 dB.

Based on the monitoring undertaken, and desk-based review, the site of the Proposed Development can be classified as negligible to low risk for future residents transportation noise risk exposure. Overall, a conservative low risk rating is applied.

It was noted during both surveys that there is a small area on the site of the Proposed Development where there is a localised noise impact by plant equipment associated with the existing laboratory. The plant includes a small boiler, air intake and extraction points. Refer to Figure 9.7 below indicating the plant location.

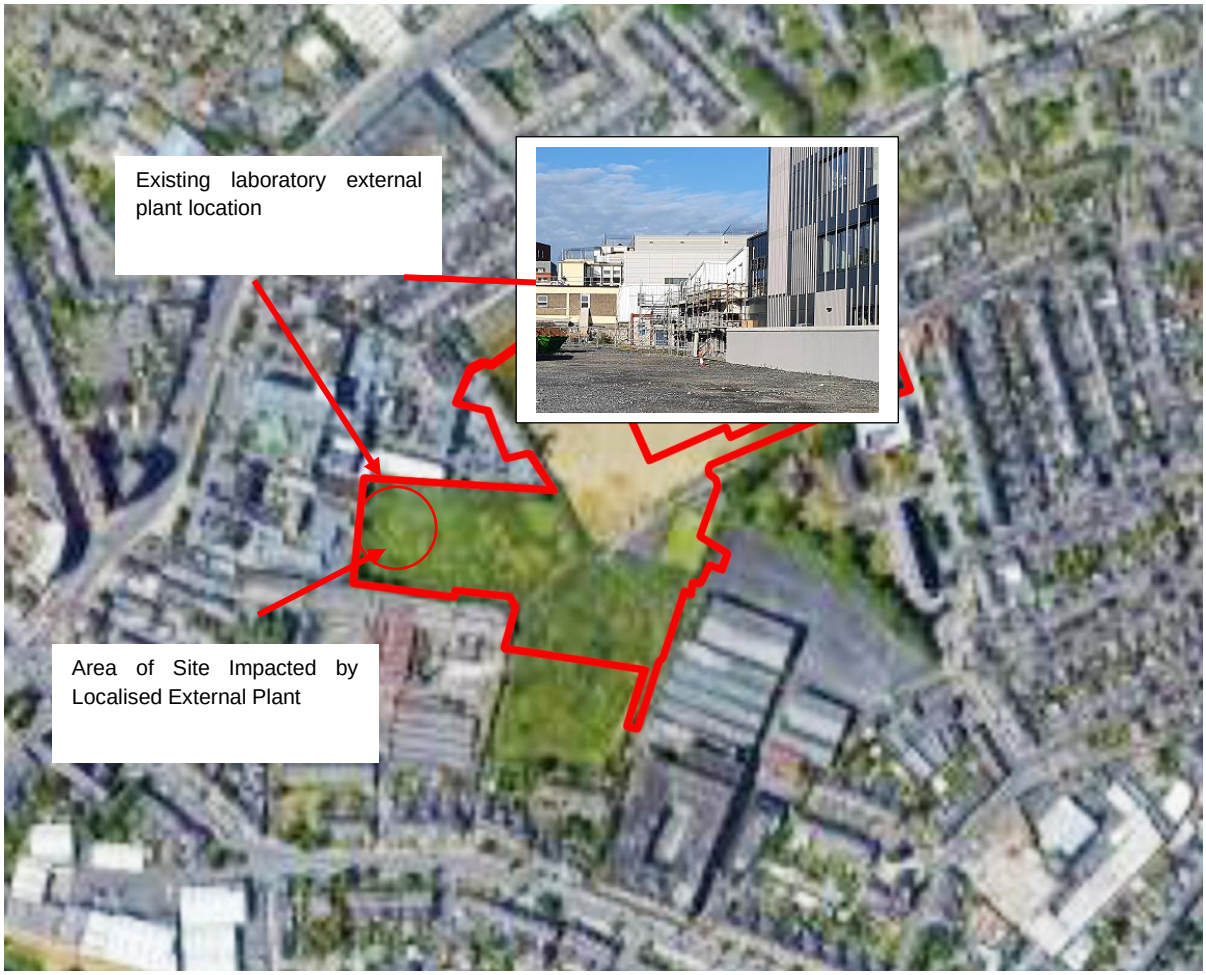


Figure 9-7: Location of Hospital Plant Impacting site of the Proposed Development

Short-term noise measurements were undertaken at 20 and 50m from the proposed plant in October 2022. Plant specific noise levels were 50 and 44 dB(A) respectively at these distances. The laboratory plant could potentially impact the future residential amenity of proposed Block DCC6, particularly during the night-time as specific plant noise levels at the proposed nearest façade, approximately 20m from the plant are above the recommended World Health Organisation (WHO) guideline as follows:

- Night-time - L_{Aeq} 45 dB, 1 meter from the façade of a dwelling.

Furthermore, this type of noise has the potential to be tonal in nature which can cause additional annoyance. However, the existing laboratory will be refurbished and the existing associated external plant will be decommissioned in 2023. The external plant will be removed prior to the Operational Phase of the Proposed Development.

Tables 9-4 and 9-5 below summarise the results of short-term, attended monitoring at measurement locations, NMP2 and NMP3, representing existing NSLs facing into the site of the Proposed Development.

As existing receptors facing inwards towards the site, these NSLs also benefit from set back from the main routes and screening of road traffic noise by buildings. The site is quiet in nature considering its city location as further evidenced by the results below.

Table 9-4: Summary Results of Monitoring NMP2 – September 2021

Date/ Time	Parameter				Description of Ambient Sound Environment
	$L_{Aeq,t}$	$L_{A10,t}$	$L_{A90,t}$	L_{AFmax}	
15/9/2021					
10.35	45	48	40	57	Distant road traffic noise, birdsong and construction noise from the construction of the National Cervical Screening laboratory.
11.05	46	49	43	60	
11.36*	47	49	42	66	

**Measurement cut short at DCC request.*

Table 9-5: Summary Results of Monitoring, NMP3 -September 2021

Date/ Time	Parameter				Description of Ambient Sound Environment
	$L_{Aeq,t}$	$L_{A10,t}$	$L_{A90,t}$	L_{AFmax}	
15/9/2021					
11.42	46	49	41	63	Distant road traffic noise, birdsong and construction noise.
12.22	49	51	43	71	
12.53	49	52	44	70	

No existing vibration sources were subjectively noted on the Proposed Development site or in the immediate vicinity.

9.4 Characteristics of the Proposed Development

The Proposed Development will consist of the construction of a residential scheme of 543 no. apartments on an overall site of 3.26 ha (GFA of c. 53,227 sqm) containing the following mix of apartments:

- 225 No. 1 bedroom apartments (36 no. 1-person & 189 no. 2-person)
- 274 No. 2 bedroom apartments (including 52 No. 2 bed 3 person apartments and 222 No. 2 bed 4 person apartments)
- 44 No. 3 bedroom 5-person apartments
- A retail/café unit (168 sq.m.), mobility hub (52 sq.m.) and 952 sq.m. of community, artist workspace, arts and cultural space, including a creche, set out in 4 No. blocks.

The breakdown of each block will contain the following apartments:

- Block DCC1 comprises 111 No. apartments in a block of 6-7 storeys;
- Block DCC 3 comprises 247 No. apartments in a block of 6-15 storeys;
- Block DCC5 comprises 132 No. apartments in a block of 2-7 storeys;
- Block DCC6 comprises 53 No. apartments in a block of 7 storeys;

The Proposed Development will also provide for public open space of 3,408 sqm, communal amenity space of 4,417 sqm and an outdoor play space associated with the creche. Provision of private open space in the form of balconies or terraces is provided to all individual apartments.

The Proposed Development will provide 906 no. residential bicycle parking spaces which are located within secure bicycle stores. 5% of these are over-sized spaces which are for large bicycles, cargo bicycles and other non-standard bicycles. In addition, 138 spaces for visitors are distributed throughout the site.

A total of 79 no. car parking spaces are provided at undercroft level. Six of these are mobility impaired spaces (2 in each of DCC1, DCC3 & DCC5). 50% of standard spaces will be EV fitted. Up to 30 of the spaces will be reserved for car sharing (resident use only). A further 15 no. on-street spaces are proposed consisting of:

- 1 no. accessible bay (between DCC5 & DCC6)
- 1 no. short stay bay (between DCC5 & DCC6)
- 1 no. crèche set-down / loading bay (between DCC5 & DCC6)
- 1 no. set-down / loading bay (northern side of DCC5)
- 1 no. set-down/loading bay (northern side of DCC 3)
- 10 no. short stay spaces (north-east of DCC1)

In addition, 4 no. motorcycle spaces are also to be provided.

Vehicular, pedestrian and cyclist access routes are provided from a new entrance to the north-west from Margaret Kennedy Road. Provision for further vehicular, pedestrian and cyclist access points have been made to facilitate connections to the planned residential schemes on the Bailey Gibson & Player Wills sites for which there are extant permissions (Ref. No.'s ABP-307221-20 & ABP-308917-20).

The development will also provide for all associated ancillary site development infrastructure including site clearance & demolition of boundary wall along Margaret Kennedy Road and playing pitch on eastern side of site and associated fencing/lighting, the construction of foundations, ESB substations, switch room, water tank rooms, storage room, meter room, sprinkler tank room, comms room, bin storage, bicycle stores, green roofs, hard and soft landscaping, play equipment, boundary walls, attenuation area and all associated works and infrastructure to facilitate the development including connection to foul and surface water drainage and water supply.

9.4.1 Construction Phase

The total duration for the construction phase for the Proposed Development is 35 months with development set out in two phases as shown in Table 9-6 and Figure 9-8.

Table 9-6: Proposed Construction Programme

	Stage	Start Date	Finish Date
Phase 1	Enabling Works (site-setup, site strip, cut and fill) (Duration 3 months)	2024	2024
	Piling (Duration 18 weeks)	2024	2025
	DCC3	2024	2027
	DCC6	2024	2026
	DCC5	2025	2026
Phase 2	Enabling Works	2025	2025
	Piling (Duration 6 weeks)	2025	2025
	DCC1	2025	2027

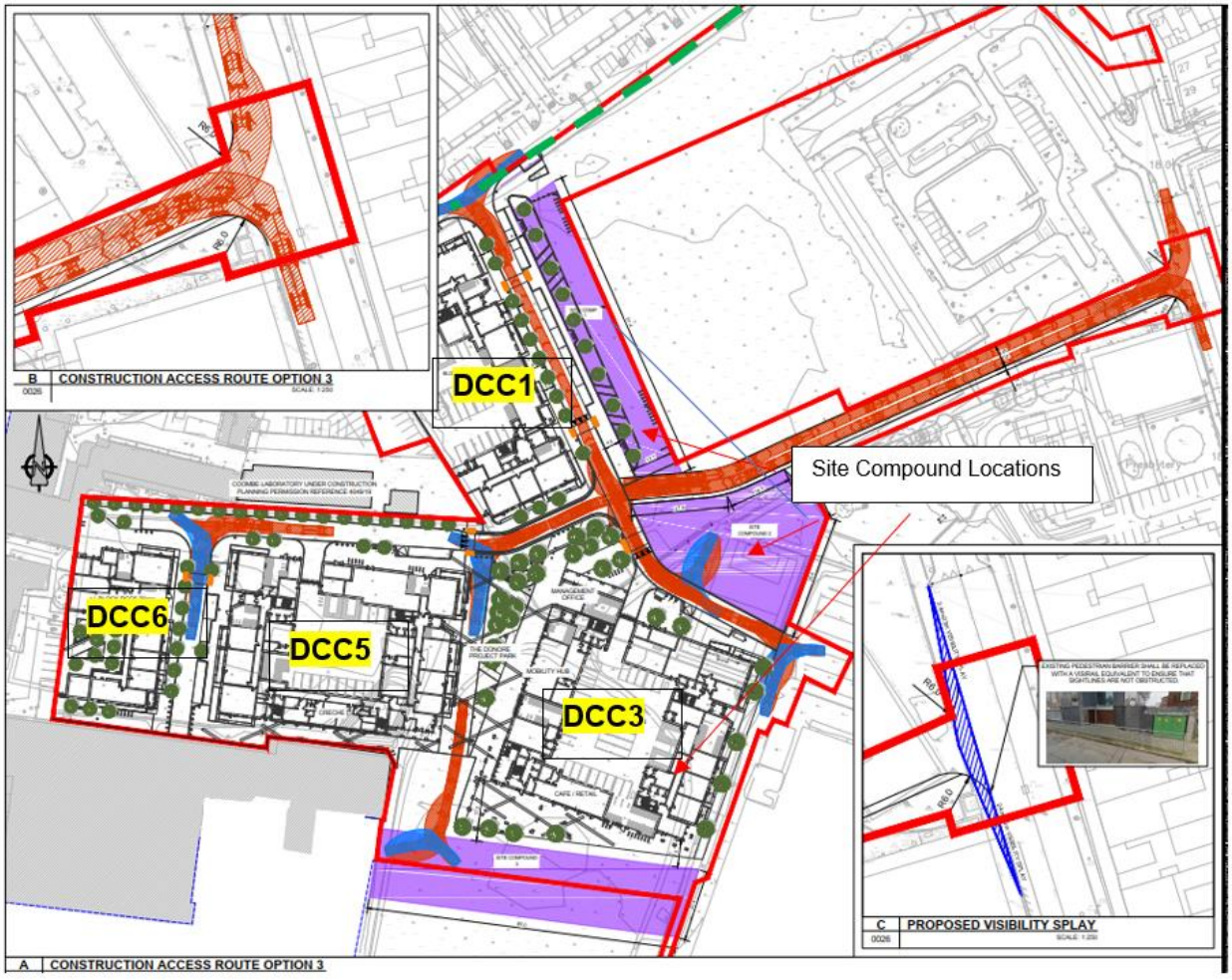


Figure 9-8: Phasing of Development and Proposed Construction Access

The construction access route will be off Donore Avenue from a new dedicated and temporary access point beside the existing (and currently unused) Donore Youth and Community Centre.

The route will travel past NSL4 (location indicated on Figure 9.1). Construction traffic will arrive to the site from the South Circular Road and will turn left for departures to Cork Street.

An existing low wall along Margaret Kennedy Road (partially indicated as a green dashed line on Figure 9.8), the existing construction site compound and temporary car-park for the new National Cervical Screening Laboratory construction at the Coombe Women and Infants University Hospital will be removed. Minor demolition works will take place over a 1-week period and will occur as part of Phase 1 enabling works.

Site compounds will be located as indicated on Figure 9-8. Site compounds will be used for storage of construction materials and equipment. Material will be moved by crane or teleporter from the compounds to the new buildings under construction.

Foundations will be piled. Continuous flight auger (CFA) piling is proposed for both Phases 1 and 2. CFA piling is often specified for urban areas as the advantages of using this type of piling includes faster installation, prevention of vibration and decreased noise disruption to adjacent receptors. There will be an overlap of approximately 1 month between the start of piling and the end of enabling works during Phase 1.

Piling and construction of DCC3 will potentially overlap by 2 months.

As indicated in Table 9-6 there is overlap between both phases from 2025 onwards. DCC5 and DCC6 will be occupied approximately 6 months before the end of Phase 1 and before Phase 2 is completed.

Up to 7 HGVs per hour will access and exit the site. As access is from south Circular Road and exit is to Cork St, this equates to 7 HGV pass-bys per hour for existing NSLs on Donore Avenue. Staff will arrive and depart during AM and PM peak hours. Approximately 19 staff cars will arrive in the morning and depart in the evening.

9.5 Potential Impact of the Proposed Development

9.5.1 Construction Phase - Noise

9.5.1.1 Applicable Noise Criteria

The site development and construction phases can potentially give rise to temporary to short term noise and vibration impact and effects through the use of mobile and non-mobile heavy machinery and equipment. The following section discusses the applicable criteria applied to site development and construction phase noise and vibration.

There is no definitive published Irish guidance relating to the maximum permissible noise level that may be generated during the construction phase of a project.

BS5228:2009 + A1:2014: *Code of Practice for Noise and Vibration Control on Construction and Open Sites – Noise* describes applicable noise level thresholds not to be exceeded at NSRs, depending upon existing ambient levels, as described in Table 9-7. This table is based upon report E3.2, Table E.1 of BS5228:2009 + A1:2014 Part 1.

Table 9-7: Threshold of Significant Effect at Dwellings

Assessment category and threshold value period (L_{Aeq})	Threshold value, in decibels (dB)		
	Category A	Category B	Category C
Night-time (23:00-07:00)	45	50	55
Evening and Weekends	55	60	65
Daytime (07:00-19:00) and Saturday (07:00-13:00)	65	70	75
NOTE 1: A significant effect has been deemed to occur if the total L_{Aeq} noise level, including construction, exceeds the threshold level for the Category appropriate to the ambient noise level. NOTE 2: If the ambient noise level exceeds the threshold values given, in the table (i.e. the ambient noise level is higher than the above values), then a significant effect is deemed to occur if the total L_{Aeq} noise level for the period increases by more than 3dB due to construction activity. NOTE 3 Applied to residential receptors only.			
A) Cat A: Threshold values to use when ambient noise levels (rounded to nearest 5dB) are less than these values B) Cat B: Threshold values to use when ambient noise levels (rounded to the nearest 5dB) are the same as Cat A values C) Cat C: Threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than Cat A values D) 19:00-23:00 weekdays, 13:00-23:00 Saturday and 07:00-23:00 Sunday is deemed 'evening and weekend' period.			

Generally, the Category A daytime threshold value can be applied to residential NSLs 2,3 and 4 facing into the site (as indicated on Figure 9-1) based on the ambient sound levels recorded during the daytime baseline survey ($L_{Aeq,t}$ < 55 dB). The Category A daytime threshold value will also apply to existing NSLs on Donore Avenue which are set back or screened from the road by existing walls. However, some NSLs on Donore Avenue are not set back from the road and therefore the Category B threshold values apply to these. It should be noted that this assessment method is only valid for residential properties and not commercial properties. The threshold values apply to the sum of both the ambient and construction noise levels.

In addition to the above, the following acceptable levels are described in the Transport Infrastructure Ireland (TII) publication Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes, March 2014. These limits are applied during the construction of road infrastructure projects at the facades of NSLs:

Table 9-8: TII Acceptable Levels for Construction

Day	Working Hours	Level dB ($L_{Aeq,1hr}$)	Level dB (L_{ASmax})
Mon-Fri	07.00 – 19.00	70	80
Mon-Fri	19.00 – 22.00	60*	65*
Saturday	08.00 – 16.30	65	75
Sundays & Bank Holidays	08.00 – 16.30	60*	65*

*Note *: Construction activity at these times, other than emergency works, will normally require specific permission from the local authority.*

There will be no requirement for night-time or evening (19.00 – 23.00 hrs) construction works. Accordingly, based on current ambient sound levels, BS5228 and TII acceptable levels for construction and also the existing ambient sound environment, the following construction noise thresholds are proposed for residential and commercial NSLs:

- 65 dB $L_{Aeq,1hr,}$ Mon-Fri (07.00 – 19.00hrs) and Sat (07.00 – 13.00 hrs), and,
- 70 dB $L_{Aeq,1hr,}$ Mon-Fri (07.00 – 19.00hrs) and Sat (07.00 – 13.00 hrs for commercial and residential receptors with no set back or screening on Donore Avenue.

The Coombe Women and Infants University Hospital is also a potential NSL. Based on the site visits, the buildings directly adjacent to the site boundary are laboratories including the new National Cervical Screening Laboratory. The new laboratory is a well sound insulated and enclosed building. Therefore, it is considered that the limit applicable for construction noise at this receptor is 70 dB $L_{Aeq,1hr,}$ Mon-Fri (07.00 – 19.00hrs) and Sat (07.00 – 13.00 hrs.

The following should be noted in relation to the prediction of construction noise and to the use of the threshold values or limits:

Prediction of likely noise impact has been completed using data from BS5228:1 and is based on the prediction methodology set out in ISO9613-:1996. However, it is important to note that the construction process is subject to a tendering process. Therefore, with regards to prediction of construction noise at NSLs the following factors are relevant:

- The sound power ratings (or sound pressure levels at known distance) used in the assessment may vary from the ratings for the actual equipment chosen by the contractor and used on site;
- Depending on conditions encountered in real-time, different types of equipment may be chosen and the number of units may vary. Usage may also vary in terms of length of time operating or in terms of intensity, character and location.

As a result, limits or threshold values, are typically applied to control construction noise. *BS5228-1 notes that a potentially significant negative effect will occur if the predicted construction noise level at a NSL exceeds the applicable threshold value*. BS5228-1 also

notes that factors such as the number of receptors affected, and the duration and character of the impact may need to be considered to determine if there is an actual significant effect.

The recently published UK LA111 similarly notes that the magnitude of impact is major if the construction noise impact is greater than or equal to the threshold value (from BS5228-1) +5dB. A moderate impact magnitude is above or equal to the threshold value and below the threshold value +5 dB. Impacts of major and moderate magnitude are then considered to constitute a significant effect *depending* on duration.

In this regard, the standard notes that construction noise shall constitute a significant effect where it is determined that a major or moderate magnitude of impact will occur for a duration exceeding:

- 10 or more days or nights in any 15 consecutive days or nights;
- A total number of days exceeding 40 in any 6 consecutive months.

The following summary table applies with regards to magnitude of impact and construction noise level:

Table 9-9: Magnitude of Impact & Construction Noise Descriptors

Magnitude of Impact	Construction Noise Description
Major	Above or equal to threshold value +5 dB
Moderate	Above or equal to threshold value and below threshold value +5 dB
Minor	Above or equal to baseline and below threshold value
Negligible	Below baseline.

LA111also offers guidance on construction related traffic noise as follows:

Table 9-10: Magnitude of Impact at NSLs for Construction Traffic

Magnitude of Impact	Increase in Baseline Noise Level of Closest Public Road Used for Construction Traffic (dB)
Major	Greater than or equal to 5.0
Moderate	Greater than or equal to 3.0 and less than 5.0
Minor	Greater than or equal to 1.0 and less than 3.0
Negligible	Less than 1.0

The same durations apply as stated for construction noise.

9.5.1.2 Phase 1 Construction Noise Assessment

Phase 1 works will encompass the enabling works, piling and construction of Blocks DCC3, DCC5 and DCC6.

The distances to existing NSLs from the proposed building footprints are outlined in Table 9.11.

Table 9-11: Nearest NSLs

NSL	Distance
NSL1 (Coombe Women and Infants University Hospital labs)	A number of labs on boundary with Phase 1. The new National Cervical Screening Laboratory is approx. 15-20m from proposed Block DCC5. Overlooking site; no screening to levels above ground floor.
NSL2 (Margaret Kennedy Road apartments)	Approx. 125m from Block DCC3. Part of block partially screened.
NSL3 (South Circular Road)	2-storey houses set back off South Circular Road, facades approx. 90m from Block DCC3. Ground floors screened by existing boundary wall to gardens.
NSL4 (parochial building)	Building façade 35m from proposed construction site compound 2 and 80m from footprint of Block DCC3. Ground floor screened by existing boundary wall to gardens.

A review of the proposed schedule has been completed to determine a conservative estimate or worst-case scenario of construction noise impact magnitude from the development of Phase 1.

Excavation, cut and fill (enabling works) and piling of foundations will overlap at times. Piling works will move from one block to the next. The enabling works, will not occur at the same time as superstructure construction although piling may overlap with superstructure construction by a period of 2 months. A representative conservative scenario for assessment involves piling of one block while excavation works are also ongoing. Additionally in this regard, it should be noted that potentially worst-case elevation of noise levels typically occurs as a result of the use of heavy machinery on site during excavation and piling foundation works. Other later phases such as super-structure construction tend to be less intensive. Therefore, enabling works and piling occurring concurrently are assessed as a worst-case scenario.

CFA piling is proposed.

The following source data from BS5228-1 have been considered in the conservative assessment of construction work:

Table 9-12: Source Data Used for Prediction of Construction Noise

Source	Frequency (Hz)								SPL@ 10m
	63	125	250	500	1k	2k	4k	8k	
	dB(A)								
Enabling Works Sources									
Tracked Excavator loading lorry	59	62	68	74	73	72	69	62	79
Tracked excavator breaking and spreading rubble	53	65	74	76	77	76	71	61	83
Wheeled Loader	60	66	68	71	70	67	63	54	76
CFA Piling Sources									
Crawler Mounted Rig	55	65	69	73	74	73	69	62	79
Tracked Excavator Inserting Metal Cage	53	59	64	66	69	68	61	51	74
Concrete Pump	56	66	63	68	69	69	63	53	75

Tracked excavators will typically be involved in digging out material into spoil heaps and/or placing the material directly into lorries for removal off-site. Wheeled loaders may be used for movement of material within the site. During the site visit in June 2022, hardstand was noted on parts of the site. Therefore, it is assumed that a tracked excavator may be used to break up and spread rubble. It is assumed that 2 tracked excavators and 2 wheeled loaders could be in operation at any given time and one CFA piling rig and associated sources. Up to 14 lorries could be on the construction access route within a one-hour period.

NSL1 and NSL3 represent existing receptors that are more likely to be potentially affected by Phase 1 works. Future receptors on the Bailey Gibson and Player Wills permitted developments may be similarly affected if built out and occupied. The impact magnitude calculated at NSL1 will be similar to that at the Bailey Gibson and Player Wills sites.

The calculated noise levels at both NSLs are presented in Tables 9-13 and 9-14 and assumes that sources are on over for 66% of the time during a 1-hour period. Screening by existing buildings or receptor walls at NSL3 have been accounted for. NSL1 will not be screened as the building overlooks the site.

Table 9-13: Conservative Estimated Construction Noise at NSL1

NSL1		
Source & Assumptions	**Source Data from BS5228 LAeq,t @10m**	**Predicted LAeq,1hour (dB)**
Site Development		
Tracked Excavator loading lorry @ 75m	79	71
Wheeled Loader @ 75m	76	
Tracked Excavator breaking and spreading rubble @ 90m	83	
Wheeled loader @90m	76	
CFA piling sources @ DDC5 site (30m)	81	

The above calculation indicates that the noise level at NSL1 will exceed the selected threshold value for non- residential property by 1 decibel. The Bailey Gibson and Player Wills developments, if built will experience a similar impact magnitude rating, however the threshold value is lower for residential development therefore the selected threshold value will be exceeded by 6 decibels. These increases constitute moderate and major negative impact magnitude ratings respectively based on the criteria in Table 9.9.

Piling work close to the site boundaries with the NSLs is the main contributory source to the predicted $L_{Aeq,1hr}$. Phase 1 piling will take place over an 18-week period in total for three of the proposed blocks and therefore will not be as close to the site boundary with each NSL for the full duration. It is estimated that works will move away from the site boundary after 4 weeks. When duration of piling only is considered, the effect is not likely to be significant. However, as there will be overlap of sub-phases such as piling with building construction, it is considered that a potentially likely significant short-term negative effect can occur at times at existing and future NSLs bordering the site. Therefore, mitigation measures will be implemented as part of good practice to minimise construction noise and to ensure that the threshold values are not reached through the selection of low noise equipment, careful timing of works and screening where possible. Further detail is outlined in Section 9.6.1.

Table 9-14 below presents a conservative estimate of construction noise at NSL3 as a result of Phase 1.

Table 9-14: Conservative Estimated Construction Noise at NSL3

NSL3		
Source & Assumptions	**Source Data from BS5228 LAeq,t @10m**	**Predicted LAeq,1hour (dB)**
Site Development		
Tracked Excavator loading lorry @ 120m	79	57
Wheeled Loader @120m	76	
Tracked Excavator breaking and spreading rubble @ 160m and screened by BG site buildings	83	
Wheeled loader @160m and screened by BG site buildings	76	
CFA Piling Sources @ DDC3 site (90m) unscreened.	81	

The above calculation indicates that the noise level at NSL3 will not exceed the threshold value for residential property. Piling work is the main contributory source to the predicted $L_{Aeq,1hr}$. The impact magnitude is minor as the existing baseline will be exceeded. The effect is therefore not likely significant.

9.5.1.3 Phase 2 Construction Noise Assessment

Further enabling works, piling and construction of DCC1 will be completed during Phase 2.

The distances to existing NSLs from the proposed building footprints are outlined in Table 9.15.

Table 9-15: Nearest NSLs

NSL	Distance
NSL1 (Coombe Women and Infants University Hospital lab)	Approx. 25m from proposed Block DCC1. Overlooking site; no screening to levels above ground floor.
NSL2 (Margaret Kennedy Road apartments)	Approx. 30m from Block DCC1. Overlooking site; no screening.
NSL4 (parochial building)	Building façade 35m from proposed construction site compound 2 and 110m from footprint of Block DCC1. Ground floor screened by existing boundary wall to gardens.

NSL1 and NSL2 are the closest receptors more likely to be potentially affected by Phase 2 works. Table 9-16 outlines the calculated impact magnitude at NSL2.

Table 9-16: Conservative Estimated Construction Noise at NSL2

NSL2		
Source & Assumptions	**Source Data from BS5228 LAeq,t @10m**	**Predicted LAeq,1hour* (dB)**
Site Development		
Tracked Excavator loading lorry @ 60m	79	69
Wheeled Loader @ 60m	76	
Tracked Excavator loading lorry @ 115m	79	
Wheeled Loader @ 115m	76	
CFAPiling Sources @ DDC1 site (40m)	81	

The above calculation indicates that the noise level at NSL2 will exceed the selected threshold value for non- residential property by 4 decibels. Therefore, this constitutes a moderate negative impact magnitude rating. Piling work close to the site boundary is the main contributory source to the predicted $L_{Aeq,1hr}$. Phase 2 piling will take place over a 6-week period and will not always be at the site boundary during this period. However, the site is small with little scope for distance attenuation. Therefore, while the total predicted level will reduce away from the site boundary, the total impact magnitude rating is not likely to change. When duration of piling only is considered, the effect is not likely to be significant. However, as there will be overlap of sub-phases such as piling with building construction, it is considered that a significant short-term negative effect is likely to occur at times at NSL2. Therefore, mitigation measures will be implemented as part of good practice to minimise construction noise to below the threshold value for residential receptors through the selection of low noise equipment, careful timing of works and screening where possible etc. Further detail is outlined in Section 9.6.1.

9.5.1.4 Construction Traffic Noise Assessment

The main NSLs potentially affected by construction traffic movements are NSL4 and NSLs on Donore Avenue. As arrivals and departures are split left or right on Donore Avenue, a total of 7 HGVs will pass-by each NSL per hour. At NSL4, all 14 HGV movements on the internal access route are accounted for.

An SEL of 85 dB(A) has been assumed for truckpass-bys (@5m from road edge) on roadsides. This value has been used to calculate $L_{Aeq,1hour}$ values for HGV movements on Donore Avenue and at NSL4. NSL4 benefits from set back by 16m from the proposed access route and an existing boundary wall screening the ground floor which could be most affected by daytime movements.

The predicted $L_{Aeq,1hr}$ values are 58 and 51 dB(A) respectively excluding existing baseline.

Baseline noise levels directly on Donore Avenue are in the region of 63-67 dB (A) and 47 dB(A) at NSL4.

Therefore, the baseline+HGV movement noise is predicted to be 64-68 dB(A) at Donore Avenue and 52 dB(A) at NSL4. An increase of 1 - 2 decibels above baseline is expected at Donore Avenue and up to 5 decibels at NSL4. Therefore, the impact magnitude rating is minor to major. Based on duration of the works, the effect is deemed to be likely significant negative short term at NSL4. Therefore, further mitigation measures will apply at NSL4 as detailed in Section 9.6.1.

9.5.2 Construction Phase - Vibration

9.5.2.1 Applicable Criteria

Vibration impacts can typically potentially occur during site development and construction phases of development through the use of equipment such as rock breakers (not proposed), piling, vibrating rollers (potential) or ground improvement methods (not proposed). Vibration can affect both human beings and buildings (although most concern is with damage to buildings from site development and construction). Accordingly, there are separate criteria for both.

Guidance relevant to the protection of building structures is contained in the following documents:

- 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.

Both standards contain similar guidance relating to building damage criteria. Table 9.17 details the transient vibration guide values for cosmetic damage to buildings as set out in BS5228-2:

Table 9-17: Transient Vibration Guide Values for Cosmetic Damage

Type of Building	Peak Component Particle Velocity in Frequency Range of Predominant Pulse	
	4 – 15 Hz	15 Hz and above
Reinforced or Framed Structures Industrial and Heavy Commercial Buildings	50mm/sec at 4 Hz and above	50mm/sec at 4 Hz and above
Unreinforced or Light-weight Structures Residential or Light Commercial Buildings	15mm/sec at 4Hz increasing to 20mm/sec at 20Hz	20mm/sec at 15Hz increasing to 50mm/sec at 40Hz

The above values are for transient or intermittent vibrations which do not cause a resonant response in buildings. The criteria should be reduced by 50% for more sustained or continuous vibration which may occur during activities such as continuous piling methods. The values should also be reduced by 50% for listed buildings although they may not necessarily be more vulnerable than new builds.

The following limits therefore apply for continuous vibrations:

- Light Buildings – 7.5mm/sec

- Heavy Buildings – 25mm/sec

BS7385-2 indicates that the probability of damage tends towards zero at a component PPV of 12.5 mm/sec.

BS5228-2 also provides the following range of vibration values and associated potential effects on humans:

Table 9-18: Vibration Criteria – Human Beings

Vibration Level mm/sec PPV	Effect
0.14	Vibration might just be perceptible in the most sensitive in the most sensitive situations for most vibration frequencies.
0.3	Vibration might just be perceptible in residential environments.
1	A vibration level of this magnitude is likely to cause complaint.
10	Vibration is likely to be intolerable for any more than a very brief exposure to this level.

Source: BS5228-2

As can be seen from Table 9.18, the limits for humans are much lower than for cosmetic damage to buildings.

Laboratories may contain equipment sensitive to vibration. There are a number of existing laboratories associated with the Coombe Women and Infants University Hospital in proximity to the proposed works including the existing colposcopy building (VSL3) and existing laboratory (VSL2) adjacent to the new laboratory (VSL1) nearly completion on the Proposed Development site boundary (Refer to Figure 9.1 for lab locations). All of the laboratories, including the new laboratory, are likely to be operational during construction of the Proposed Development. It is also possible that a new additional colposcopy laboratory (Planning File Ref. No. 3537/21) will be built and operational on the site boundary. It should be noted that in general, vibration limits for sensitive equipment vary with the type of equipment and it is necessary to consult the equipment manufacturer for further information. Vibration sensitive equipment will, by necessity and design, be subject to extensive vibration control, such as vibration isolation from supporting structures, high rigidity and high mass floors, vibration isolated floors and other vibration source controls including anti-slam doors, control of footfalls, isolation of power and mechanical services equipment.[4]

There are protected structures within the general locality however there are none on or in close proximity to the site. These are outside the zone of influence for likely vibration impacts.

9.5.2.2 Phase 1& 2 – Construction Vibration Assessment

[4] Measurement & Assessment of Groundborne Noise & Vibration, 3RD Edition, Association of Noise Consultants, 2020.

Piling is the main activity during the construction phase of the proposed Development that can give rise to potential vibration impacts although HGVs moving on uneven surfaces and the use of vibratory rollers may also give rise to potential vibration impact. CFA piling as proposed for this project, amongst other types of piling such as injected piles etc. is preferable to driven piling in terms of minimising vibration. BS5228-2, Section F.3.2.4 notes the following with regards to vibration and CFA injection piling:

> *"The levels of vibration associated with continuous flight auger injected piling and pressed-in piling are minimal, as the processes do not involve rapid acceleration or deceleration of tools in contact with the ground but rely to a large extent on steady motions. Continuous vibrations at a low level could be expected from the prime movers."*

Prediction of vibration levels at receptors is complex and dependent on several variables such as the excavation method, the nature of the used equipment, the properties of the subsoil, the heterogeneity of the soil deposit, the distance to the receptor and the dynamic characteristic of the adjacent structures. Therefore, limits or threshold criteria as set out in BS5228-2 are applied for buildings and humans. As noted above, specific manufacturer limits will apply to sensitive equipment.

BS5228-2 provides some historic data on vibration levels measured on sites from different types of piling equipment under specific conditions e.g. soil type, however there is no data for other types of equipment. Table D.6 of the standard provides historic case history data on vibration levels measured at known distances during rotary bored piling (CFA historic data is not included in the standard). Measured vibration levels for augering range from 0.05 mm/sec at 20m to 0.54 mm/sec at 5m depending on ground conditions. Taking account of the distances to VSLs from piling, notwithstanding ground conditions present, it is not anticipated that the vibration criteria in Tables 9-17 and 9.18 will not be exceeded. Nevertheless, precautionary vibration monitoring at VSL1 – VSL3 (Coombe Women and Infants University Hospital existing and proposed laboratories), Bailey Gibson site development (if built out) and at receptors along the construction haul routes (NSL4) is proposed to ensure compliance with the limits or threshold values outlined earlier in Section 9.5.2 and will be included in the CEMP as a preventative measure.

9.5.3 Operational Phase

9.5.3.1 *Additional Traffic on Surrounding Roads*

Additional traffic arising from the Proposed Development can give rise to increased traffic noise impact at existing NSLs on the surrounding road network in the long term. Accordingly, the potential effect of additional traffic related noise impact arising from the completed development on existing NSLs has been considered. As a general rule of thumb, a doubling of traffic flow will likely result in a 3 decibel increase in traffic noise levels which is a perceptible change. In order to assist with the interpretation of the noise impact associated with vehicular traffic on public roads, Tables 9-19 and 9-20 from the UK LA111 document offer guidance as to the likely noise impact magnitude of short-term medium term and long-term change due to operational traffic. Short term medium term is defined as noise change between the Do Minimum Opening Year (DMOY)and the Do Something Opening Year (DSOY).

The magnitude of long-term change as set out in Table 9.21 is determined on the basis of change between the Do Minimum Opening Year (DMOP) and the Do Something Future Year (DSFY) e.g. 15 years after opening year.

Table 9-19: Magnitude of Change Short to Medium term Traffic

Noise Change (dB $L_{A10.18hr}$ or L_{night})	Magnitude	Corresponding Effect
Greater than or equal to 5.0	Major	Significant
3.0-4.9	Moderate	Significant
1.0-2.9	Minor	Not significant
Less than 1	Negligible	Not significant

Table 9-20: Magnitude of Change Long-term Traffic

Noise Change (dB $L_{A10.18hr}$ or L_{night})	Magnitude	Corresponding Effect
Greater than or equal to 10.0	Major	Significant
5.0 – 9.9	Moderate	Significant
3.0-4.9	Minor	Not significant
Less than 3	Negligible	Not significant

A review of the TTA has been undertaken. The Proposed Development is proposed as a low car development reflected in the total number of 79 parking spaces. The Proposed Development site location provides ease of access to amenities, schools, retail etc.

The data available in the TTA focuses on peak hour traffic levels as opposed to 18-hour flow (08.00 – 24.00 hrs) or night-time flow which correlate to the noise parameters in Tables 9.20 and 9.21. Notwithstanding this, the data has been used to provide an interpretation of potential noise impact magnitude from long term traffic changes in the area using the above tables.

Table 12-8 of Chapter 12-1 Traffic indicates the existing 2-way peak hour traffic and new vehicle trips two-way on the new access road (opposite Margaret Kennedy Road) and at Junction 1 onto Donore Avenue. The data is presented in Table 9-21:

Table 9-21: Traffic Flow Changes from TTA

	AM Peak Hour			PM Peak Hour		
Location	Existing Two-Way Vehicle Trips	New Vehicle Trips (Two-way)	% Increase	Existing Two-Way Vehicle Trips	New Vehicle Trips (Two-way)	% Increase
Site Access	3	76	2534.35%	5	81	1622.00%
Junction 1 - Donore Ave / Margaret Kennedy Road/ Brown Street South	301	76	25.29%	306	81	26.47%

It is clear from Table 9-21, that traffic flow will significantly increase during peak hours on the access route past the existing apartments at Margaret Kennedy Road. The impact on Donore Avenue will be <1 decibel and therefore constitutes a negligible long-term impact magnitude rating which corresponds to a likely non-significant effect.

Using an SEL value of 72 dB(A) at 5m for cars, the predicted $L_{Aeq,1h}$ in the AM peak at Margaret Kennedy Road will increase from 44 to 58 dB(A) with the development in place. This magnitude rating constitutes a major impact magnitude. However, the following should be noted in terms of the context of the impact:

- The location is city-centre and the surrounding areas were previously developed. The current baseline is therefore a temporary scenario.
- Outside of peak hours, traffic flows are likely to be much lower.
  The area directly to the south-east will be developed as amenity and sporting facilities.

Therefore, taking context into account, the effect is not likely to be significant.

9.5.3.2 *Plant Equipment*

The Proposed Development incorporates enclosed plant equipment at ground floor level of each block. Food preparation areas associated with the creche in Block DCC5 and the retail/café in DCC3 may also have associated air handling/refrigeration units. Based on the location of this equipment and distance to the nearest existing NSLs no potential negative impacts are anticipated.

9.5.4 Future Residential Noise Exposure Considerations

9.5.4.1 Transportation Noise

The UK ProPG: Planning & Noise, New Residential Development, May 2017[5] outlines a systematic risk based two stage approach for evaluating transportation noise exposure on prospective sites for residential development. The Guidance was mainly developed for transportation noise.

Stage 1 comprises an initial noise risk assessment of sites proposed for residential development considering either measured and/or predicted noise levels. A site is then characterised as negligible to high risk in terms of noise exposure of future residents.

Based on the site-specific monitoring and desk-based study undertaken and also taking into consideration any reduced screening arising from the demolition of the remaining St. Teresa's Gardens complex on Donore Avenue, the site is considered to be low risk at most in terms of future residential exposure to transportation noise.

[5] This document was prepared by a working group comprising members of the UK Association of Noise Consultants (ANC), the Institute of Acoustics (IOA) and the Chartered Institute of Environmental Health (CIEH). Although not a government document, since its adoption, it has been generally considered as a best practice guidance for assessing inward noise risk for new residential development.

External Amenity Areas

BS8233:2014 states that "*the acoustic environment of external amenity areas that are an intrinsic part of the overall design should always be assessed and noise levels should ideally not be above the range 50 -55 dB $L_{Aeq,16hr.}$"*

ProPG goes further to extend the advice contained within BS8233:2014 to include:

"Whether or not external amenity spaces are an intrinsic part of the overall design, consideration of the need to provide access to a quiet or relatively quiet external amenity space forms part of a good acoustic design process."

Based on the measured sound levels on site, the proposed private and communal parks, courtyards and roof/groundfloor/1st floor podium terraces will not be above the acceptable range of 50 - 55 dB $L_{Aeq,16hr.}$ Therefore, the Proposed Development complies with Pro-PG requirements to provide access to quiet or relatively quiet external amenity space.

In addition, the following is noted with regards to the provision of good acoustic design:

- The public space will be enhanced with tree planting. Softer as opposed to hard surfaces, however minor, may help reduce the impact of any reflected noise from traffic in a green space.
- The provision of planted areas in urban or suburban settings can *qualitatively* improve the soundscape for local residents and enjoyment of the proposed amenity areas. Natural features have been shown to improve perceived tranquillity and are provided in the landscape strategy.[6]
- Access to the public spaces provide additional optional external amenity to residents.

Internal Areas

Appropriate guidance and best practice in relation to noise intrusion in residential and other buildings is also contained within BS8233:2014 – *Guidance on Sound Insulation and Noise Reduction for Buildings* which is referred to in Pro-PG. This British standard sets out recommended noise limits for good indoor ambient noise levels and takes account of guidelines issued by bodies such as the WHO. Details taken from the standard for good conditions are presented in Table 9-22.

[6] Tranquillity and Soundscapes in Urban Green Spaces, Predicted and Actual Assessments from a Questionnaire Survey, Environment and Planning B: Planning and Design, 2013, Vol 40.

Table 9-22: Recommended Good Indoor Ambient Noise Levels

Criteria	Typical Situation	Design Range $L_{Aeq,\ T}$	
		07.00-23.00	23.00 -07.00
Resting	Living Room	35 $L_{Aeq,16hr}$	-
Dining	Dining Room	40 $L_{Aeq,16hr}$	-
Sleeping (daytime resting)	Bedroom	35 $L_{Aeq,16hr}$	30 $L_{Aeq,8hr}$ 45 $L_{Amax,f*}$

Source: BS8233:2014 and Pro-PG

Column 4 in Table 9-22 includes for an additional $L_{Amax,f}$ value as per Pro-PG guidelines. The following is noted in this regard:

Note 4:

"Regular individual noise events (for example scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,f}$ depending on the character or number of events per night. Sporadic noise events could require separate values. In most circumstances in noise sensitive rooms at night time (e.g. bedrooms) good acoustic design can be used so that individual noise events do not normally exceed 45 dB $L_{Amax,f}$ more than 10 times a night.

Pro-PG also notes the following with regards to achieving internal target levels:

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 L_{Aeq} target values subject to the further advice in Note 7.

Note 7:

Where development is considered necessary or desirable, despite external noise levels above WHO Guidelines, the internal L_{Aeq} target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved.

The relaxed criteria are indicated in Table 9-23 for reasonable conditions.

Table 9-23: Recommended Relaxed Indoor Ambient Noise Levels

Criteria	Typical Situation	Design Range $L_{Aeq,\ T}$	
		07.00-23.00	23.00 - 07.00
Resting	Living Room	40 $L_{Aeq,16hr}$	-
Dining	Dining Room	45 $L_{Aeq,16hr}$	-
Sleeping (daytime resting)	Bedroom	40 $L_{Aeq,16hr}$	35 $L_{Aeq,8hr}$

The relaxed criteria may arguably be applicable to the Proposed Development site, however, based on the monitoring undertaken, desk-based study and the enclosed nature of the site with screening and set-back from the main traffic routes, it is considered that the Proposed Development will achieve good internal day and night-time limits for resting and sleeping as set out in Table 9-23 with partially open windows which give a 10 -15 decibel sound reduction.

Regardless of the above but without over-specifying sound insulation, an adequate level of sound insulation in glazing such as double glazing, will be provided within the scheme.

9.5.4.2 Hospital Plant Equipment

Hospital external fixed plant, including a number of small vents and a boiler associated with an existing laboratory, (Refer to Figure 9.7) was found to be elevating ambient noise levels locally in the vicinity of the footprint of DCC6. Based on the site measurements, the estimated noise level from the plant at the proposed ground floor windows of Block DCC 6 is 50 dB(A) (freefield).

Based on the noise level alone, the recommended "good" internal night-time sleeping conditions with an open or partially opened window will not be achieved. Furthermore, there can also be tonal elements associated with these types of sources which can potentially cause annoyance.

Additionally, the World Health Organisation Community Guidelines for Noise, 1999 specification for an external noise level of L_{Aeq} 45 dB, 1 meter from the façade of a dwelling at night-time will be exceeded.

In order to mitigate this effect, The Coombe Women's and Infant Hospital have confirmed the laboratory will be refurbished and the existing associated external plant will be decommissioned in 2023. The external plant will be removed prior to the Operational Phase of the Proposed Development

9.5.5 Potential Cumulative Impacts

9.5.5.1 Site Development and Construction Phases

In general, it should be noted that potential construction impacts at NSLs are greatest within 40m of development works, after which they reduce as noise attenuates over distance. As addition of sources is logarithmic, the highest contributing sources, i.e. generally those at close distances to NSLs predominate and tend to define the noise impact magnitude.

There is potential for overlap of the Proposed Development construction phases and adjoining permitted Developments including the following in proximity to the site/existing NSLs:

1. Planning File Ref. No. 3537/21 – Development of a new dedicated Colposcopy/Women's Health Unit including the existing colposcopy building.
2. Part 8 Permission Ref. No. 2475/18 – Construction of 54 residential units, demolition of 2 no. existing flat blocks to facilitate the future provision of a landmark park and full-size multi-sport pitch.
3. Bailey Gibson site for which there is an extant permission (Planning File Ref. No. ABP-307221-20).

4. Player Wills site for which there is an extant permission (Planning File Ref. No. ABP-308917-20).
5. Baily Gibson 2 Strategic Housing Development (Planning File Ref No. ABP-314171-22)

Planning File Ref. No. 4049/19 – new 4-story lab building with the Coombe Women and Infants University Hospital with the provision of rooftop plant and 2 number rear extensions to the existing adjacent laboratory building to include a new link, office and store is nearing completion and will be occupied shortly. Therefore, no cumulative construction phase noise and/or vibration impacts could occur with it and the Proposed Development.

Taking a conservative approach, the cumulative effects of construction of Projects 1 – 4 occurring at the same time as the Proposed Development has been considered below.

NSLs not directly bounding the Proposed Development site such as those at O'Reilly Avenue, Rehoboth Place and St Catherine's Ave are expected to be predominantly impacted by works associated with the other developments listed above as these developments are closer to these NSLs.

The potential effects on NSLs 1, 2, 3 and 4, as identified on Figure 9-1, from cumulative impacts are described further below.

NSL1, the new laboratory, will be predominantly influenced by the Proposed Development works. Therefore, the cumulative impact at this NSL is as described earlier under section 9.5.1.2 i.e. potentially likely significant short-term negative effect occurring at times.

NSL3 is in closest proximity to the Player Wills site and is approximately 40m from the Bailey Gibson site but is 90m from building footprint of DCC3. Therefore, the construction works associated with the Player Wills and the Bailey Gibson sites are expected to be predominant.

The development of Projects 2 and 4 above may potentially result in likely significant short term cumulative construction noise effects at times at NSL2 and NSL4 if the developments proceed at the same time as Phase 2 of the Proposed Development. Therefore standard mitigation measures will be applied to ensure that cumulative construction noise levels are maintained below the limits specified in Section 9.5.1.1. to reduce the magnitude rating and therefore prevent significant negative effects.

Construction traffic from Projects 2 and 4 above are likely to use Donore Avenue for access/egress. Therefore, cumulative effects may arise however these are not likely to be significant taking account of existing baseline traffic flows on the road.

9.5.5.2 Operational Phase

The long-term traffic noise impacts have been discussed earlier in Section 9.5.3.1.

9.5.6 "Do Nothing" Impact

Adjoining sites as listed above under Section 9.5.5 have received planning permission including the Player Wills and Bailey Gibson sites. These developments mainly comprise residential development and facilities such as the landmark park and the full-sized multi-sports pitch. Therefore, the future soundscape of the Proposed Development site and at the nearest

NSLs may alter slightly to include typical neighbourhood sounds from adjoining new development without the development of the proposed site. Taking account of context i.e., the type of sources introduced, past history and location, the “Do Nothing” impact is expected to be long term neutral.

The Proposed Development site is zoned for future development. Therefore, should the development not proceed, a similar development is likely. This scenario impact is expected to be long term neutral also.

9.6 Avoidance, Remedial & Mitigation Measures

9.6.1 Construction Phase

The following noise and vibration management measures will apply to the Proposed Development to ensure the daytime threshold values specified in this chapter are complied with:

- A Site Representative will be appointed for matters related to noise and vibration.
- Any complaints received will be thoroughly investigated.
- A written complaints log will be maintained by the Site Representative. This will, at a minimum, record complainant’s details (where agreed) the date and time of the complaint, details of the complaint including where the effect was observed, corrective and preventative actions taken and any close-out communications. This will ensure that the concerns of local residents who may be affected by site activities are considered during the management of activities at the site.
- Noise monitoring with capability for real-time review both on-site and remotely will be conducted at nearby NSLs listed earlier in this chapter.
- In the event of meeting or exceedance of the threshold values at NSLs, works will be ceased and measures implemented immediately to ensure that the limits are complied with.
- The Site Representative will also liaise with the Site Representatives on other active construction sites in the immediate vicinity. In particular, liaison will be required when noisy activities are planned to ensure that cumulative noise levels do not meet or exceed the threshold values through measures such as timing of works. As noise monitoring will have capability for remote viewing, all Site Representatives can have access to monitoring data.
- According to BS5228-1, bored piles can be constructed by means of a rotary piling rig or by impact boring. The associated noise characteristics are normally steady unless it is necessary to insert steel casings for part of the depth which could result in intermittent high peaks which can be more disturbing and result in higher noise levels. Continuous flight auger (CFA) piling, as proposed, is a means of bored piling that does not need a temporary casing thus eliminating intermittent high peaks. CFA piling is considered one of the quietest methods of piling available. Bored piling methods are often considered as a reduced noise alternative to driven piles. Driven piles also have more potential for vibratory impact. Therefore, the use of CFA piling is a mitigating factor incorporated into the design. CFA in particular is recommended on sensitive sites. Due to the urban nature and the presence of potentially sensitive equipment in

the Coombe Women and Infants University Hospital labs, CFA piling is the most suitable choice of bored piling type.

- Temporary acoustic screening will be placed along the boundaries with NSL2 at Margaret Kennedy Road and additional hoarding at NSL4 above the existing wall to further mitigate HGV movement noise on the access route. As a general rule of thumb, it is recommended that temporary screening break the “line of sight” from the sources to the lower windows of the nearest NSLs where possible.
- Low noise plant and/or the use of enclosures will be chosen to minimise construction noise impact.
- The operation of certain pieces of equipment, where substitution, enclosure etc. cannot be carried out will be managed through monitoring and timing of use to ensure that noise levels remain below the threshold values/criteria specified.
- During the construction phase all equipment will be required to comply with noise limits set out in EC Directive 2000/14/EC and the 2005/88/EC amendment on the approximation of the laws of the Member States relating to the noise emission in the environment by equipment for use outdoors. The directive covers equipment such as compressors, welding generators, excavators, dozers, loaders and dump trucks.

As a precautionary measure and as part of good practice, vibration monitoring will be carried out where works are in close proximity to VSLs1, 2 and 3 and at NSLs 2 and 4 during piling and other activities such as compacting of roads using rollers. As a precautionary measure, test monitoring will be completed at NSL2 in relation to HGV pass-bys to ensure that there is no vibration impact due to construction traffic. With regards to piling, test monitoring will be conducted with the equipment on at low levels before increasing incrementally to operational levels, if deemed necessary. Works will be ceased, and mitigation measures implemented where monitoring detects vibration levels associated with the works above the manufacturer’s guidelines for the lab equipment in-situ.

The outline CEMP submitted with this application will include the noise and vibration management measures listed above.

9.6.2 Operational Phase

Any plant equipment proposed for installation in the future to serve commercial units will be assessed in accordance with the procedures set out in BS4142:2014+A1:2019 to ensure there is no significant effect on the nearest NSRs (future residents).

At a minimum, these units must comply with the external day and night-time criteria specified in The World Health Organisation Community Guidelines for Noise, 1999:

- Night-time - L_{Aeq} 45 dB, 1 meter from the façade of a dwelling.
- Daytime – L_{Aeq} 55 dB, to protect the majority of people from being seriously annoyed during the daytime.

Plant will be specified to ensure that there are no tonal or impulsive elements.

With regards to future residential amenity the external plant will be removed prior to the Operational Phase of the Proposed Developmen

9.6.3 "Worst Case" Scenario

The worst-case scenarios have been assessed in this chapter.

9.7 Residual Impacts

9.7.1 Construction Phase

Construction noise arising from the proposed project will cause a temporary to short term elevation of ambient sound levels in the vicinity of the existing NSLs at times especially when works are *close to the boundary*, but this will be controlled by mitigation measures to below the threshold values specified in this chapter for construction works. The threshold values, by necessity, are higher than existing ambient levels as construction works are temporary to short term in nature. Therefore, the construction phase activities are not expected to constitute a likely significant negative effect. As works move away from NSLs and/or as new buildings provide screening, it is expected that construction noise levels will reduce to below standard limit values for the majority of the duration of the total works.

Construction traffic accessing the proposed works will have a likely minor short-term non-significant negative effect on NSLs off Donore Ave and at NSL4 with mitigation of additional hoarding.

The cumulative effects are as described above.

9.7.2 Operational Phase

Existing NSRs

An assessment of the long-term additional traffic noise impact associated with the proposed project based on peak hour flows has been completed. The impact magnitude will be long term negative negligible on Donore Avenue and therefore the effect will not be likely significant. The assessment includes for cumulative long-term traffic on Donore Avenue.

Additional traffic noise will be introduced at existing NSLs at Margaret Kennedy Road due to the new route into the Proposed Development. The impact magnitude rating is major negative as there is very little traffic at present (3 two-way flow in the peak hour increasing to 76 two-way flow due to the development). However, the following should be noted in terms of the context of the impact magnitude:

- The location is city-centre and the surrounding areas were previously developed. The current baseline is therefore a temporary scenario.
- Outside of peak hours, traffic flows are likely to be much lower.
- The area directly to the south-east will be developed as amenity and sporting facilities.

Therefore, taking context into account, the effect is not likely to be significant.

Future Residents

The Proposed Development site, although in the city centre, is a quiet location. The criteria for good external amenity and internal conditions with open or partially open windows will be achieved taking account of transportation noise.

Specific existing hospital plant associated with the existing laboratory and identified as elevating noise in the vicinity of the western site boundary, will be removed and therefore will not affect future residential amenity.

In the long-term no adverse impacts on future residents are expected.

9.8 Monitoring

9.8.1 Construction Phase

The contractor will be required by contractual obligation to ensure construction activities operate within the noise threshold values and vibration limits set out within this assessment. The contractor will be required to undertake real-time noise monitoring at locations representative of the closest NSLs to ensure that construction noise is maintained below the relevant threshold values. Vibration test monitoring will be required at VSLs especially during piling to ensure that limits stated in the chapter, and limits as required in the Coombe Women and Infants University Hospital laboratories in accordance with manufacturers specifications are not exceeded. In this regard, pre monitoring will be completed to establish existing vibration levels in the laboratories.

9.8.2 Operational Phase

Not applicable.

9.9 Interactions

9.9.1 Population and Human Health

The World Health Organisation (WHO) identifies that noise is a public health issue. It has negative impacts on human health and well-being and is a growing concern. In particular, the effects from long term exposure to anthropogenic sources including transportation sources (road, air and rail), wind turbines and leisure have been identified in the WHO Environmental Noise Guidelines for the European Region, 2018, as sources of concern as they potentially contribute to sleep loss and depravation. The effects of additional road traffic arising as a result of the impact of the proposed project on human health have been assessed in this chapter.

9.9.2 Biodiversity

Construction noise has the potential to temporarily impact on fauna. This has been specifically addressed in Chapter 5 dealing with biodiversity and is outside the scope of this chapter.

9.9.3 Material Assets

Construction vibration has the potential to impact on the buildings and laboratory sensitive equipment associated with the laboratories described in this chapter. Limits specified in this chapter and in accordance with manufacturers specifications for laboratory equipment will be complied with. The contractor will be required to contractually comply with these limits.

9.10 Difficulties Encountered When Compiling

No difficulties were encountered when compiling this Chapter.

9.11 References

BS5228:2009 +A1:2014: Code of Practice for Noise and Vibration Control on Construction and Open Sites: Part 1: Noise and Part 2: Vibration.

BS4142:2014+A1:2019 Methods for Rating and Assessing Industrial and Commercial Sound.

BS 7385: 1993: Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration.

BS6472-1:2008: Guide to evaluation of human exposure to vibration in buildings. Vibration sources other than blasting.

Environmental Noise Guidelines for the European Region, World Health Organisation, Oct 2018.

Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes, March 2014.

Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4) as published by the Environmental Protection Agency in January 2016.

Guidelines for Environmental Noise Impact Assessment, Institute of Environmental Management and Assessment, Version 1.2, Nov 2014.

ISO 1996 Acoustics – Description, Measurement and Assessment of Environmental Noise, Part 1, Basic Quantities and Assessment Procedures (2016) and Part 2 Determination of Environmental Noise Levels (2017).

ISO 9613.-2 – 1996 Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation.

Measurement and Assessment of Groundborne Noise and Vibration, 3rd Edition, UK Acoustics and Noise Consultants (ANC), 2020

ProPG: Planning and Noise: Professional Practice Guidance on Planning and Noise, New Residential Development, ANC, IOA and UK CIEH, May 2017.

Proposed Strategic Housing Development, Former Bailey Gibson Site, 326 – 328 South Circular Road, Dublin 8, Vol. II, Environmental Impact Assessment Report, McCutcheon Halley, May 2020.

Proposed Strategic Housing Development, Former Player Wills site and undeveloped land owned by Dublin City Council, at South Circular Road, Dublin 8, Vol. II, Environmental Impact Assessment Report, McCutcheon Halley, December 2020.

10 TOWNSCAPE AND VISUAL

10.1 Introduction

This report identifies and assesses the potential effects of the Proposed Development in Dublin 8 on the townscape and visual resources of the study area. It examines the proposed mitigation measures that will be implemented to prevent, reduce, or offset potential adverse townscape and visual effects or enhance potential beneficial effects.

In the context of this project 'landscape' includes urban landscape or townscape. As the study area is predominantly built-up, the term 'townscape' has been used rather than landscape. Both terms are, however, interchangeable, depending on the nature and context of the area.

The report considers how:

- Townscape effects associated with a development relate to changes to the fabric, character, and quality of the townscape resource and how it is experienced; and
- Visual effects relate closely to townscape effects, but also concern changes in views as visual assessment is also concerned with people's perception and response to changes in visual amenity.

Townscape and visual effects are interrelated with cultural heritage and historic townscape character but are assessed separately. Whilst elements of the built heritage such as Listed Buildings and Conservation Areas are important elements of the townscape and contribute to its character and influence its quality and value, effects on the significance of these designated features and their setting do not form part of this assessment. Relevant effects have been assessed in Chapter 11: Archaeology and Cultural Heritage.

The townscape and visual impact assessment will be supported by a booklet of photomontages (prepared by Innovision Media Limited), which will be included as a separate document in the planning application.

10.1.1 Quality Assurance and Competence

This Chapter was written by:

Author: Maria Donohoe

Title: LVIA Landscape Architect, AECOM

Qualifications: BSc (Hons) Landscape Architecture, MILI.

This Chapter has been prepared by Maria Donohoe, Landscape Architect, BA (Hons) MILI. Maria is a Landscape Architect with AECOM Ltd. Maria has Bachelor of Honours in Landscape Architecture from University College Dublin and is a Member of the Irish Landscape Institute. She has worked in the Republic of Ireland and the UK and has experience on a range of projects across the public and private sectors. Maria has provided landscape and visual impact assessment for urban and rural developments, in residential, renewable energy projects as well as industrial, electricity, and road infrastructure developments. She provides technical reviews of architectural and landscape architectural design proposals proposing

mitigation strategies and design solutions to reduce/minimise the landscape and visual effects through landscape change.

Co-Author / Reviewer: Joerg Schulze

Title: Associate Director Landscape Architecture & LVIA, AECOM

Qualifications: Diplom-Ingenieur (FH) Landscape Architecture (Erfurt, Germany), MILI

Joerg Schulze is a qualified Landscape Architect since 2003 and a corporate member of the Irish Landscape Institute since 2008. He has over 19 years' professional experience working for clients in the private and public sectors. He has a comprehensive track record in developing and managing landscape and visual impact assessments of large residential, commercial, industrial, infrastructural, renewable energy, tourism and civic developments throughout the island of Ireland. He has extensive experience in all stages of the planning, design, tender and implementation process, contract management and as consultant for EIAR, EIA and Part 8 applications. He has also prepared residential visual impact assessments, manages the production of photomontages and the preparation of zones of theoretical visibility and theoretical visual intensity mapping. Joerg is a regular expert witness at Oral Hearings.

10.1.2 Relevant Legislation, Planning Policies and Guidance

European

The Council of Europe Landscape Convention (ETS No.176) provides guidelines for managing landscapes/townscapes. The Convention is not an EU Directive. Countries that sign and ratify the Convention make a commitment to upholding the principles it contains within the context of their own domestic legal and policy frameworks. The convention was ratified by Ireland in March 2002 and came into effect in Ireland in 2004. The European Landscape Convention requires "*landscape to be integrated into regional and town planning policies and in cultural, environmental, agricultural, social and economic policies, as well as any other policies with possible direct or indirect impacts on Landscape*".

National

The National Landscape Strategy (NLS) for Ireland 2015-2025 was launched in May 2015 and is to be implemented by the Government in the future. The NLS promotes the sustainable protection, management, and planning for the landscape/townscape. The NLS states that the "*National Landscape Strategy will be used to ensure compliance with the European Landscape Convention and to establish principles for protecting and enhancing the townscape*(townscape) *while positively managing its change. It will provide a high-level policy framework to achieve balance between the protection, management and planning of the landscape by way of supporting actions.*" It also states that "*The Strategy sets out Ireland's high-level objectives and actions with regard to landscape* (townscape)*. It also positions landscape in the context of existing Irish and European strategies, policies and objectives, and outlines methods of ensuring co-operation at a sectoral and at a European level by the State".*

<u>Urban Development and Building Heights – Guidelines for Planning Authorities, December 2018</u>

These guidelines set out national planning policy guidance on building heights with regard to urban areas. Under the guidance, it is considered that by consolidating and strengthening existing built up areas, more sustainable development patterns can be achieved by limiting the expansion of towns and cities outwards. These guidelines build upon the strategic policy framework set out in Project Ireland 2040 and the National Planning Framework.

With regard to the building heights of new developments, relevant aspects of these guidelines are extracted and listed as follows:

- Increased building height is a significant component in making optimal use of the capacity of sites in urban locations where transport, employment, services or retail development can achieve a requisite level of intensity for sustainability,

- Taller buildings can assist in reinforcing and contributing to a sense of place within a city or town centre,

- In some cases, statutory development plans have tended to set out overly restrictive maximum height limits in certain locations and crucially without the proper consideration of the wider planning potential of development sites.

Local Authorities and An Bord Pleanála *"will be required to have regard to the guidelines and apply any specific planning policy requirements (SPPRs) of the guidelines … in carrying out their functions"*. It should be highlighted that any SPPRs within the guidelines will take precedence over *"any conflicting, policies and objectives of development plans, local area plans and strategic development zone planning schemes".*

Local

The Dublin City Development Plan 2022-2028 (DCDP)

The Dublin City Development Plan 2022-2028 is the main strategic planning policy document, which will guide the renewal and development of Dublin City up to 2028. On 14th December 2022, a new City Development Plan (2022 – 2028) will come into operation to provide guidance and future renewal going forward. (Relevant details on planning policies are described in the Planning Policy Context report included in the planning submission package).

The Proposed Development Site is identified in the DCDP as Zone Z14, which is an area, where proposals for substantial, comprehensive development or re-development have been, or are in the process of being prepared with the objective:

"To seek the social, economic and physical development and/or regeneration of an area with mixed use, of which residential would be the predominant use".

Strategic Development and Regeneration Area 11 - St. Teresa's Gardens and Environs (SDRA 11)

The site is a large part of the area identified as SDRA 11, an area capable of delivering significant quantities of homes and employment for the city. The 'Key Guiding Principles' of relevance to this assessment include:

"Deliver a mixed-use quarter with a considerable capacity for high quality residential accommodation and complementary uses".

"To maximise the potential of well-connected but underutilised brownfield low-intensity residential land, situated within the existing built fabric of the city and adjacent to the proposed Greenhills to City Centre Core Bus Corridor".

"To support the development of a network of streets and public spaces to ensure the physical, social and economic integration of St. Teresa's Gardens with the former Player Wills and Bailey Gibson sites and adjoining lands".

10.1.3 Scope

Study Area

A study area extending to a radius of 1.5km from the boundary of the Proposed Development has been determined as appropriate for the assessment of townscape and visual effects. The extent of the study area is based on initial findings of the desktop study later verified on-site during the fieldwork survey. It is acknowledged that the Proposed Development may be visible from locations beyond the study area, and as such, it is important to note that the 1.5km study area defines the area within which potential effects could be significant, rather than defining the extent of visibility.

Nine photomontages have been produced to illustrate views from representative viewpoints located within the 1.5km study area radius.

Effects Scoped Out

The Proposed Development will become a permanent feature in the townscape following the completion of construction works. The assessment takes account of this in the determination of residual townscape and visual effects.

10.1.4 Temporal Scope

The type and duration of the townscape and visual effects fall within two main stages as follows:

Construction (temporary and of a short duration)

- Potential physical effects arising from construction of the development on the townscape resource within the development application boundary area;
- Potential effects to townscape character or visual amenity within the wider study area as a result of visibility of construction activities or the development during construction;
- Effects of temporary site infrastructure such as – site traffic; construction compounds, cranes; and
- Potential effects of partially built development in various stages of construction.

Operational

- Potential effects of the Proposed Development on townscape resources and townscape character, including the perceptual qualities of the townscape;
- Potential effects of the Proposed Development on views and visual amenity; and
- Potential cumulative effects of the development in combination with other planned and Proposed Developments of a similar type and scale upon the townscape and visual resource of the study area.

10.2 Study Methodology

This section sets out the methodology for the Townscape and Visual Impact Assessment (TVIA) in respect of the Proposed Development.

10.2.1 Guidance and other information used in the Townscape and Visual Impact Assessment

The following sources and guidelines were used in the assessment:

- EPA "Guidelines on the information to be contained in Environmental Impact Assessment Reports", May 2022;
- 'Guidelines for Landscape and Visual Impact Assessment' (GLVIA), 3rd Edition, 2013, Landscape Institute (UK) & IEMA;
- 'Visual Representation of Development Proposals', Landscape Institute, Technical Guidance Note 06/19, 17 September 2019;
- 'Landscape value and valued landscapes' Technical Guidance Note 02/21,Landscape Institute (UK);
- Dublin City Development Plan 2016-2022;
- Draft Dublin City Development Plan 2022-2028;
- National Parks and Wildlife Service (NPWS), http://www.npws.ie/;
- Sport Ireland: Find your Trails: http://www. https://www.sportireland.ie/outdoors/find-your-trails; and
- Ordnance Survey Ireland, 1:50,000 Discovery Mapping.

10.2.2 Townscape and Visual Impact Assessment Criteria

This report has been prepared based on the Environmental Protection Agency (EPA) guidance document 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports, May 2022. Best practice guidance, such as the '*Guidelines for Landscape and Visual Impact Assessment, 3rd Edition (GLVIA3), 2013, Landscape Institute (UK) & IEMA*' provide specific guidelines for landscape and visual impact assessments. Therefore, a combination of the EPA guidelines, the Landscape Institute guidelines and professional experience has informed the methodology for the assessment herein. The Landscape Institute guidelines require the assessment to identify, predict and evaluate the significance of potential effects to townscape characteristics and established views. The assessment is based on an evaluation of the sensitivity to change and the magnitude of change for each townscape or visual receptor. For clarity, and in accordance with best practice, the assessment of potential effects on townscape character and visual amenity, although closely related, are undertaken separately.

The assessment acknowledges that townscape and visual effects change over time as the existing townscape external to the Proposed Development evolves and proposed planting establishes and matures.

The significance of an effect or impact is determined by two distinct considerations:

1. The **Nature** of the receptor likely to be affected, namely:
    - The value of the receptor or view;
    - The susceptibility of the receptor to the type of change arising from the Proposed Developments; and
    - The sensitivity to change is related to the value attached to the receptor.

2. The **Magnitude** of the effect likely to occur, namely:
    - The size and scale of the townscape and visual effect (for example, whether there is a complete or minor loss of a particular townscape element);
    - The geographical extent of the areas that will be affected;
    - The duration of the effect and its reversibility; and
    - The quality of the effect – whether it is neutral, positive or negative.

Table 10-1 provides the definition of the duration of both townscape and visual effects.

Table 10-1: Definition of Duration of Effects

Duration	Description
Temporary	Effects lasting one year or less
Short Term	Effects lasting one to seven years
Medium Term	Effects lasting seven to fifteen years
Long Term	Effects lasting fifteen to sixty years
Permanent	Effects lasting over sixty years

The quality of both townscape and visual effects is defined in Table 10-2.

Table 10-2: Definition of Quality of Effects

Quality of Effects	Description
Neutral	This will neither enhance nor detract from the townscape character or view
Positive (Beneficial)	This will improve or enhance the townscape character or view
Negative (Adverse)	This will reduce the quality of the existing townscape character or view

10.2.3 Assessment Process

The assessment is undertaken based on the following key tasks and structure:

- Establishment of the baseline or receiving environment.
- Appreciation of the Proposed Development; and
- Assessment of effects.

10.2.4 Establishment of the Baseline

A baseline study has been undertaken through a combination of desk-based research and site surveys in order to establish the existing conditions of the townscape and visual resources of the study area. Desk based research has involved a review of mapping and aerial photography, relevant planning and policy documents and other related publications.

10.2.5 Appreciation of the Proposed Development

In order to be able to accurately assess the full extent of likely effects on townscape character and visual amenity it is essential to develop a thorough and detailed knowledge of the Proposed Development. This includes a comprehensive understanding of its location, nature and scale and is achieved through a review of detailed descriptions of the Proposed Development and drawings (see Planning Application Drawings accompanying the application) and an on-site survey.

The townscape and visual impact assessment has considered all elements of the Proposed Development.

10.2.6 Assessment of Effects

The townscape and visual impact assessment seeks to identify, predict and evaluate the significance of potential effects to townscape characteristics and established views. The assessments are based on an evaluation of the sensitivity to change and the magnitude of change for each townscape or visual receptor.

The assessment acknowledges that townscape and visual effects change over time as the existing townscape internal and external to the Proposed Development evolves. The assessment therefore reports on potential effects during both construction/operation and completion of the Proposed Development. The prominence of the Proposed Development in

the townscape or view will vary according to the existing screening effects of local topography, intervening existing vegetation and building structures.

GLVIA3 requires that a clear distinction is drawn between landscape (which includes the urban townscape) and visual effects:

- Townscape effects relate to the degree of change to characteristics or physical components of an urban area, which together form the character of that townscape, e.g. topography, streets, buildings and open space.
- Visual effects relate to the degree of change to an individual receptor's or a receptor group's view of that townscape, e.g. local residents, users of public open space, footpaths or motorists passing through the area.

As mentioned in the scope above, construction and operational stages of the Proposed Development are assessed separately. Distinctions may be drawn between temporary and permanent effects, with permanent effects typically being of greater importance. Residual effects are those likely to arise from the Proposed Development considering all embedded measures.

The assessment forms part of an iterative process where, as potentially significant effects are identified, these inform the design of the Proposed Development. Mitigation of the effects of the proposed development has been considered throughout the process, including site selection, consultation and design development. This process and the considerations, which informed it, are described within the Design Statement included in the planning submission package.

When considering the potential effect of changes that a future development may have on the townscape and visual resource it is necessary to identify those key elements of the townscape which make it distinctive. These can be seen as layers which overlay each other and vary in dominance from place to place. These layers mainly comprise of the buildings, structures and spaces which influence the pattern of uses, activity and movement in a place and the experience of those who visit, work and live there.

Cumulative effects arise from changes brought about by one development in conjunction with another of similar character. Cumulative effects are considered where the presence of developments of a similar type or scale, that have planning consent but are not constructed, or that are the subject of undetermined applications may have a combined effect on the perception of townscape character and visual amenity.

10.2.7 Townscape Effects

Townscape effects describe the impact on the fabric or structure of a townscape or townscape character. The assessment of townscape effects firstly requires the identification of the components of the townscape. The townscape components are also described as townscape receptors and comprise the following:

- Individual townscape elements or features;
- Specific aesthetic or perceptual aspects; and

- Townscape character, or the distinct, recognisable and consistent pattern of elements (natural and man-made) in the townscape that makes one townscape different from another.

The assessment will identify the interaction between these components and the Proposed Development during construction and operational phases. The condition of the townscape and any evidence of current pressures causing change in the townscape will also be documented and described.

10.2.7.1 Townscape Value

Townscape value is frequently addressed by reference to international, national, regional and local designations, determined by statutory and planning agencies. However, absence of such a designation does not necessarily imply a lack of quality or value. Factors such as accessibility and local scarcity can render areas of nationally unremarkable quality, highly valuable as a local resource. The quality and condition are also considered in the determination of the value of a townscape.

With reference to GLVIA 3, townscape value refers to the relative value that is attached to different townscapes by society. The definition and application of townscape value has also been informed by the 'Townscape value and valued townscapes' Technical Guidance Note 02/21 published by the Landscape Institute.

The evaluation of townscape value is undertaken with reference to the definitions stated in Table 10-3.

Table 10-3: Townscape Value

Townscape Value	Classification Criteria
High	Nationally designated or iconic, unspoilt townscape with few, if any, degrading elements.
Medium	Regionally or locally designated townscape, or an undesignated townscape with locally important landmark features and some detracting elements.
Low	Undesignated townscape with few if any distinct features or with several degrading elements.

10.2.7.2 Townscape Susceptibility

Townscape susceptibility relates to the ability of a particular townscape to accommodate the Proposed Development without undue negative consequences. Townscape susceptibility is appraised through consideration of the baseline characteristics of the townscape, and in particular the scale or complexity of a given townscape.

The evaluation of townscape susceptibility is undertaken with reference to a three-point scale, as outlined in Table 10-4.

Table 10-4: Townscape Susceptibility Criteria

Townscape Susceptibility	Classification Criteria
High	Small scale, intimate or complex townscape considered to be intolerant of even minor change.
Medium	Medium scale, more open or less complex townscape considered tolerant to some degree of change.
Low	Large scale, simple townscape considered tolerant of a large degree of change.

10.2.7.3 Townscape Sensitivity

Townscape sensitivity to change is determined by employing professional judgment to combine and analyse the identified townscape value, quality and susceptibility and is defined with reference to the scale outlined in Table 10-5.

Table 10-5: Townscape Sensitivity to Change Criteria

Townscape Susceptibility	Classification Criteria
High	• Townscape characteristics or features with little or no capacity to absorb change without fundamentally altering their present character. • Townscape designated for its international or national townscape value or with highly valued features. • Outstanding example in the area of well cared for townscape or set of features that combine to give a particularly distinctive sense of place. • Few detracting or incongruous elements.
Medium- High	• Townscape characteristics or features with a low capacity to absorb change without fundamentally altering their present character. • Townscape designated for regional or county-wide townscape value where the characteristics or qualities that provided the basis for their designation are apparent or a townscape with highly valued features locally. • Good example in the area of a well-cared for townscape or set of features that combine to give a clearly defined sense of place.
Medium	• Townscape characteristics or features with moderate capacity to absorb change without fundamentally altering their present character. • Townscape designated for its local townscape value or a regional designated townscape where the characteristics and qualities that led to the designation of the area are less apparent or are partially eroded or an undesignated townscape which may be valued locally – for example an important open space. • An example of a townscape or a set of features which is relatively coherent, with a good but not exceptional sense of place - occasional buildings and spaces may lack quality and cohesion.
Medium - Low	• Townscape characteristics or features which are reasonably tolerant of change without determent to their present character. • No designation present or of little local value. • An example of an un-stimulating townscape or set of features; with some areas lacking a sense of place and identity.
Low	• Townscape characteristics or features which are tolerant of change without determent to their present character. • An area with a weak sense of place and/or poorly defined character /identity. • No designation present or of low local value or in poor condition. • An example of a monotonous unattractive visually conflicting or degraded townscape or set of features.

10.2.7.4 Townscape Receptors

The townscape resources within the study area that could be affected by the development include:

- Physical resources such as buildings, open space, trees, watercourses (Canal) etc.;
- Designated, valued or recognised components that contribute to townscape character; and
- Cultural heritage interests that contribute to townscape character.

Townscape receptors are defined as those townscape resources within the study area from which the development may be visible or where potential visibility of the development in one part of the townscape resource affects the experience of another part. Field assessment studies were used to check the potential visibility of the development from the townscape resources within the study area. Within this section specific consideration is also given to changes to townscape elements such as the built fabric, open space or trees.

10.2.7.5 Sensitivity of Townscape Receptors

The sensitivity of a townscape receptor is an expression of its ability to accommodate the Proposed Development as part of its own character. The sensitivity of a townscape varies according to the nature of the existing resource and the nature of the proposed changes as a result of the Proposed Development. The sensitivity of the townscape is based on interpretation of a combination of judgements relating to their susceptibility to the type of change or development proposed and the value attached to the townscape.

10.2.7.6 Townscape Character

Townscape character is a complex mix of physical features and patterns and cultural elements. Buildings, structures and spaces and the resulting layout and urban grain, the density and mix, scale and appearance, human interaction and cultural and historic features combine to create a common ‘sense of place’ and identity that is experienced as townscape character. Definable units (character areas and character zones) can be used to categorise the townscape and the level of detail and size of unit can be varied to reflect the scale of definition required. It can be applied at national, regional and local levels.

The quality or condition of a townscape character receptor reflects its attributes, such as the condition of the buildings and spaces or vegetative components and the attractiveness and townscape quality of the area as well as its sense of place. A townscape with consistent, intact and well-defined, distinctive attributes is generally considered to be of higher quality and in turn, higher sensitivity, than a townscape where the presence of inappropriate or discordant elements has detracted from its inherent attributes. The higher the quality of a receptor the greater is its sensitivity to the Proposed Development.

10.2.7.7 Magnitude of Townscape Change

Magnitude of change is an expression of the size or scale of change in the townscape, the geographical extent of the area influenced and the duration and reversibility of the resultant effect. The variables involved are described overleaf.

- The extent of existing townscape elements that will be lost, the proportion of the total extent that this represents and the contribution of that element to the character of the townscape;
- The extent to which aesthetic or perceptual aspects of the townscape are altered either by removal of existing components of the townscape or by addition of new ones;
- Whether the effect changes the key characteristics of the townscape, which are integral to its distinctive character;
- The geographic area over which the townscape effects will be felt (within the Proposed Development site itself; the immediate setting of the Proposed Development site; at the scale of the townscape type or character area; on a larger scale influencing several townscape types or character areas); and
- The duration of the effects (short term, medium term or long term) and the reversibility of the effect (whether it is permanent, temporary or partially reversible).

Changes to townscape characteristics can be both direct and indirect. Direct change occurs where the Proposed Development will result in a physical change to the townscape within or adjacent to the Proposed Development site. Indirect changes are a consequence of the direct changes resulting from the Proposed Development. They can often occur away from the Proposed Development site (for example, off-site construction staff parking) and may be a result of a sequence of interrelationships or a complex pathway (for example, a new road or footpath construction may increase public access and associated problems e.g. littering). They may be separated by distance or in time from the source of the effects. The magnitude of change affecting the baseline townscape resource is based on an interpretation of a combination of the criteria set out in Table 10-6.

Table 10-6: Magnitude of Townscape Change Criteria (Townscape Effects)

Magnitude of Townscape Change	Classification Criteria
None	• No change.
Negligible	• Little perceptible change.
Low	• Minor change, affecting some characteristics and the experience of the townscape to an extent; and • Introduction of elements that is not uncharacteristic.
Medium	• Noticeable change, affecting some key characteristics and the experience of the townscape; and • Introduction of some uncharacteristic elements.
High	• Noticeable change, affecting many key characteristics and the experience of the townscape; and • Introduction of many incongruous developments
Very High	• Highly noticeable change, affecting most key characteristics and dominating the experience of the townscape; and • Introduction of highly incongruous development.

10.2.8 Visual effects

Visual effects are determined by the extent of visibility and the nature of the visibility (i.e., how a development is seen within the townscape); for example, whether it appears integrated and balanced within the visual composition of a view or whether it creates a focal point.

Negative visual effects may occur through the intrusion of new elements into established views, which are out of keeping with the existing structure, scale and composition of the view. Visual effects may also be beneficial, where an attractive focus is created in a previously unremarkable view or the influence of previously detracting features is reduced. The significance of effects will vary, depending on the nature and degree of change experienced and the perceived value and composition of the existing view.

10.2.8.1 Receptors

For there to be a visual impact, there is the need for a viewer. Views experienced from locations such as settlements, recognised routes and popular vantage points used by the public have been included in the assessment. Receptors are the viewers at these locations. The degree to which receptors, i.e. people, will be affected by changes as a result of the Proposed Development depends on a number of factors, including:

- Receptor activities, such as taking part in leisure, recreational and sporting activities, travelling or working;
- Whether receptors are likely to be stationary or moving and how long they will be exposed to the change at any one time;
- The importance of the location, as reflected by designations, inclusion in guidebooks or other travel literature, or the facilities provided for visitors;
- The extent of the route or area over which the changes will be visible;
- Whether receptors will be exposed to the change daily, frequently, occasionally or rarely;
- The orientation of receptors in relation to the Proposed Development and whether views are open or intermittent;
- Proportion of the developments that will be visible (full, sections or none);
- Viewing direction, distance (i.e. short-, medium- and long-distance views) and elevation;
- Nature of the viewing experience (for example, static views, views from settlements and views from sequential points along routes);
- Accessibility of viewpoint (public or private, ease of access);
- Nature of changes (for example, changes in the existing skyline profile, creation of a new visual focus in the view, introduction of new man-made objects, changes in visual simplicity or complexity, alteration of visual scale, landform and change to the degree of visual enclosure); and
- Nature of visual receptors (type, potential number and sensitivity of viewers who may be affected).

10.2.8.2 Value of the View

Value of the view is an appraisal of the value attached to views and is often informed by the appearance on Ordnance Survey tourist maps and in guidebooks, literature or art. Value can also be indicated by the provision of parking or services and signage and interpretation. The nature and composition of the view is also an indicator. The value of the view is determined with reference to the definitions outlined in Table 10-7.

Table 10-7: Value of the View

Value	Classification Criteria
High	Nationally recognised view of the townscape, with no detracting elements.
Medium	Regionally or locally recognised view, or unrecognised but pleasing and well composed view, with few detracting elements.
Low	Typical or poorly composed view often with numerous detracting elements.

10.2.8.3 Visual Susceptibility

The GLVIA guidelines identify that the susceptibility of visual receptors to changes in views and visual amenity is a function of:

- The occupation or activity of people experiencing the view at a particular location; and
- The extent to which their attention or interest may therefore be focused on the views and visual amenity they experience at particular locations.

For example, residents in their home, walkers whose interest is likely to be focused on the townscape or a particular view, or visitors at an attraction where views are an important part of the experience often indicate a higher level of susceptibility. Whereas receptors occupied in outdoor sport, where views are not important, or at their place of work, are often considered less susceptible to change. Visual susceptibility is determined with reference to the three-point scale and criteria outlined in Table 10-8.

Table 10-8: Visual Susceptibility

Susceptibility	Classification Criteria
High	Receptors for which the view is of primary importance and are likely to notice even minor change.
Medium	Receptors for which the view is important but not the primary focus and are tolerant of some change.
Low	Receptors for which the view is incidental or unimportant and is tolerant of a high degree of change.

10.2.8.4 Visual Sensitivity

Sensitivity to change considers the nature of the receptor; for example, a person occupying a residential dwelling is generally more sensitive to change than someone working in a factory

unit. The importance of the view experienced by the receptor also contributes to an understanding of the susceptibility of the visual receptor to change as well as the value attached to the view.

A judgement is also made on the value attached to the views experienced. This takes account of:

- Recognition of the value attached to particular views, for example in relation to heritage assets, or through planning designations;
- Indicators of the value attached to views by visitors, for example through appearance in guidebooks or on tourist maps, provision of facilities for their enjoyment (sign boards, interpretive material) and references to them in literature or art; and
- Possible local value; it is important to note that the absence of view recognition does not preclude local value, as a view may be important as a resource in the local or immediate environment due to its relative rarity or local importance.

The visual sensitivity to change is based on interpretation of a combination of all or some of the criteria outlined in Table 10-9.

Table 10-9: Sensitivity to Change Criteria

Visual Sensitivity	Classification Criteria
High	• Users of outdoor recreational facilities, on recognised national cycling or walking routes or in nationally designated townscapes. • Residential buildings.
Medium-High	• Users of outdoor recreational facilities, in highly valued townscapes or locally designated • townscapes or on local recreational routes that are well publicised in guidebooks. • Road and rail users in nationally designated townscapes or on recognised scenic routes, likely to be travelling to enjoy the view.
Medium	• Users of outdoor recreational facilities including public open space in moderately valued townscapes. • Users of primary transport road network, orientated towards the Proposed Development, likely to be travelling for other purposes than just the view.
Medium-Low	• People engaged in active outdoor sports or recreation and less likely to focus on the view. • Primary transport road network and rail users likely to be travelling to work with oblique views of the Proposed Development or users of minor road network.
Low	• People engaged in work activities indoors, with limited opportunity for views of the Proposed Development.

10.2.8.5 Magnitude of Visual Change

Visual effects are direct effects as the magnitude of change within an existing view will be determined by the extent of visibility of the Proposed Development. The magnitude of the visual effect resulting from the development at any particular viewpoint or receptor is based on the size or scale of change in the view, the geographical extent of the area influenced and its duration and reversibility. The variables involved are described below.

- The scale of the change in the view with respect to the loss or addition of features in the view and changes in its composition, including the proportion of the view occupied by the development;

- The degree of contrast or integration of any new features or changes in the townscape form, scale, mass, line, height, sky lining, back-grounding, visual clues, focal points, colour and texture;

- The nature of the view of the development, in relation to the amount of time over which it will be experienced and whether views will be full, partial or glimpses.

- The angle of view in relation to the main activity of the receptor, distance of the viewpoint from the development and the extent of the area over which the changes will be visible; and

- The duration of the effects (short term, medium term or long term) and the reversibility of the effect (whether it is permanent, temporary or partially reversible).

The magnitude of visual effect resulting from the development at any particular viewpoint or receptor is based on the interpretation of the above range of factors and is set out in Table 10-10.

Table 10-10: Magnitude of Visual Change Criteria (Visual effects)

Magnitude of Visual Change	Classification Criteria
None	No change in the existing view.
Negligible	The development will cause a barely discernible change in the existing view.
Low	The development will cause very minor changes to the view over a wide area or minor changes over a limited area.
Medium	The development will cause modest changes to the existing view over a wide area or noticeable change over a limited area.
High	The development will cause a considerable change in the existing view over a wide area or a significant change over a limited area.
Very High	The development will cause significant changes in the existing view over a wide area or a change which will dominate over a limited area.

10.2.9 Significance criteria

The objective of the assessment process is to identify and evaluate the potentially significant effects arising from the Proposed Development. The assessment will identify the residual effects likely to arise from the finalised design considering mitigation measures and the change over time.

The significance of effects is assessed by considering the sensitivity of the receptor and the predicted magnitude of effect in relation to the baseline conditions. In order to provide a level

of consistency and transparency to the assessment and allow comparisons to be made between the various townscape and visual receptors subject to assessment, the assessment of significance is informed by pre-defined criteria as outlined in Table 10-11. When assessing significance, individual effects may fall across several different categories of significance and professional judgement is therefore used to determine which category of significance best fits the overall effect to a townscape or visual receptor.

The significance of the effects can be adverse (negative) or beneficial (positive) according to the definitions set out in Table 10-11.

Table 10-11: Categories of Significance of Townscape and Visual Effects

Significance Category	Description of Effect
Profound	• An effect that obliterates sensitive characteristics within the townscape and/or visual environment.
Very Significant	• An effect which, by its character, magnitude, duration, or intensity significantly alters most of a sensitive aspect of the townscape and/or visual environment.
Significant	• An effect which, by its character, magnitude, duration, or intensity alters a sensitive aspect of the townscape and/or visual environment.
Moderate	• An effect that alters the townscape in a manner that is consistent with existing and emerging baseline trends.
Slight	• An effect which causes noticeable changes in the townscape and/or visual environment without affecting its sensitivities.
Not Significant	• An effect which causes noticeable changes in the townscape and/or visual environment but without significant townscape and/or visual consequences.
Imperceptible	• An effect capable of measurement but without significant townscape and/or visual consequences.

The significance of the effect is determined by considering the magnitude of the effect and the quality of the baseline environment affected by the Proposed Development. The basis for consideration of the significance of effects is detailed in Figure 10-1.

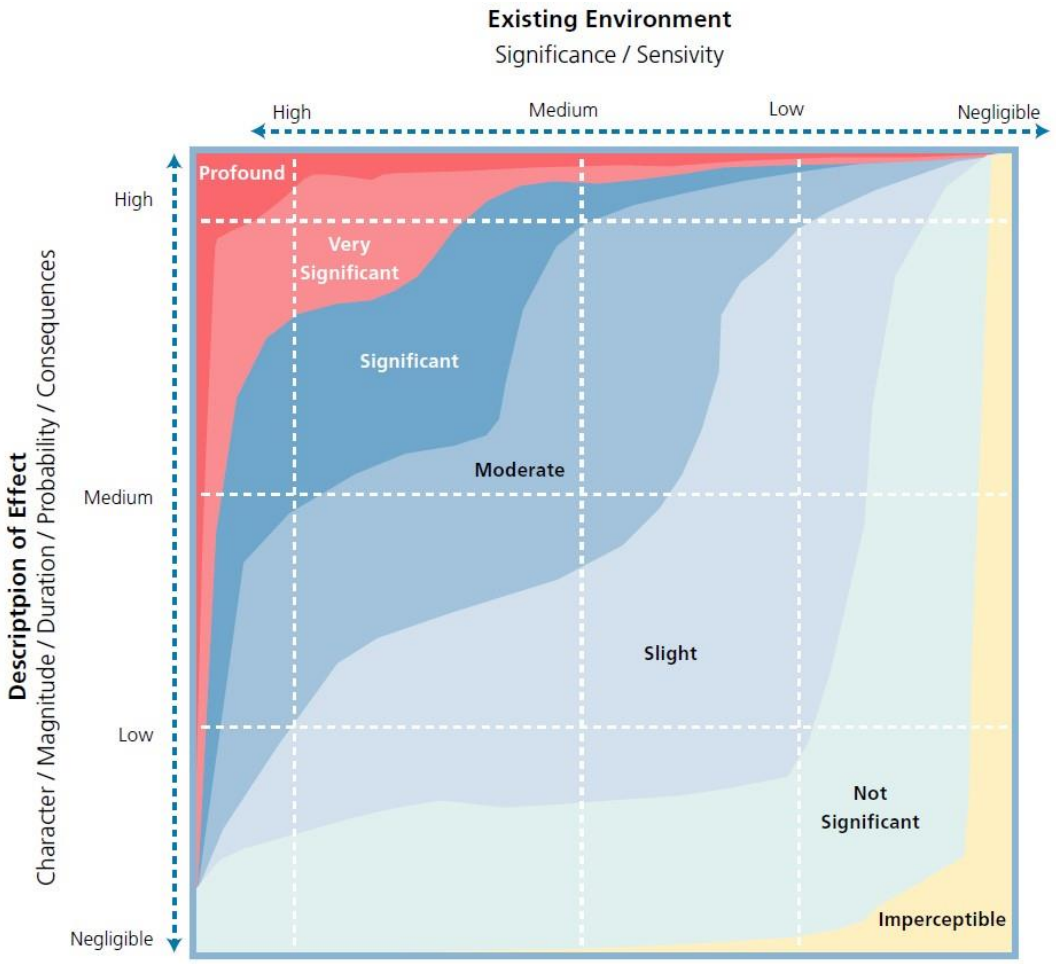


Figure 10-1 Basis for consideration of significance of effects[7]

Effects will be assessed for all phases of the Proposed Development. Construction effects are considered to be temporary, short-term effects which occur during the construction/decommission phase only. Operational/residual effects are those long-term effects, which will occur as a result of the presence or operation of the development.

The quality of each effect is based on the ability of the townscape character or visual receptor to accommodate the Proposed Development, and the impact of the development within the receiving context. Once this is done, the quality of the effect is then assessed as being neutral, beneficial or adverse. A change to the townscape or visual resource is not considered to be adverse simply because it constitutes an alteration to the existing situation.

10.2.10 Cumulative Effects

In addition to townscape and visual effects, it is also important to consider potential cumulative effects. The approach used to determine cumulative effects has drawn on guidance on cumulative impact assessment published by the GLVIA3. Cumulative townscape and visual

[7] Environmental Protection Agency (EPA) 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports', May 2022. Available online at https://www.epa.ie/publications/monitoring--assessment/assessment/guidelines-on-the-information-to-be-contained-in-environmental-impact-assessment.php

effects may result from additional changes to the baseline townscape or views as a result of the Proposed Development in conjunction with other developments of a similar type and scale.

The cumulative assessment includes developments that are consented but not constructed, that are the subject of undetermined applications, or are currently at scoping stage, and which are similar in type and scale to the Proposed Development.

10.2.10.1 Magnitude of Cumulative Effects

The principle of magnitude of cumulative effects makes it possible for the proposed scheme to have major effects on a particular receptor, while having only minor cumulative effects in conjunction with other existing developments.

The magnitude of cumulative effects arising from the proposed scheme is assessed as Very High, High, Medium, Low or Negligible, with intermediate categories, based on interpretation of the following parameters:

- The additional extent, direction and distribution of existing and other developments in combination with the Proposed Development;
- The distance between the viewpoint, the Proposed Development and the cumulative developments; and
- The townscape setting, context and degree of visual coalescence of existing and Proposed Development and cumulative developments.

10.2.10.2 Significance of Cumulative Effects

As for the assessment of townscape and visual effects, the significance of any cumulative effects follows a same classification as illustrated in Image 1 - Basis for consideration of significance of effects, in Section 10.2.9, and will be assessed as Profound, Very Significant, Moderate, Slight, Not Significant, Imperceptible.

10.2.10.3 Limitations of Cumulative Effects

The cumulative assessment focuses on potential cumulative effects relating to the main permanent structure of each cumulative development. This is due to the uncertainty of the timing of construction activities for each of the identified developments. As a result, temporary structures and activity relating to construction have not been considered within the cumulative assessment.

10.2.11 Field Work

Site surveys of the study area and beyond were carried out in November 2021 and July 2022 identifying the potential visibility of the Proposed Development and key additional viewpoints within the core study area and the wider townscape. Photomontages showing the existing view and the superimposed development on photomontages have been produced from key representative viewpoints, considering topography, existing buildings, screening vegetation and other localised factors. The booklet of photomontages prepared by Innovision Media Limited contains details on viewpoint locations and Photomontages 1 – 9.

10.2.12 Selection of Viewpoints

Viewpoint selection has been carried out according to the current best practice standards and the following industry guidelines:

- 'Guidelines for Landscape and Visual Impact Assessment' (GLVIA3), 3rd Edition, 2013, Landscape Institute (UK) & IEMA; and
- 'Visual Representation of Development Proposals', Landscape Institute, Technical Guidance Note 06/19, 17 September 2019.

It is not feasible to take photography from every possible viewpoint located in the study area. Photography has been taken from viewpoints, which are representative of the nature of visibility at various distances and in various contexts. Viewpoint photography is used as a tool to come to understand the nature of the potential residual effects. The selection process of viewpoint locations is as follows:

- The location of viewpoints within the study area is informed by desktop and site surveys;
- Identification and selection of representative viewpoints showing typical open or intermittent views within a local area, which will be frequently experienced by a range of viewers; and
- Identification and selection of specific viewpoints from key viewpoints in the townscape such as routes or locations valued for their scenic amenity, main residential areas etc.

10.2.13 Photomontages

Photomontages are photorealistic visualisations produced using specialist software. They illustrate the likely future appearance of the Proposed Development from a specific viewing point. They are useful tools for examining the effects of the development from a number of critical viewpoint positions at publicly accessible locations within the study area.

However, photomontages in themselves can never provide the full picture in terms of potential effects. Photomontages are one source of information and used as a tool to help to understand the nature of potential effects and to assist the determination of the magnitude and significance of residual townscape and visual effects. They can only inform the assessment process by which judgements are made. A visualisation can never show exactly what the Proposed Development will look like in reality due to factors such as; different lighting, weather and seasonal conditions which vary through time and the resolution of the image. As the photomontages are representative of viewing conditions encountered, some of them may show existing buildings or vegetation screening some or all parts of the developments. Such conditions are normal and representative.

The images provided give a reasonable impression of the scale of the development and the distance to the development but can never be 100% accurate. It is recommended that decision-makers and any interested parties or members of the public should ideally visit the viewpoints on site, where visualisations can be compared to the 'real life' view, and the full impact of the Proposed Development can be understood.

Viewpoints / Photomontages 1 – 9 show the Proposed Development including the following information:

- Existing View, showing the baseline image;
- Photomontage, showing the Proposed Development including all visible components at full height;
- Cumulative Photomontage, showing the Proposed Development in conjunction with the outline of the following developments: Bailey Gibson permission (Ref. ABP 307221-20) and Player Wills permission (Ref. ABP 308917-20); and
- Cumulative Photomontage, showing the Proposed Development in conjunction with the outline of the following developments: Bailey Gibson current SHD Application, and Player Wills permission (Ref. ABP 308917-20).

Photomontage images have been produced with reference to best practice and the following industry guidelines:

- 'Visual Representation of Development Proposals', Landscape Institute, Technical Guidance Note 06/19, 17 September 2019; and
- Guidelines for Landscape and Visual Impact Assessment (GLVIA), Third Edition, Landscape Institute and Institute of Environmental Management and Assessment, IEMA, 2013', Landscape Institute (UK) & IEMA.
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10.2.14 Zone of Theoretical Visibility (ZTV)

Mapping the extent of the area from which a development is likely to be visible is commonly referred to as a Zone of Theoretical Visibility (ZTV). ZTV prediction does not take into account the effects of seasons, lighting, weather conditions or visibility over distance. Moreover, a ZTV does not take into account the screening effects of existing vegetation or built structures and can omit topographical variations of up to 10m. Therefore, in reality, ZTV mapping's principal use is to identify viewing points for further analysis.

Considering the scale, context and overall setting of the Proposed Development, the production of a ZTV would not have been useful in the identification of viewpoints within the study area. The assessment relied therefore on comprehensive site surveys to establish the nature of visibility within the study area and to identify key viewpoint locations.

10.3 The Existing and Receiving Environment (Baseline Situation)

This section provides a summary of the current baseline conditions within the study area, as defined in Section 10.1.3 - Study Area and Section 10.2.4 - Establishment of the Baseline.

10.3.1 Site Context

The Proposed Development site incorporates approximately an overall area of 3.26 ha of primarily brownfield lands located in the central urban area of Dublin, less than 3 km from O'Connell Street. The site is currently disused land following the demolition of St. Teresa's Gardens and a portion is being used as a construction compound. The site is positioned at the centre of three main routes, Cork Street to the Northwest, Donore Avenue to the Northeast and the South Circular Road to the South. Thus, the site is strategically positioned inside the Grand Canal and South Circular Road, well served by all modes of public transport, and has access to high quality public open space. These characteristics, along with the site's large scale and its history of residential use contribute to its suitability for strategic high-density residential development.

The site is identified as part of the Strategic Development and Regeneration Area (SDRA 11) in the Dublin City Development Plan 2022-2028 (DCDP) and lies at the centre of a number of DCC sites to connect other projects together and open up this new neighbourhood to its surrounding context. The regeneration lands comprise of 3 no. land parcels, DCC lands, Players Wills and the full extent of the Bailey Gibson land with a total area of 10.3 hectares. The Coombe Women & Infants University Hospital lands (2.32 hectares) to the west of the site form part of SDRA 11 designation.

The position of the Proposed Development Site at the core of the SDRA 11 designation is important, the site is largely enclosed to the south by substantial planned and permitted compact development and is placed adjacent to the Coombe Women & Infants University Hospital campus. The site's notable separation from urban thoroughfares and its unusual shape limits the opportunity of views from the wider public realm.

The national policy of compact growth provides further impetus for development of a scale that would significantly affect the landscape/townscape character and the composition of views in the site's receiving environment. The existing site has a very low townscape and visual sensitivity to the Proposed Development.

10.3.1.1 Wider Townscape Character

The Proposed Development site is located at the centre portion of the SDRA 11 lands. The demolished St. Teresa's flats complex (previously a defining element of the local townscape character) is now in brownfield condition and awaiting development. The permitted compact redevelopment of the neighbouring sites, Bailey Gibson Ref. ABP-307221-20 (up to sixteen storeys), and Player Wills ABP-308917-20 (up to nineteen storeys) are both currently under judicial review. The wider townscape character is mixed, the land uses immediately adjacent to the site comprise of residential, health and brownfield land parcels awaiting development. Within the immediate wider area there is a considerable area low-density residential with pockets of retail and intuitional lands with community centres.

To the north:

The Proposed Development Site has a short northern edge along Margaret Kennedy Road (part of the SDRA 11) a residential terrace of 3-storey homes and 2 to 7-storey apartments recently redevelopment by Dublin City Council. The area now has a new link to Cameron Street and access to Cork Street. The street backs onto an area of older artisan cottages, traditionally single-storey dwellings along Eugene Street, Fingal Street, Maxwell Street and two-storey dwellings along Cameron Street, Darley Terrace and Donore Avenue. This area – touches the Proposed Development Site's northern boundary and therefore has a townscape and visual sensitivity to the Proposed Development. Further north, Cork Street has a more contemporary character with blocks of apartments of up to seven stories fronting the street.

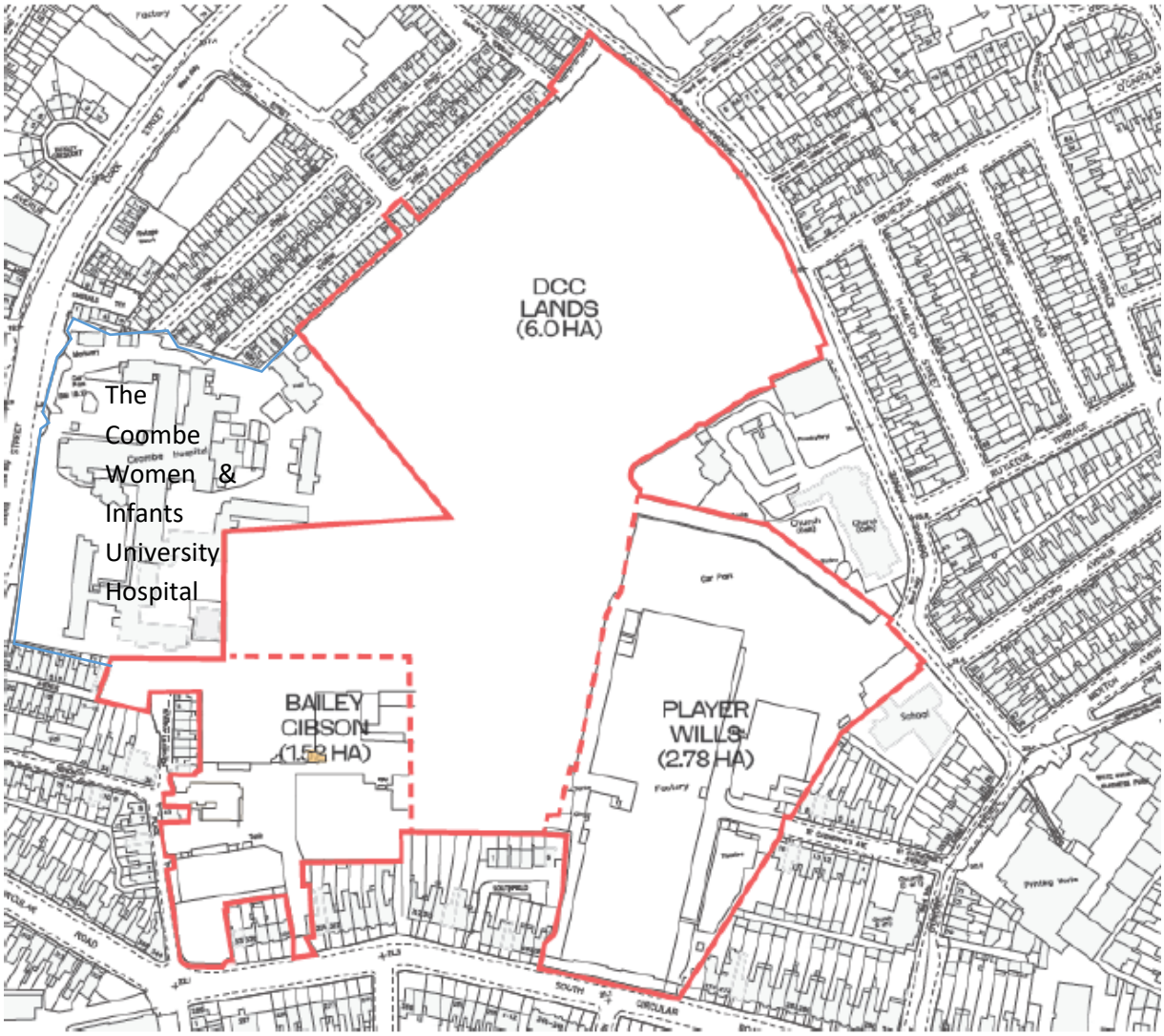

Figure 10-2 STRA 11 Framework

To the east:

The plot of land immediately east of the Proposed Development site is in the ownership of Dublin City Council and is currently in rough grassland. Formerly the St. Teresa's Gardens

Flats, most now mostly demolished, two 4-storey blocks remain, with one lengthy block fronting Donore Avenue.

The adjacent Institutional lands comprise of a parish centre, community centre and St. Teresa's church (1924), a notable protected structure within the receiving environment. East of Donore Avenue, a belt of fine-grained Victorian dwellings stretch as far as the South Circular Road (SCR), these houses are zoned a Z2 Residential Conservation Area. Closer to the city, rows of mid-century two-storey terraced dwellings form short streets and neighbourhood blocks. This area has a strong coherent character with a moderate to high townscape and visual sensitivity to the Proposed Development.

The Proposed Development Site shares a short boundary to the east with the Player Wills site (ABP-308917-20), a recently permitted scheme of four blocks up to 19 storeys in height with some public realm benefits, and commercial and community use. The application provides that the former factory along the South Circular Road (SCR) will be retained, a notable building along the SCR due to its height, massing and architectural design. This scheme is currently under judicial review.

To the south:

Immediately south of the Proposed Development Site an area of grassland backs on to modern late twentieth-century residential development occupying a section of the rear gardens of some older dwellings fronting the South Circular Road. These dwellings are also part of the prevailing red brick Victorian townscape character between the SCR road and the Grand Canal. The canal watercourse is a conservation area and the blue-green infrastructure provides a strong green east-west spine for slow mode transport through the area. Townscape and visual sensitivity to the Proposed Development is moderate to high.

The Bailey Gibson Lands, located directly south are mainly occupied by single and two-storey factory buildings of brick and render, accompanied by concrete standing areas. Planning for a Proposed Development ranging from 2 to 16 storeys is currently under judicial review (Ref: ABP-307221-20) and second application as is listed as Bailey Gibson 2 SHD (Planning Ref: ABP-314171-22).

Beyond the canal to the south lies a modern residential suburban character incorporating local schools. These dwellings are mostly terraced two-storey houses of mid-twentieth century age, with low sensitivity to the Proposed Development.

To the west and The Coombe Women and Infants University Hospital lands

Dolphins Barn commercial core lies a short distance to the west at the junction of Dolphin's Barn Street/Cork Street and the SCR. The townscape character is varied, detached by a heavily used thoroughfare, the street has a number of low-rise older buildings (some in poor condition) and some recent development including apartments ranging from 4 to 12 storeys with a modern urban character. This area has a low sensitivity to the Proposed Development.

Rehoboth Place is a narrow street connecting the Bailey Gibson site with Dolphin's Barn Street and is occupied by terraces of 2-storey houses, this area has a high sensitivity to the Proposed Development.

The Proposed Development site shares a boundary along the western edge with The Coombe Women and Infants University Hospital campus comprised of several building clusters between one and six storeys', including individual buildings of various style and scale, dating from different periods of development and some large areas of surface carparking. A new four-storey laboratory building is currently under construction (4049/19). The hospital has a low townscape value and has a low sensitivity to the Proposed Development.

10.3.2 Existing Townscape Context

Blue and Green Infrastructure

The Dublin City Development Plan 2022-2028 (DCDP) identifies a network of Blue and Green Infrastructure. It is stated that *"Green infrastructure has a critically important role to play in making Dublin a climate resilient, healthy and green city. Green infrastructure (GI) can be defined as an interconnected network of green space (or blue in the case of water features) that conserves natural ecosystem values and functions and provides associated benefits to human populations. These benefits can be described as ecosystem services and can change over time, and may be potential or realised, depending on human needs".*

Green infrastructure systems are spatially made of three different parts:

a) *'Core Areas' which are the nuclei of the network and provide essential habitat for sensitive species*

b) *'Hubs' which are places buffering the core areas, and are made of the largest, least fragmented continuous areas of forest, wetlands, stream systems, or other native landscape types*

c) *'Corridors' are vital to maintain connectivity in the landscape and provide for animal movement, seed and pollen dispersal, and plant migration.*

Green infrastructure features … benefit the individual and the community physically, psychologically, emotionally and socio-economically. Green infrastructure creates opportunities to connect urban areas and provides appealing places in which to live and work".

The Proposed Development is a short walking distance to the Grand Canal, located less than 400 metres to the south of the site.

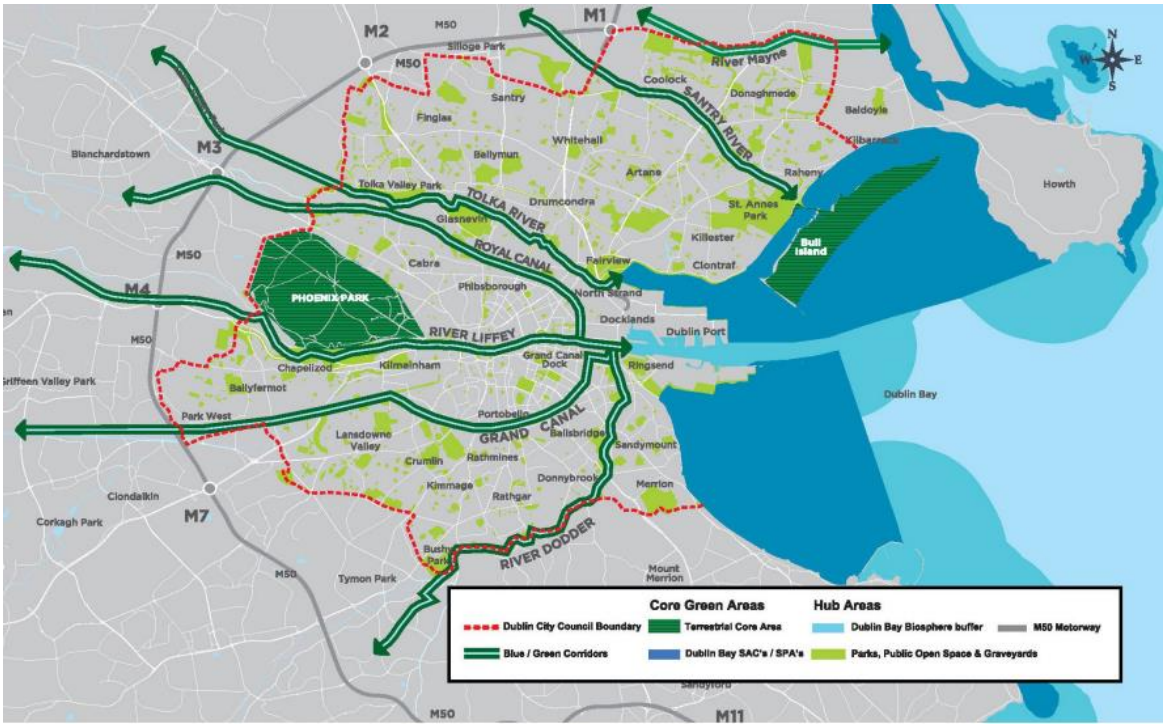

Figure 10-3 Existing Strategic Green and Blue Network in Dublin City *(Draft Dublin City Development Plan 2022-2028, Chapter 10, Figure 10-1)*

10.3.3 Designated Views and Prospects

There are a number of designated protected views and prospects identified in the Dublin City Development Plan 2022-2028 however, there will be no adverse impacts on these valued vistas resulting from the Proposed Development of the site as they are not located in the vicinity of the site nor include sections of the Proposed Development in their viewsheds.

10.4 Characteristics of the Proposed Development

The Proposed Development will consist of the construction of a residential scheme of 543 no. apartments on an overall site of 3.26 ha (GFA of c. 53,227 sqm) containing the following mix of apartments:

- 225 No. 1 bedroom apartments (36 no. 1-person & 189 no. 2-person)
- 274 No. 2 bedroom apartments (including 52 No. 2 bed 3 person apartments and 222 No. 2 bed 4 person apartments)
- 44 No. 3 bedroom 5-person apartments
- A retail/café unit (168 sq.m.), mobility hub (52 sq.m.) and 952 sq.m. of community, artist workspace, arts and cultural space, including a creche, set out in 4 No. blocks.

The breakdown of each block will contain the following apartments:

- Block DCC1 comprises 111 No. apartments in a block of 6-7 storeys;
- Block DCC 3 comprises 247 No. apartments in a block of 6-15 storeys;
- Block DCC5 comprises 132 No. apartments in a block of 2-7 storeys;
- Block DCC6 comprises 53 No. apartments in a block of 7 storeys;

The Proposed Development will also provide for public open space of 3,408 sqm, communal amenity space of 4,417 sqm and an outdoor play space associated with the creche. Provision

of private open space in the form of balconies or terraces is provided to all individual apartments.

The Proposed Development will provide 906 no. residential bicycle parking spaces which are located within secure bicycle stores. 5% of these are over-sized spaces which are for large bicycles, cargo bicycles and other non-standard bicycles. In addition, 138 spaces for visitors are distributed throughout the site.

A total of 79 no. car parking spaces are provided at undercroft level. Six of these are mobility impaired spaces (2 in each of DCC1, DCC3 & DCC5). 50% of standard spaces will be EV fitted. Up to 30 of the spaces will be reserved for car sharing (resident use only). A further 15 no. on-street spaces are proposed consisting of:

- 1 no. accessible bay (between DCC5 & DCC6)
- 1 no. short stay bay (between DCC5 & DCC6)
- 1 no. crèche set-down / loading bay (between DCC5 & DCC6)
- 1 no. set-down / loading bay (northern side of DCC5)
- 1 no. set-down/loading bay (northern side of DCC 3)
- 10 no. short stay spaces (north-east of DCC1)

In addition, 4 no. motorcycle spaces are also to be provided.

Vehicular, pedestrian and cyclist access routes are provided from a new entrance to the north-west from Margaret Kennedy Road. In addition, provisions for further vehicular, pedestrian and cyclist access points have been made to facilitate connections to the planned residential schemes on the Bailey Gibson & Player Wills sites for which there are extant permissions (Ref. No.'s ABP-307221-20 & ABP-308917-20). However, while these additional connections can be facilitated, the Proposed Development has been designed to function on a standalone basis.

The development will also provide for all associated ancillary site development infrastructure including site clearance & demolition of boundary wall along Margaret Kennedy Road and playing pitch on eastern side of site and associated fencing/lighting, the construction of foundations, ESB substations, switch room, water tank rooms, storage room, meter room, sprinkler tank room, comms room, bin storage, bicycle stores, green roofs, hard and soft landscaping, play equipment, boundary walls, attenuation area and all associated works and infrastructure to facilitate the development including connection to foul and surface water drainage and water supply.

Chapter 2 – Project Description & Description of Alternatives, contains a detailed description of the Proposed Development.

10.5 Potential Effects

The following potential visual effects, direct and indirect townscape effects, as well as the duration and nature of effects arising from the Proposed Development, have been identified. Photomontages 1-9 illustrate the Proposed Development from representative viewpoint locations within the study area. A description of each photomontage is included in Section 10.5.4 herein.

10.5.1 Effects at Construction Phase

Townscape and visual effects at construction stage will be experienced locally. Due to the nature of the site, the most notable effects will be from the adjacent properties and the adjacent network of streets. The sensitivity of residential views is generally considered high. The visual envelope that is likely to be most affected is from the existing neighbouring residential areas and the Coombe Women and Infants University Hospital to the west. The receptors and activities associated with the adjoining undeveloped sites to the south are considered low.

Construction effects are most likely to be associated with the visibility of construction traffic and the upper part of the development site where cranes and scaffolding will be visible above the existing boundary and adjacent existing built structures. Again, it is predicted that these will be most prevalent when looking from the north of the Proposed Development site. It is considered that there will also be few mid-distance views of construction works from the nearby road network. Longer distance views beyond 500m will relate to the visibility of cranes.

Construction impacts will comprise:

- Potential effects to townscape character or visual amenity within the locality or the wider study area as a result of the visibility of construction activities such as demolition works, the construction of buildings, associated scaffolding, and machinery including cranes.

- Effects of temporary site infrastructure such as site traffic and construction compounds especially those located in areas adjacent to sensitive townscape and visual receptors.

- Potential physical effects arising from construction of the development and in particular on the townscape resource within the site area.

Photomontages 1-9 illustrate the townscape and visual effects at operational stage only. The proposed construction works do not allow for a meaningful illustration in photomontages as these can only show one particular snapshot in time, which will not capture the dynamic and complex nature of construction works comprehensively.

Townscape and visual effects and their significance during construction works will be temporary. They will be highest within the immediate vicinity of the site, primarily amongst the residents along Margaret Kennedy Road, Donore Avenue and the Coombe Women and Infants University Hospital Campus. Principal views of construction works will likely be experienced within a radius of approximately up to 200m from the site boundary. The magnitude of visual effects is considered medium to high in close-distance views. Their significance / quality is considered moderate-significant / adverse.

The visibility of construction works within the wider study area beyond 300-500m will be limited to the upper sections of the building construction including cranes. It is likely these will be visible from the Grand Canal, as well as from the local residential road network. The magnitude of visual effects is considered low. Their significance / quality is considered slight-moderate / adverse.

10.5.2 Effects at Operational Phase

General operational effects:

- Potential effects of the development on townscape resources and townscape character, including the perceptual qualities of the townscape, and upon designated townscapes where the primary focus of designations or sensitive townscapes is altered;

- Potential effects of the development on views and visual amenity such as the potential for the development to alter (beneficial or adverse) the composition of the view from a viewpoint; and

- Potential cumulative effects of the development in combination with other developments that are consented but not constructed, that are the subject of undetermined applications, or are currently at scoping stage, and which are similar in type and scale upon the townscape and visual resource of the study area.

General key townscape and visual operational effects:

- The significant opportunity to improve views from within the local and wider landscape/townscape character areas;

- The extent to which the development may intrude into existing views or improve views experienced by residents and day to day users of the area; and

- The extent to which users of the townscape such as tourists and visitors may be subject to effects (beneficial or adverse).

10.5.3 Townscape Effects

Direct or indirect townscape effects on the fabric of the townscape and its receptors are closely related to the nature and extent of visibility. The sensitivity is considered high. However, the Proposed Development will form part of urban consolidation and sustainable development in the area.

Direct and permanent change will occur locally where the Proposed Development will be physically located. It will utilise and re-purpose a site previously occupied for residential use which has turned into a brownfield site of late, contributing to an overall improvement in neighbourhood housing stock in this part of the city. The highest direct townscape effects will arise from the transformation of the existing site into a contemporary apartment complex, which will strengthen and bolster the surrounding townscape character, reflecting the trend in urban densification within the city. The magnitude of townscape change at the site level is Very High and the resulting significance/quality of change is Very Significant / Beneficial.

Indirect changes will occur at a local level and at a city level in the wider study area. The Proposed Development will become a new point of focus due to both its scale and its location. The Proposed Development will become part of an emerging high density townscape character, along with the neighbouring permitted developments. It will be sympathetic to the existing surrounding townscape character and integrates comfortably into the established urban grain as it will not change the fabric of the overall existing and emerging townscape character within the study area. Sensitive receptor groups affected in these areas will be existing residents adjoining the site and the adjacent streetscape, followed by the wider city character and setting where the Proposed Development will become a perceptible new component of the townscape. The sensitivity of these receptors is considered high. The magnitude of indirect townscape character change is considered to range from Low to Medium. The significance / quality of change decreases with distance and is considered to range between Slight - Moderate / Neutral.

At a city scale, the development contributes to a significant intensification of land use and introduces a new urban scale and character to the area, which will also be perceptible at a greater distance within the wider study area where it will be recognisable as part of a new high rise building cluster. The magnitude at city scale is considered Medium. The significance / quality of change decreases with distance and is considered to range between Slight - Moderate / Neutral.

A summary table of townscape effects from representative viewpoint locations is detailed in Table 10-12.

Table 10-12: Summary of Townscape Effects

Receptor	Main Receptor Group	Sensitivity	Magnitude (at operation) of Townscape Effects	Quality of Effects	Significance of Townscape Effects
Within the development site	None	Low	Very High	Beneficial	Very Significant
Adjacent city environs, up to approx. 250m radius)	Residents, Vehicular traffic, workers, visitors	High	Medium	Beneficial	Significant
City environs, beyond approx. 250m radius)	Residents, Vehicular traffic, workers, visitors	High-Medium	Medium-Low	Neutral	Slight-Moderate

10.5.4 Visual Effects

Dublin city, including the area around the Proposed Development site, is in a continuous process of renewal, densification, and intensification of its building stock. The Proposed Development will be seen in the context of a single development within an evolving building arrangement, which is to provide more compact solutions in order to increase the existing housing stock in a sustainable way.

The Proposed Development will form a new urban community. The proposed buildings will provide a new scale and function in the immediate area and will align well with the existing adjacent architecture and pattern of mixed-use development in the area. Middle-, or long-distance views beyond 200-500m and in the wider study area become quickly limited due to the existing intervening built environment. The majority of views will be partially or fully screened by intervening existing buildings. The taller elements of the Proposed Development will, when visible, become a new focus point in the skyline of the city. Currently proposed and permitted but not yet constructed buildings or building regeneration, particularly in terms of taller buildings and additional floors will shape the future visual appearance of the immediate neighbourhood of the Proposed Development.

A total of 9 photomontages from representative viewpoint locations have been prepared to illustrate the nature of the visibility of the proposal at various distances and contexts. Considering the nature of the Proposed Development, the magnitude of visual change is considered permanent. A detailed description of the visual effects on receptors is provided below and includes the following:

- Visual Effects: Proposed Development Only
- Cumulative Visual Effects: In conjunction with Bailey Gibson permission (Ref. ABP 307221-20, herein referred to as 'BG 1') and Player Wills permission (Ref. ABP 308917-20 herein referred to as 'Player Wills'); and
- Cumulative Visual Effects: In conjunction with Bailey Gibson 2 current SHD Application (Ref. ABP-314171-22, herein referred to as 'BG 2'), and Player Wills permission (Ref. ABP 308917-20 herein referred to as 'Player Wills').

Viewpoint / Photomontage 1: South Circular Road

Visual Effects: Proposed Development only

View south of the site on the South Circular Road as it passes the junction of Rehoboth Place and Priestfield Cottages. The Proposed Development will be partially seen above the existing buildings seen in the foreground. The uppermost parts of the Proposed Development will be seen from this view, with the most eastern block tower seen behind a mature tree in the foreground. The addition of the Proposed Development will intensify slightly the prevailing character of modern residential developments within this section of the study area. Views during the winter season without foliage will reveal the prominent tall building block in this view.

Cumulative Visual effects: BG 1 and Player Wills

When seen in the cumulative scenario, this proposal will be screened in its majority by BG 1 apart from the uppermost storeys of the eastern block tower, which will become visible above the cumulative development.

Cumulative Visual effects: BG 2 and Player Wills

The Proposed Development will be screened by the BG 2.

Table 10-13: Summary of Visual Effects for Viewpoint / Photomontage 1

Viewpoint / Photomontage	Visual sensitivity	Magnitude of visual change	Significance / Quality of visual effects	Magnitude / Significance / Quality of Cumulative effects (BG 1 and Player Wills)	Magnitude / Significance / Quality of Cumulative effects (BG 2 and Player Wills)
Viewpoint / Photomontage 1 (View from South Circular Road)	Medium - High	Medium (Summer) High (Winter)	Moderate / Neutral (Summer) Moderate-Significant / Beneficial (Winter)	Low / Slight / Neutral	None

Viewpoint / Photomontage 2: South Circular Road / Dolphin's Barn Junction

Visual Effects: Proposed Development only

View northeast from the corner of Dolphin's Barn Street / South Circular Road. The Proposed Development will be partially seen above existing commercial premises located in the foreground. The proposed tall residential block will add a new element and point of focus in this view. It will alter the visual character of this view considering the otherwise traditional low-rise townscape setting. The Proposed Development will therefore alter the existing view and the prevailing townscape character by adding a contemporary residential development within this or similar views in the area. However, despite its size, it will not be seen as uncharacteristic at this distance as it picks up the box shape of the existing 2 storey above ground floor buildings in the foreground.

Cumulative Visual effects: BG 1 and Player Wills

When seen in combination with the permitted development BG 1, the Proposed Development will be partially screened. The permitted development will become the prominent point of focus in the middle distance, with the Proposed Development receding into the background. However, the scale of the Proposed Development will be similar to the permitted and both developments will be considered as a group of similar developments.

Cumulative Visual effects: BG 2 and Player Wills

When seen in combination with the current application BG2 and Player Wills permission, the Proposed Development will be partially screened at lower levels by the BG2 proposal and has a similar mass and height to the Players Wills Proposal. The articulation of facades and materiality treatment will become the prominent point of focus in the middle distance, with the Proposed Development receding into the background.

Table 10-14 Summary of Visual Effects for Viewpoint / Photomontage 2

Viewpoint / Photomontage	Visual sensitivity	Magnitude of visual change	Significance / Quality of visual effects	Magnitude / Significance / Quality of Cumulative effects (BG 1 and Player Wills)	Magnitude / Significance / Quality of Cumulative effects (BG 2 and Player Wills)
Viewpoint / Photomontage 2 (South Circular Road / Dolphin's Barn Junction)	Low	Medium	Moderate / Beneficial	Low / Not Significant / Neutral	Medium / Moderate / Beneficial

Viewpoint / Photomontage 3: Dolphin's Barn Street opposite Reilly's Ave

Visual Effects: Proposed Development only

View east from the plaza at the corner of Reuben Street / Dolphin's Barn Street. The Proposed Development will form a new built-up background behind the cottages and The Coombe Women and Infants University Hospital in the foreground and middle distance. The Proposed Development will become a new prominent focus point in the background but it will not be dominant due to the distance and intervening built structures in this view.

Visual effects: BG 1 and Player Wills

When seen in combination with the permitted development BG 1, the adjacent permitted development will become a more dominant point of focus due to its height when seen in combination with the Proposed Development. Both developments will read as a group of similar, with the indicative adjacent permitted development taking precedence over the proposed in terms of scale and height.

Visual effects: BG 2 and Player Wills

When seen in combination with the current application BG 2 and Player Wills permission, the Proposed Development will be somewhat screened at lower levels by the BG 2 proposal and has a similar mass and height to the Players Wills Proposal. The addition of the Proposed Development will intensify slightly the prevailing character of modern residential developments within this section of the study area.

Table 10-15 Summary of Visual Effects for Viewpoint / Photomontage 3

Viewpoint / Photomontage	Visual sensitivity	Magnitude of visual change	Significance / Quality of visual effects	Magnitude / Significance / Quality of Cumulative effects (BG 1 and Player Wills)	Magnitude / Significance / Quality of Cumulative effects (BG 2 and Player Wills)
Viewpoint / Photomontage 3 (Dolphin's Barn Street opposite Reilly's Ave)	High	Medium-High	Moderate-Significant / Beneficial	Medium / Moderate / Beneficial	Medium / Moderate / Beneficial

Viewpoint / Photomontage 4: Emerald Square / Cork Street

Visual Effects: Proposed Development only

View southeast from the corner of Emerald Square / Cork Street, opposite The Coombe Women and Infants University Hospital. The Proposed Development will be partially seen above the existing buildings in the foreground. The uppermost parts of the Proposed Development will be seen from this view, with the most northern tall block appearing behind a mature tree and buildings in the foreground. The addition of the Proposed Development will intensify slightly the prevailing character flat roofed buildings and intensify the density of the built-up environment within this view. However, it will not alter the existing townscape character.

Visual effects: BG 1 and Player Wills

There are no cumulative effects from this viewpoint location as BG 1 and Player Wills developments are not visible.

Visual effects: BG 2 and Player Wills

There are no cumulative effects from this viewpoint location as BG 1 and Player Wills developments are not visible.

Table 10-16 Summary of Visual Effects for Viewpoint / Photomontage 4

Viewpoint / Photomontage	Visual sensitivity	Magnitude of visual change	Significance / Quality of visual effects	Magnitude / Significance / Quality of Cumulative effects (BG 1 and Player Wills)	Magnitude / Significance / Quality of Cumulative effects (BG 2 and Player Wills)
Viewpoint / Photomontage 4 (Emerald Square / Cork Street)	Medium-High	Low	Slight / Neutral	None	None

Viewpoint / Photomontage 5: Brown Street South / Donore Ave Junction

Visual Effects: Proposed Development only

View southwest from the corner of Donore Avenue / Brown Street South. The Proposed Development will be a prominent addition in this view when compared to the existing scenario. The Proposed Development be a noticeable change in this view redefining the prevalence of built-up townscape in this area. The Proposed Development will be seen as a large and prominent contemporary development signalling a new beginning on the site and in the area.

Visual effects: BG 1 and Player Wills

When seen in combination with the permitted BG 1 and Player Wills, the adjacent permitted developments will add further tall building elements to the view, which will help the integration of the Proposed Development into its setting. The proposed tall building element will therefore not be seen as uncharacteristic when seen in combination with the permitted cumulative developments. The proposed and the cumulative developments will read as a group of similar developments, with the Proposed Development taking precedence over the permitted ones in terms of scale and prominence in this view.

Visual effects: BG 2 and Player Wills

When seen in combination with the permitted developments BG 2 and Player Wills, the adjacent permitted Players Wills will add a further tall building element to the view, intensifying townscape towards the east. The BG2 proposal can be glimpsed between the between the two new blocks in the mid distance due to its reduced height.

Table 10-17 Summary of Visual Effects for Viewpoint / Photomontage 5

Viewpoint / Photomontage	Visual sensitivity	Magnitude of visual change	Significance / Quality of visual effects	Magnitude / Significance / Quality of Cumulative effects (BG 1 and Player Wills)	Magnitude / Significance / Quality of Cumulative effects (BG 2 and Player Wills)
Viewpoint / Photomontage 5 (Brown Street South / Donore Ave Junction)	Medium-High	High	Significant / Beneficial	Medium / Significant / Beneficial	Medium / Moderate / Beneficial

Viewpoint / Photomontage 6: O'Donovan Road / Sandford Gardens Junction

Visual Effects: Proposed Development only

View southwest from O'Donovan Road / Sandford Gardens Junction. The Proposed Development will form a new built-up background in this view. The tall apartment block will form a prominent new focus point without being overbearing due to the distance and overall scale of the Proposed Development within the view. It will intensify the built-up character in this view, introduce a new building height and type of architecture.

Visual effects: BG 1 and Player Wills

When seen in combination with the permitted developments BG 1 and Player Wills, the Player Wills development will be perceived as more prominent as it will be taller and screen partially the Proposed Development. The majority of the Gibson Bailey development will be screened by the Proposed Development. The permitted and proposed developments will be read as a group of similar developments, which will alter the existing townscape character considerably due to the introduction of tall building elements, which stand in contrast to the existing low rise townscape character. However, considering the location of the permitted and proposed developments within an inner suburb of Dublin city, the change in townscape character and visual amenity is not considered uncharacteristic.

Visual effects: BG 2 and Player Wills

When seen in combination with the permitted developments BG 2 and Player Wills, the Player Wills development will be perceived as more prominent as it will be taller and screen partially the Proposed Development. The BG 2 development will be fully screened by the permitted and the Proposed Development. The proposed developments will alter the existing townscape character considerably due to the introduction of tall building elements, providing contrast to the existing low rise townscape character. This change in townscape character and visual amenity is not considered uncharacteristic in compact city centre development.

Table 10-18: Summary of Visual Effects for Viewpoint / Photomontage 6

Viewpoint / Photomontage	Visual sensitivity	Magnitude of visual change	Significance / Quality of visual effects	Magnitude / Significance / Quality of Cumulative effects (BG 1 and Player Wills)	Magnitude / Significance / Quality of Cumulative effects (BG 2 and Player Wills)
Viewpoint / Photomontage 6 (O'Donovan Road / Sandford Gardens Junction)	High	Medium-High	Moderate-Significant / Beneficial	Medium / Moderate / Beneficial	Medium / Moderate / Beneficial

Viewpoint / Photomontage 7: Rutledge Terrace **/** Donore Ave

View west from Rutledge Terrace close to the junction with Donore Ave. The Proposed Development as well as cumulative developments will be entirely screened by St. Teresa's Church.

Table 10-19: Summary of Visual Effects for Viewpoint / Photomontage 7

Viewpoint / Photomontage	Visual sensitivity	Magnitude of visual change	Significance / Quality of visual effects	Magnitude / Significance / Quality of Cumulative effects (BG 1 and Player Wills)	Magnitude / Significance / Quality of Cumulative effects (BG 2 and Player Wills)
Viewpoint / Photomontage 7 (Rutledge Terrace / Donore Ave)	High	N/A	N/A	N/A	N/A

Viewpoint / Photomontage 8: Aughavanagh Road outside Scoil Íosagain

Visual Effects: Proposed Development only

View north from Aughavanagh Road adjacent to Scoil Íosagáin. The proposed tall apartment block will form a new point of focus in the background of this view. The Proposed Development will form a prominent but not dominant new feature in this view. It will add a new type and scale of development to the overall low rise townscape character in this view.

Visual effects: BG 1 and Player Wills

When seen in combination with the permitted developments BG 1 and Player Wills, the Proposed Development will be one of several tall buildings in this view and reinforce the change in townscape character in the background of this view. The existing low rise housing estate will be located at the edge of a band of high rise developments separated by the Grand Canal and its tree lined embankments. The proposed and permitted developments will read as band of developments with the Proposed Development increasing the densification of the built-up environment and becoming a link between the Bailey Gibson development to the left and the Player Wills development to the right.

Visual effects: BG 2 and Player Wills

When seen in combination with the permitted BG 2 and Player Wills, the adjacent permitted Players Wills will add a further tall building element to the view, intensifying townscape towards the east. The BG 2 proposal is barely discernible between the crowns of trees along the canal bank. BG 2 will become more visible in winter when the trees are out of leaf.

Table 10-20: Summary of Visual Effects for Viewpoint / Photomontage 8

Viewpoint / Photomontage	Visual sensitivity	Magnitude of visual change	Significance / Quality of visual effects	Magnitude / Significance / Quality of Cumulative effects (BG 1 and Player Wills)	Magnitude / Significance / Quality of Cumulative effects (BG 2 and Player Wills)
Viewpoint / Photomontage 8 (Aughavanagh Road outside Scoil Íosagain)	High	Medium-High	Moderate-Significant / Beneficial	Medium / Moderate / Beneficial	Medium / Moderate / Beneficial

Viewpoint / Photomontage 9: Parnell Bridge on the Grand Canal

Visual Effects: Proposed Development only

View north from Parnell Bridge on the Grand Canal. The Proposed Development will form a new built-up background in this view behind the existing buildings in the foreground and middle-ground. The tall apartment block will form a prominent new focus point without being overbearing due to the distance and overall scale of the Proposed Development within the view. It will intensify the built-up character in this view, introduce a new building height and type of architecture.

Visual effects: BG 1 and Player Wills

When seen in combination with the permitted developments BG 1 and Player Wills, the Proposed Development will add another tall building element to a background skyline, which will transform the existing low rise townscape character of this view considerably. All developments will read as group of similar developments, with the Proposed Development increasing the densification and emerging built-up townscape character as well as providing a link between the two permitted projects. However, the permitted Player Wills development will remain the most prominent development in this view due to its scale.

Visual effects: BG 2 and Player Wills

When seen in combination with the permitted developments BG 2 and Player Wills , the BG 2 proposal is not visible from the viewpoint location. The adjacent permitted Players Wills will add a tall built element to the view, forming a tighter cluster of height on the townscape.

Table 10-21: Summary of Visual Effects for Viewpoint / Photomontage 9

Viewpoint / Photomontage	Visual sensitivity	Magnitude of visual change	Significance / Quality of visual effects	Magnitude / Significance / Quality of Cumulative effects (BG 1 and Player Wills)	Magnitude / Significance / Quality of Cumulative effects (BG 2 and Player Wills)
Viewpoint / Photomontage 9 (Parnell Bridge on the Grand Canal)	High	Medium-High	Moderate-Significant / Beneficial	Medium / Moderate / Beneficial	Medium / Moderate / Beneficial

A summary table of visual effects from representative viewpoint locations is detailed in Table 10-22.

Table 10-22: Summary of visual effects from representative viewpoint locations

Viewpoint / Photomontage	Receptor Group	Susceptibility of Viewer to Change	Sensitivity of Viewer	Magnitude of Visual Effects (at operation)	Significance / Quality of Visual Effects	Magnitude / Significance / Quality of Cumulative effects (BG 1 and Player Wills)	Magnitude / Significance / Quality of Cumulative effects (BG 2 and Player Wills)
Viewpoint / Photomontage 1 (View from South Circular Road)	Vehicular traffic, Pedestrians, Works and Local Residents	Medium	Medium - High	Medium (Summer) High (Winter)	Moderate / Neutral (Summer) Moderate-Significant / Beneficial (Winter)	Low / Slight / Neutral	None
Viewpoint / Photomontage 2 (South Circular Road / Dolphin's Barn Junction)	Vehicular traffic, Pedestrians and Works	Low	Low	Medium	Moderate / Beneficial	Low / Not Significant / Neutral	Medium / Moderate / Beneficial
Viewpoint / Photomontage 3 (Dolphin's Barn Street opposite Reilly's Ave)	Pedestrians, local residents, vehicular traffic	Medium	High	Medium-High	Moderate-Significant / Beneficial	Medium / Moderate / Beneficial	Medium / Moderate / Beneficial
Viewpoint / Photomontage 4 (Emerald Square / Cork Street)	Pedestrians, local residents, vehicular traffic	Medium	Medium-High	Low	Slight / Neutral	None	None
Viewpoint / Photomontage 5 (Brown Street South / Donore Ave Junction)	Pedestrians, local residents, vehicular traffic	Medium	Medium-High	High	Significant / Beneficial	Medium / Significant / Beneficial	Medium / Moderate / Beneficial
Viewpoint / Photomontage 6 (O'Donovan Road / Sandford Gardens Junction)	Pedestrians, local residents	High	High	Medium-High	Moderate-Significant / Beneficial	Medium / Moderate / Beneficial	Medium / Moderate / Beneficial

Viewpoint / Photomontage	Receptor Group	Susceptibility of Viewer to Change	Sensitivity of Viewer	Magnitude of Visual Effects (at operation)	Significance / Quality of Visual Effects	Magnitude / Significance / Quality of Cumulative effects (BG 1 and Player Wills)	Magnitude / Significance / Quality of Cumulative effects (BG 2 and Player Wills)
Viewpoint / Photomontage 7 (Rutledge Terrace / Donore Ave)	Pedestrians, local residents, vehicular traffic	Medium-High	High	N/A	N/A	N/A	N/A
Viewpoint / Photomontage 8 (Aughavanagh Road outside Scoil Íosagain)	Pedestrians, School Users. Vehicular traffic	Medium	High	Medium-High	Moderate-Significant / Beneficial	Medium / Moderate / Beneficial	Medium / Moderate / Beneficial
Viewpoint / Photomontage 9 (Parnell Bridge on the Grand Canal)	Pedestrians, local residents, vehicular traffic	Medium-High	High	Medium-High	Moderate-Significant / Beneficial	Medium / Moderate / Beneficial	Medium / Moderate / Beneficial

10.5.5 Cumulative Townscape and Visual Effects

In addition to townscape and visual effects, it is also important to consider potential cumulative effects. As stated in the methodology, significant cumulative effects may occur where a number of similar developments combine to increase the prevalence of that type of development within a townscape or view to the extent that they become a defining characteristic. The following developments have been considered relevant and assessed in conjunction with the Proposed Development. The Bailey Gibson development has been assessment separately in line with the two planning applications for that site.

The accompanying booklet of photomontages illustrates cumulative effects of the Proposed Development in combination with adjacent permitted developments.

Viewpoints / Photomontages 1 – 9 all illustrate the cumulative effects of the proposed residential development when seen in combination with the indicative overall cumulative projects within this area. Section 10.5.4 above includes an assessment of cumulative visual effects from representative viewpoints.

The Proposed Development site is located within a new mixed-use environment with surrounding residential land uses. Construction on the site will create a localised disturbance, particularly in terms of noise and visual effects. However, the Proposed Development will (a) contribute to the diversity of character in the new urban townscape, and (b) indicate a new place of significance in the townscape by improving legibility as it ties together a number of permitted developments, allowing the development of a cohesive townscape character. Considering the Proposed Development with the permitted developments, the proposal will integrate with these developments and create a significant new urban quarter within this area of Dublin City. The visibility of these developments in combination completes the transformation of this area into a new part of the city north of the Grand Canal.

Bailey Gibson Permission (Planning Ref: ABP- 307221-20) – (***referred to as BG 1 herein***)

Planning permission granted by An Bord Pleanála for development at the BG 1 portion of the lands involving (i) demolition of all structures (ii) the construction of 416 no. residential units (4 no. houses, 412 no. apartments) (iii) the inclusion of 133 car parking, (iv) A total of 2,618 square metres of communal space and any ancillary contingent works to facilitate this development.

Cumulative townscape effects will occur with the introduction of similar development types into an existing urban area. Given the established townscape character and qualities in this part of the city centre, both developments will serve to consolidate and reinforce the trend in contemporary residential and commercial development in this part of the city. The magnitude of cumulative townscape change is considered Medium and the resulting significance / quality is Moderate / Beneficial.

Cumulative visual effects will arise from the intensification of the residential / mixed-use development pattern of this part of Dublin City centre. Photomontage / Viewpoint 8 illustrates the visible massing relationships that will exist between both developments from Aughavanagh Road to the south. Both developments will be seen in combination from mainly adjacent streets surrounding the development sites, particularly from areas along the Grand Canal, some close views are available and from Margaret Kennedy Road and Donore Avenue

from the east. The magnitude of cumulative visual change is considered Medium and the resulting significance / quality is Moderate / Beneficial.

Bailey Gibson 2 SHD Planning Application (Planning Ref: ABP-314171-22) – (***referred to as BG 2 herein***)

Current planning application to An Bord Pleanála for a SHD development at the BG2 lands involving (i) Build to Rent and Build to Sell Strategic Housing Development comprising 345 residential units, (ii) a childcare facility (iii) 2 commercial units, a food and beverage unit, (iv) a sports pitch, public park and playground and all associated ancillary contingent works to facilitate this development.

Cumulative townscape effects will occur with the introduction of similar development types into an existing urban area. Given the established townscape character and qualities in this part of the city centre, both developments will serve to consolidate and reinforce the trend in contemporary residential and commercial development in this part of the city. The magnitude of cumulative townscape change is considered Low and the resulting cumulative significance / quality is Slight / Beneficial.

Cumulative visual effects will arise from the intensification of the mixed-use development pattern of this part of Dublin City centre. Both developments will be seen in combination from mainly adjacent streets surrounding the development sites, Photomontage / Viewpoint 2 illustrates the visible massing relationships that will exist between both developments from SCR / Dolphin's Barn junction to the southwest. The magnitude of cumulative visual change is considered Medium and the resulting significance / quality is Moderate / Beneficial.

Player Wills Permission (Planning Ref: ABP- 308917-20)

Permission granted by An Bord Pleanala for development consisting of demolition of all buildings excluding the original fabric of the former Player Wills Factory, construction of 492 Build to Rent apartments, 240 Build to Rent shared accommodation units, community, arts and cultural and exhibition space, retail/café/office uses, crèche and associated site works.

Cumulative townscape effects will occur with the introduction of similar development types into an existing urban area. Given the established townscape character and qualities in this part of the city centre, both developments will serve to consolidate and reinforce the trend in contemporary residential and commercial development in this part of the city. When viewed from SCR / Dolphin's Barn junction the development will further integrate the Proposed Development into the streetscape due to the additional height proposed, setting an overall greater roof height along the street. The magnitude of cumulative townscape change is considered Medium and the resulting cumulative significance / quality is Moderate / Beneficial.

Cumulative visual effects will arise from the intensification of the mixed-use development pattern of this part of Dublin City centre. Photomontage / Viewpoint 6 illustrate the visible massing relationships that will exist between both developments from various locations. Both developments will be seen in combination from mainly adjacent streets surrounding the development sites, particularly from areas along O'Donovan Road. The magnitude of cumulative visual change is considered Medium and the resulting cumulative significance / quality is Moderate / Beneficial.

Additional consideration was given to The Coombe Laboratory Building permission (Ref: 4049/19) and Colposcopy/Women's Health Unit (Ref. 3537/21).

The development site shares a boundary with The Coombe Women & Infants University Hospital Campus. The campus is the subject of ongoing development works and building upgrades.

- Permission granted by Dublin City Council for development of a 4 storey Laboratory Building (1340m²) within the existing Coombe site with the provision of rooftop plant and 2 no. rear extensions to the existing adjacent laboratory building to include a new link, office and store (68m²) with all associated site works.
- Permission granted by Dublin City Council for development Colposcopy Building comprises of a new dedicated Colposcopy/Women's Health Unit building of 3 no. storeys plus rooftop plant room which will be attached to the existing Colposcopy building to the west by way of glazed link.

Cumulative townscape effects will occur with the introduction of similar development types into an existing urban area. While the permissions at The Coombe Women & Infants University Hospital Campus are of a smaller scale (3 and 4 storeys respectively) and will further intensify the established land use, townscape character and qualities in this part of the city centre, these developments will serve to consolidate development in this part of the city. The magnitude of cumulative townscape change is considered Low and the resulting significance / quality is Slight / Neutral.

Cumulative visual effects will arise from the intensification of the mixed-use development pattern of this part of Dublin City centre. It is considered likely some views may be available of the proposed Laboratory (Ref: 4049/19) and the Colposcopy Building (Ref. 3537/21) from areas within the public realm. These developments will be seen in combination from mainly adjacent streets surrounding the development sites. The magnitude of cumulative visual change is considered Low and the resulting significance / quality is Moderate / Beneficial.

The Part 8 permission for the demolition of flat blocks St Teresa's Gardens (Ref 2475/18)

Part 8 permission granted by Dublin City Council for development consisting of Demolition of the remaining two original flat complex blocks.

There will be localised cumulative townscape impacts arising from the proximity of these demolition works, once the last remaining flat blocks are removed from the townscape surrounding residences would potentially experience a visual impact where open views are possible, in the context of the ongoing regeneration of the area and the pattern of development proposed. The magnitude of cumulative townscape change is considered Low and the resulting significance / quality is Slight / Neutral.

Cumulative visual effects will arise from the demolition works, surrounding residences would potentially experience a visual impact where open views are possible, in the context of the ongoing regeneration of the area and the pattern of development proposed. The magnitude of cumulative visual change is considered Medium and the resulting significance / quality is Moderate / Beneficial.

A summary table of cumulative effects in Table 10-23.

Table 10-23: Summary of cumulative effects

Cumulative Application	Visual sensitivity	Magnitude of cumulative townscape change	Significance / Quality of cumulative townscape effects	Magnitude of cumulative visual change	Significance / Quality of cumulative visual effects
Bailey Gibson Permission **(Planning Ref: ABP-307221-20) – (BG1)**	Medium	Medium	Moderate / Beneficial	Medium	Moderate / Beneficial
Bailey Gibson SHD Planning Application **(Planning Ref: (ABP-314171-22) – (BG2)**	Medium	Low	Slight / Beneficial	Low-Medium	Slight-Moderate / Beneficial
Player Wills Permission **(Planning Ref: ABP-308917-20)**	Medium	Medium	Moderate / Beneficial	Medium	Moderate / Beneficial
The Coombe Laboratory Building permission **(Planning Ref: 4049/19)** **The Coombe Laboratory Building permission** **(Planning Ref: 4049/19)**	Low	Low	Slight / Neutral	Medium	Moderate / Beneficial
The Part 8 permission St Teresa's Gardens **(Planning Ref: 2475/18)**	Medium	Low	Slight / Neutral	Medium	Moderate / Beneficial

10.6 Avoidance, Remedial and Mitigation Measures

Mitigation is a term used to describe the measures or actions that may be taken to minimise environmental effects. The purpose of mitigation is to avoid, reduce and where possible remedy or offset, any significant adverse direct and indirect effects on the environment arising from the Proposed Development.

Considering the location and height of the Proposed Development, which is an infill site enclosed by adjacent dwellings and health facilities, the principal mitigation for the site is inherent in the architectural design, façade materials and details.

The proposed landscape design cannot mitigate the building height but it will provide a park at ground level with interconnecting spaces which will weave together the various adjoining developments and link together the various open spaces and residences. The drawings illustrating the proposed landscape design and the associated detailed design report are contained within the planning application documents. A synopsis is provided below.

The inspiration for the landscape design concept of the weft thread is drawn from the area's rich weaving history and Huguenot legacy. The proposals include vibrant interconnecting environmental, social and physical fibres which intertwine within the Donore Project Park and subsequently permeate throughout the rest of the site. These landscape proposals represent the source of the weft thread which brings 'colour to the weave' and in this instance enhancement and completeness to the DCC SDRA 11 Guiding Principles..

The Donore Project Park consists of a series of high quality, functional, amenable, well overlooked, permeable active and passive open spaces and informal play spaces which are interconnected with a network of pedestrian and cycle routes. It is the Primary Pedestrian Space at the centre of the SDRA 11 Regeneration Area and it links the various open spaces and residences together. Passive surveillance is provided from DCC1, DCC3 & DCC5 as well as Players Park. Donore Park is a place for resting, active and passive uses and informal play. It is the link between the physical, social and environmental influences of the residences and Player Wills Park to the south and the GAA pitch to the north. The Donore Project Park provides visual integration as it connects the different projects. This is achieved through full integration of the design concepts of the adjacent proposals and appropriate selection of the hard and soft landscaping palette.

10.7 Potential Residual Effects

Considering the nature of the Proposed Development, potential townscape and visual effects at operation, identified in Section 10.5 above, will also be considered residual as they relate to the scale of the Proposed Development. Primary mitigation measures have therefore been included to the architectural design during the planning and design stage as stated in Section 10.6 above. The proposed public realm at ground level cannot mitigate effects on townscape character or the visual amenity but will help to successfully integrate the Proposed Development into its setting and anticipated connectivity to adjoining urban quarters.

10.8 Monitoring

No monitoring requirements are required in relation to townscape and visual during the construction or operational phase of Proposed Development site.

10.9 Interactions

Townscape and visual interactions are summarised under the following sections.

10.9.1 Population and Human Health

Visual effects will mainly relate to the introduction of the taller elements of the Proposed Development. The main visual receptor groups are residents and vehicle travellers including ferry passengers, workers, visitors/ tourists. Residents will have the highest sensitivity to

change than the road users. Vehicle travellers and workers will focus on traffic or their commercial tasks and not primarily on available views. As discussed in Section 10.5.2, it is considered that the intervening, built form will screen the site and mitigate the majority but not all of the likely adverse visual effects.

10.10 Difficulties Encountered when Compiling

No difficulties have been encountered while compiling this chapter.

10.11 References

The following sources and guidelines were used in the assessment:

- EPA "Guidelines on the information to be contained in Environmental Impact Assessment Reports", May 2022;
- 'Guidelines for Landscape and Visual Impact Assessment' (GLVIA), 3rd Edition, 2013, Landscape Institute (UK) & IEMA;
- 'Visual Representation of Development Proposals', Landscape Institute, Technical Guidance Note 06/19, 17 September 2019;
- 'Landscape value and valued landscapes' Technical Guidance Note 02/21,Landscape Institute (UK);
- Dublin City Development Plan 2016-2022;
- Draft Dublin City Development Plan 2022-2028;
- National Parks and Wildlife Service (NPWS), http://www.npws.ie/;
- Sport Ireland: Find your Trails: http://www. https://www.sportireland.ie/outdoors/find-your-trails; and
- Ordnance Survey Ireland, 1:50,000 Discovery Mapping.

10.12 Summary

10.12.1 Effects at Construction

Areas experiencing townscape and visual effects during the construction stage will be experienced locally by the adjacent road network and local residents. The sensitivity of the views is generally considered Low for road users and High for residential receptors. Areas experiencing the most prominent construction effects will be residents of the existing neighbouring residential areas and The Coombe Women and Infants University Hospital to the west, where open views of the site will be possible. Beyond the immediate roads, construction effects are most likely to be associated with the visibility of construction traffic and to the upper part of the development site where cranes and scaffolding will be visible. It is considered that there will be some long-distance views of construction activity from high ground.

10.12.2 Townscape Effects

The direct and permanent change will occur locally where the Proposed Development will be physically located. The highest direct townscape effects will arise from the transformation of the existing site into a contemporary apartment complex, which will strengthen and bolster the surrounding townscape character, reflecting the trend in urban densification within the city.

The scale and materiality of the proposed buildings, fronting the public realm on all sides is a considered response to the existing surrounding permitted development and the opportunities presented by the site's 'place-making' opportunity. The proposal will make a significant positive contribution to the envisaged local built environment.

Indirect and significant changes will occur at a local level on the surrounding road network, particularly along Donore Ave and the South Circular Road. The Proposed Development will reinforce an emerging high density townscape character, along with the neighbouring permitted developments. It will be sympathetic to the existing surrounding townscape character and integrates comfortably into the established urban grain as it will not change the fabric of the overall existing and emerging townscape character within the study area. The Proposed Development will consolidate and define the character of the area as the intensification of built elements will develop a cohesive townscape character.

At a city scale, the development contributes to a significant intensification of land use and introduces a new urban scale and character to the area, which will also be perceptible at a greater distance within the wider study area where it will be recognisable as part of a new high rise building cluster.

10.12.3 Visual Effects

In all views, the development introduces buildings of high design and material quality to the townscape. The buildings (in combination) generate a new urban quarter within the neighbourhood.

Significant visual effects will be experienced in open and partial views from up to 200-500m from the development boundary and in particular from Donore Ave and adjoining residences facing the Proposed Development site. Open views are restricted to Donore Ave; however, partial views will also be experienced from the R110 and heavily trafficked South Circular Road. The proposal will add a new and prominent building quarter and landmark north of the Grand Canal. It will provide structure and introduce a new urban quality to a current brownfield site.

Visual effects beyond approximately 500m and up to 1km will reduce quickly and visibility of the Proposed Development will concentrate on the upper sections of the buildings due to intervening screening vegetation and other existing built structures. The Proposed Development will still form a new focal point in available open views, particularly in views south from beyond the canal, but it will be one component and several in these views.

Long-distance views beyond 1km will be hard to achieve due to the buildings in the immediate surroundings quickly screen the Proposed Development from view. Vantage points are possible in elevated locations; however, the Proposed Development will be seen as a new part of the overall south Dublin city townscape and as an urban quarter with panoramic views.

10.12.4 Cumulative Effects

The Proposed Development will contribute to the diversity of the character in the new urban townscape. Cumulative townscape and visual effects will arise from the intensification of the residential / mixed-use development pattern of this part of Dublin City centre. The existing permitted and proposed cumulative scenario's, and demand for compact development will introduce a contemporary residential development of scale to an existing urban area.

Cumulative effects will occur with a building of height, the addition of height and mass to the skyline in the inner city location in not uncharacteristic where compact development demands the intensification of the appropriate sites (see View 8).

The composition with the Proposed Development, the Player Wills proposal and BG 1 proposal contributes to the visual densification at this location and identifies a destination of scale in the townscape. The visibility of these developments in combination completes the transformation of this area within the south Dublin city core into a new rejuvenated part of the city,

The composition with the Proposed Development the Player Wills proposal and lower, less present BG 2 proposal in available open views will improve legibility of the townscape character.

Considering the Proposed Development with the permitted and / or proposed developments, the proposal will integrate with these developments and create a significant new urban quarter. The visibility of these developments in combination completes the transformation of this area within the south Dublin city core into a new part of the city, north of the Grand Canal.

11 ARCHAEOLOGY AND CULTURAL HERITAGE

11.1 Introduction

11.1.1 Quality Assurance and Competence

This Chapter was written by David Kilner, Senior Archaeological Consultant, BA (Hons), PG Dip, MSc, MIAI (AECOM). David has over 20 years' experience supporting environmental impact assessment projects in Ireland. David has been responsible for determining the potential impact to heritage from a wide range of projects varying in size and type from small scale residential to large scale infrastructure, proposing and managing measures to mitigate these impacts.

11.1.2 Description of the Proposed Development

The Proposed Development (as detailed in Chapter 2) comprises of:

- the construction of a residential scheme of 543 no. apartments on an overall site of 3.26 ha. with a net development area of 53,227 sqm ha. The landholding comprises the site of the former St. Teresa's Gardens Flat Complex, which have since been demolished save for two blocks closest to Donore Avenue.

11.2 Study Methodology

11.2.1 Legislation and Guidance

This EIAR has been undertaken in accordance with all relevant legislation, policies and guidelines. The legislative documents utilised in the preparation of this assessment include:

- National Monuments Acts (1930 – 2014);
- Heritage Council Acts 1995 and 2018;
- National Heritage Plan (2002);
- Planning and Development Acts 2000 – as amended;
- Planning and Development Regulations 2001 as amended
- Planning Policy; and
- Dublin City Development Plan 2016-2022; and
- Draft Dublin City Development Plan 2022-2028.

Local planning policy within the study area is contained within the adopted Dublin City Development Plan 2022-2028. These outline objectives in relation to the protection of the heritage resource within the city. Those objectives applicable to this project are outlined in Appendix 11A qhich is contained in Appendix K of this EIAR.

The assessment of baseline conditions was carried out in accordance with the following guidance:

- EPA's draft 'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' (2022).
- European Commission's Guidance on the preparation of the Environmental Impact Assessment Report (2017).
- EPA's 'Advice Notes on Current Practice in the Preparation of Environmental Impact Statements' (2003).

- Department of Arts, Heritage, Gaeltacht and the Islands, 'Frameworks and Principles for the Protection of the Archaeological Heritage' (1999).
- Department of the Environment, Heritage and Local Government's (DEHLG) 'Government Policy on Architecture 2009 – 2015' (2009).
- Department of Arts, Heritage and the Gaeltacht's (DAHG) 'Architectural Heritage Guidelines' (2011)
- National Roads Authority (NRA) 'Guidelines for the Assessment of Archaeological Heritage Impacts of National Road Schemes' (2005).
- National Roads Authority (NRA) 'Guidelines for the Assessment of Architectural Heritage Impacts of National Road Schemes' (2005).

This assessment has been guided by Historic England Historic Environment Good Practice Advice in Planning: Note 3 (Second Edition) – The Setting of Heritage Assets (Historic England, 2017). The Setting of Heritage Assets provides guidance on setting and development management, including assessing the implications of development proposals. In light of no specific guidance having been, produced in the Republic of Ireland, this guidance is considered to be best practice.

A staged approach is recommended for setting assessments, the first step of which is to identify the settings of the cultural heritage assets that may be affected. The second step is to assess whether, how and to what degree these settings make a positive contribution to the importance of the heritage asset(s), i.e., "what matters and why". This includes a description of the key attributes of the cultural heritage asset itself, then consider the physical surroundings of the asset. This includes its relationship with other heritage assets, the way the cultural heritage asset is appreciated, and the asset's associations and patterns of use. The third step (where appropriate) is to assess the effect of a proposed development on the significance of assets, through the consideration of the key attributes of the proposed development in terms of its location and siting form, appearance additional effects, and permanence.

The assessment methodology has also adhered to the DEHLG Architectural Heritage Protection, Guidelines for Planning Authorities which was published in 2004 and revised in 2011 (DAHG, 2011). This contains the relevant guidance which is detailed below. It is important to note that paragraph 13.8.1 of the guidance states that proposed development outside the curtilage or grounds of a Protected Structure or Architectural Conservation Area (ACA) should be given similar consideration as for proposed development within the attendant grounds. This methodology has been combined with the Historic England methodology (Historic England, 2017), in order to conduct a similar and more robust assessment of the impacts of the Proposed Development on recorded archaeological monuments, in addition to architectural heritage.

Section taken from the DAHG's Architectural Heritage Protection, Guidelines for Planning Authorities (DAHG, 2011):

> *"Development Within the Attendant Grounds*
>
> *13.7.1 It is essential to understand the character of a site before development proposals can be considered. Where attendant grounds of particular significance are proposed for development, a conservation plan could be prepared in advance of any planning application which would identify the significance of the site and locate areas within the designed landscape, if any, which could accept change and development*

and those areas which could not without damaging the architectural heritage of the place.

13.7.2 When dealing with applications for works within the attendant grounds of a protected structure, a visit to the site should be considered an essential part of the assessment. The planning authority should consider:

a) Would the development affect the character of the protected structure?

b) Would the proposed works affect the relationship of the protected structure to its surroundings and attendant grounds?

c) Would the protected structure remain the focus of its setting? For example, a new building erected between a structure and a feature within the attendant grounds will alter the character of both;

d) Do the proposed works require an alteration of the profile of the landscape, for example, the creation of a golf course? How would this affect the character of the protected structure and its attendant grounds?

e) Do the proposals respect important woodland and parkland? Do they conserve significant built features and landscape features?

f) Are there important views of or from the structure that could be damaged by the proposed development? Would important vistas be obstructed by new development?

g) Would distant views of important architectural or natural landmarks be blocked or changed? Would a significant skyline be altered?

h) Even where the proposed development is at a distance from the protected structure, could it still have an impact? This could include tall or bulky buildings interrupting views of or from the protected structure and other features of the designed landscape;

i) Where the new works would not be directly visible from the protected structure, would they be visible from the approaches to the structure or from other important sites or features within the attendant grounds? If so, would this be acceptable?

j) What effect would the scale, height, massing, alignment or materials of a proposed construction have on the protected structure and its attendant grounds?

Other Development Affecting the Setting of a protected structure or an Architectural Conservation Area:

13.8.1 When dealing with applications for works outside the curtilage and attendant grounds of a protected structure or outside an ACA which have the potential to impact upon their character, similar consideration should be given as for proposed development within the attendant grounds. A visit to the site should be considered an essential part of the assessment.

13.8.2 New development both adjacent to, and at a distance from, a protected structure can affect its character and special interest and impact on it in a variety of ways. The proposed development may be sited directly about the protected structure, as with buildings in a terrace. Alternatively, it may take the form of a new structure within the attendant grounds of the protected structure. A new development could also

have an impact even when it is detached from the protected structure outside the curtilage and attendant grounds but is visible in an important view of or from the protected structure.

13.8.3 The extent of the potential impact of proposals will depend on the location of the new works, the character and quality of the protected structure, its designed landscape and its setting, and the character and quality of the ACA. Large buildings, sometimes at a considerable distance, can alter views to or from the protected structure or ACA and thus affect their character. Proposals should not have an adverse effect on the special interest of the protected structure or the character of an ACA."

In addition to the legislation and guidance detailed, the setting assessment methodology has also utilised the guidance contained within Cork County Council, 2006, Guidance Notes for the Appraisal of Historic Gardens, Demesnes, Estates and their Settings (Cork County Council, 2006). This document was prepared by Cork County Council in response to increasing adaptation and redevelopment of planned landscapes within the county. The guidance notes advise the following stepped approach which also has relevance to development beyond Cork where no similar guidance exists:

- Identification and description of development, history, features and boundaries of the designed landscape using scoping, archival research and fieldwork.
- Evaluation & assessment of significance including historical landscape description, archaeological and horticultural aspects.
- Assessing development proposals through an assessment of the heritage impact.
- Recommendations for mitigation & management including future research.

11.2.2 Sources

The preparation of the baseline was informed by material gathered and collated from various sources, including:

- National Monuments Service (NMS) and Archaeological Survey of Ireland (ASI);
- National Inventory of Architectural Heritage (NIAH); and
- Dublin City Development Plan 2016-2022, Record of Protected Structures.
- Draft Dublin City Development Plan 2022-2028, Record of Protected Structures.
- A previous iteration concerning a larger development area, which includes the Proposed Development site, was subject to an Archaeological Impact Assessment (AIA) prepared in 2013 by Archaeology Plan. This report was prepared on behalf of Dublin City Council and sought to determine the archaeological potential of a site comprising the lands of St. Teresa's Gardens and adjoining green areas to the south, in advance of redevelopment of the site by Dublin City Council (Archaeology Plan, 2013). The baseline conditions outlined within this assessment were used to inform this desk-based report.

An Environmental Impact Assessment Report (EIAR) was also prepared in May 2020 regarding a proposed strategic housing development at the former Bailey Gibson Site at 326-328 South Circular Road (McCutcheon Halley, 2020). This EIAR included chapters

considering Cultural Heritage - Archaeology (Chapter 13) and Cultural Heritage- Built Heritage (Chapter 14). The proposed housing development comprised the area of the former Bailey Gibson Site located to the immediate southwest of the Proposed Development site and included a corridor proceeding east to facilitate connections to municipal services and works proposed to public roads; this corridor passes across the south of the Proposed Development site.

A subsequent revised application has been prepared and submitted for the Bailey Gibson 2 Proposed Strategic Housing Development at the former Bailey Gibson Site at 326-328 South Circular Road (McCutcheon Halley, 2022). This EIAR included chapters considering Cultural Heritage - Archaeology (Chapter 11) and Cultural Heritage- Built Environment (Chapter 12).

Similarly, an Environmental Impact Assessment Report (EIAR) was also prepared in December 2020 regarding a Proposed Strategic Housing Development on the Former Player Wills site and undeveloped land owned by Dublin City Council at South Circular Road, Dublin 8 (McCutcheon Halley, 2020b).

A new four storey laboratory building (1340m2) was granted at the Coombe Hospital, Cork Street (Ref: 4049/19). This development was not subject to an EIAR although planning was recommended for the condition by the city archaeologist that, if, during the course of site works, and construction archaeological material is discovered, the Planning Authority should be notified immediately. In the event of an archaeological find on site, the Planning Authority (in consultation with the City Archaeologist and the National Monuments Service, Department of Culture, Heritage and the Gaeltacht) shall determine the further archaeological resolution of the site (City Archaeologist's Report, (DCC, 2019).

A similar recommendation for a condition by the Dublin City Council City Archaeologist has been placed upon planning permission for development at the Coombe Women and Infants University Hospital, Dolphin's Barn Street, Dublin 8, D08 XW7X on a 0.15 hectare site to the south-east of the hospital site, such site also including the existing Colposcopy building (Ref 3537/21) (DCC 2021). This development was also not subject to an EIAR.

11.2.3 Asset Selection and Study Area

A study area which extends 500m from the Proposed Development site boundary has been employed to include all known archaeological heritage assets. The extent of the archaeological study area follows that determined in the AIA prepared in 2013 and EIAR prepared in 2020 and is considered adequate and representative. Given the urban nature of the surrounding area, a study area of 300m was employed for architectural heritage. The study area is illustrated on Figure 11.1 and has been utilised to produce a figure illustrating the surrounding cultural heritage assets. Heritage data from all sources has been identified within these buffers. The size of this study area is considered adequate and representative to enable a detailed examination of the heritage assets surrounding the site, in order to provide sufficient archaeological and historical contextual information and allow an assessment of the archaeological potential of the site to be made. Figures have been embedded within the text while, for greater ease of review, larger versions are included as Appendix 11E which is contained in Appendix K of this EIAR.

11.2.4 Assessment of Heritage Asset Importance

A Cultural Heritage asset is defined as a monument, building, group of buildings and sites which are the combined works of nature and man constituting the historic or built environment (UNESCO 1972). A heritage asset's value is not solely expressed through any designated status but can also be exhibited through a series of values or special interests. These include architectural, historical, artistic, archaeological, cultural, scientific, social or technical interests. There is the potential for non-designated assets to display special interests equivalent to a designated asset. Therefore, a 'designated' status does not necessarily confer a set level of importance on an asset, rather a level of importance is assigned based on an assessment of the special interest displayed by that asset and professional judgement.

Section 2 of the 1930 National Monuments Act defines a 'national monument' as *"a monument or the remains of a monument the preservation of which is a matter of national importance by reason of the historical, architectural, traditional, artistic, or archaeological interest attaching thereto."* National Monuments are considered nationally important and any works carried out at, or in close proximity to, an archaeological site designated as a National Monument in the ownership or guardianship of the Minister or a Local Authority may require a Ministerial Consent.

National Monuments and Record of Monuments and Places (RMP) sites/Register of Historic Monuments (RHM) sites are not clearly differentiated in the National Monuments Act 1930 – 2014. However, not all RMP and RHM sites and associated constraint areas demonstrate the same level or degree of heritage special interest as can be found in National Monuments. Therefore, they can be considered to be of either of national or regional importance and an assessment of the special interest of the asset and professional judgement is used to identify the appropriate level of importance.

Some archaeological and architectural heritage assets are also included on the Record of Protected Structures (RPS) of each county or city development plan, under Section 51(1) of the Planning and Development Act, 2000as amended. These protected structures are included in the RPS due to their special architectural, archaeological, artistic, cultural, historical, scientific, social or technical interest. Protected structures are considered to be of international, national or regional importance.

Architectural Conservation Areas are areas which are designated in a county development plan, under Section 81(1) of the Planning and Development Act, 2000 as amended, in order to *"preserve the character of a place, area, group of structures or townscape"* that are of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest or value; or *"contributes to the appreciation of protected structures."* Architectural Conservation Areas are considered to be of either national or regional importance.

The National Inventory of Architectural Heritage was established to assist councils in assessing whether structures should be added to their Record of Protected Structures. These architectural heritage assets are rated to be of either international, national, regional, local or 'record only' importance.

The National Inventory of Architectural Heritage also contains a Garden Survey which includes designed landscapes such as parks, gardens and demesnes. These can be divided into those with substantially intact landscapes and features; and those where the landscape has been significantly eroded by later changes with only peripheral features intact. For the purposes of

this assessment, the substantially intact landscapes are judged to be of international, national or regional importance while the denuded landscapes are judged to be of local importance.

11.2.5 Determination of Sensitive Receptors

In order to assess the potential effects of a development upon a heritage asset, it must first be assigned a level of importance. This can be done in accordance with a four-point scale (Table 11-1). This table has been derived from the following guidance, with reference to the above legislation and policy, and using professional judgement:

- Environmental Protection Agency (EPA), Draft 2022, Guidelines on the Information to be Contained in Environmental Impact Assessment Reports;
- EPA, 2003, Advice Notes on Current Practice in the Preparation of Environmental Impact Statements;
- Department of Arts, Heritage and the Gaeltacht, 2005a, Frameworks and Principles for the Protection of the Archaeological Heritage;
- Department of Arts, Heritage and the Gaeltacht, 2005a, Architectural Heritage Guidelines;
- National Roads Authority, Guidelines for the Assessment of Archaeological Heritage Impacts (particularly Appendix 2, Significance Criteria); and
- National Roads Authority, Guidelines for the Assessment of Architectural Heritage Impacts (particularly Table 8).

Table 11-1: Factors Determining the Value of Heritage Assets

Importance	Criteria
International/Very High	• World Heritage Sites • Protected structures deemed to be of very high importance using legislation, EPA guidance, NIAH rating criteria and professional judgement • Structures and Designed Landscapes recorded by the NIAH • Building and Garden Survey with an International Rating
National/High	• National Monuments • Recorded Monuments deemed to be of high importance using legislation, EPA guidance, NRA Significance Criteria and professional judgement • Protected Structures deemed to be of high importance using legislation, EPA guidance, NIAH rating criteria and professional judgement • Structures recorded by the NIAH Building Survey with a National Rating or deemed to be of high importance using legislation, EPA guidance, NIAH rating criteria and professional judgement • Designed landscapes recorded by the NIAH Garden Survey with main features substantially present and deemed to be of high importance using legislation, EPA guidance, NIAH rating criteria and professional judgement • ACAs containing structures and/or designed landscapes of predominantly national importance • Undesignated archaeological remains which are rare or complex in nature, and deemed to be of high importance using legislation, EPA guidance, NRA Significance Criteria and professional judgement
Regional /Medium	• Recorded Monuments deemed to be of medium importance using legislation, EPA guidance, NRA Significance Criteria and professional judgement • Protected Structures deemed to be of medium importance using legislation, EPA guidance, NIAH rating criteria and professional judgement • Structures recorded by the NIAH Building Survey with a Regional Rating or deemed to be of medium importance using legislation, EPA guidance, NIAH rating criteria and professional judgement • Designed landscapes recorded by the NIAH Garden Survey with main features substantially present and deemed to be of medium importance using legislation, EPA guidance, NIAH rating criteria and professional judgement • ACAs containing structures and/or designed landscapes of predominantly regional importance • Undesignated architectural heritage assets which are deemed to be of medium importance using legislation, EPA guidance, NIAH rating criteria and professional judgement • Undesignated archaeological remains which are neither particularly common nor uncommon, and/or of moderate complexity, and deemed to be of medium importance using legislation, EPA guidance, NRA Significance Criteria and professional judgement
Local/Low	• Structures recorded by the NIAH Building Survey with a Local or Record Only Rating or deemed to be of low importance using legislation, EPA guidance, NIAH rating criteria and professional judgement • Designed landscapes recorded by the NIAH garden survey with only peripheral features surviving, and deemed to be of low importance using legislation, EPA guidance, NIAH rating criteria and professional judgement • Townland Boundary Features • Undesignated architectural heritage assets which are deemed to be of low importance using legislation, EPA guidance, NIAH rating criteria and professional judgement • Undesignated archaeological features which are particularly common or in poor condition, and deemed to be of low importance using legislation, EPA guidance, NRA Significance Criteria and professional judgement • Parks/Gardens/Demesnes recorded by the NIAH Garden Survey which have poor historic legibility

Importance	Criteria
	• Undesignated architectural heritage assets • Undesignated archaeological features which are particularly common or in poor condition

11.2.6 Describing Potential Effects

Having identified the value of the heritage asset, the magnitude of the effect from the Proposed Development is assessed. A potential effect is defined as a change resulting from the Proposed Development, which affects a heritage asset. These effects are considered using the following broad categories; Quality, Extent and Context of Impacts, Probability of Effects, Significance and Duration (EPA, 2022).

The quality of an effect can be reported on a three-point scale:

- Positive – a change which improves the quality or the special interests of the asset, for example the removal of an element of the surrounding setting which detracts from the appreciation of an asset;
- Neutral – a change which does not affect the quality or special interests of the asset; and
- Negative/adverse – a change which reduces the quality or special interest of the asset, for example the removal of a below-ground archaeological deposit through construction.

The significance of an effect can be judged on a seven-point scale:

- Imperceptible effect – a change capable of measurements but without significant consequences;
- Not significant – an effect which causes noticeable changes in the character of the asset but without significant consequences;
- Slight effect – an effect which causes a noticeable change without affecting the special interests or qualities of the asset to any particular degree;
- Moderate effect – a change which alters the character or special qualities of an asset in a manner that is consistent with existing and emerging baseline trends;
- Significant effect – an effect which, by its character, magnitude, duration or intensity, alters the special interests or qualities of an asset;
- Very significant – an effect which, by its character, magnitude, duration or intensity significantly changes the special interests or qualities of an asset; and
- Profound effect– an effect which obliterates the special interest or qualities of an asset.

The extent and context of effects can be assessed by the following two descriptions:

- Extent – the description of the size of the area and number of assets affected by the effect; and
- Context – the description of whether the extent, duration, or frequency will conform or contrast with established baseline conditions relating to an asset.

The probability of effects can be described by the following two points:

- Likely effects – these are effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented; and
- Unlikely effects– these are effects that can reasonably be not expected to occur because of the planned project if all mitigation measures are properly implemented.

The duration of an effect can be defined by the following criteria:

- Momentary effect – effect lasting from seconds to minutes;
- Brief effect – effect lasting for a day or less;
- Temporary effect – effect lasting for one year or less;
- Short-term effect – effect lasting one to seven years;
- Medium-term effect – effect lasting seven to fifteen years;
- Long-term effect – effect lasting fifteen to sixty years.

Effects can also be identified as permanent, i.e. lasting over sixty years; and reversible, i.e. can be reversed through remediation or restoration. Another consideration is the frequency of the effect, i.e. how often will the effect occur: once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually.

These effects have been derived from the EPA Guidelines for the Information to be contained in an EIAR (2022). These effects are equally applicable to the setting of an asset.

The effect score is arrived at without reference to the value of the asset. It can be given against a four-point scale:

- Very high;
- High;
- Medium; and
- Low.

The level of effect takes into account mitigation measures, which have been embedded within the Proposed Development as part of the design development process.

These effects have been derived from the EPA Guidelines for the Information to be contained in an EIAR (2022). The effect upon the setting of an asset is also taken into account.

Taking these criteria into consideration, the magnitude of effect can be assigned by reference to a four-point scale (Table 11-2).

Table 11-2: Factors Determining the Magnitude of Effect

Magnitude	Description
Very High	Change such that the special interests or qualities of the asset are totally altered or destroyed. Comprehensive change to setting affecting importance of asset, resulting in a serious loss in our ability to understand and appreciate the asset
High	Change such that the special interests or qualities of the asset are affected. Noticeably different change to setting affecting importance, resulting in erosion in our ability to understand and appreciate the asset
Medium	Change such that the special interests or qualities of the asset are slightly affected. Slight change to setting affecting significance resulting in a change in our ability to understand and appreciate the asset
Low	Minimal change to the asset that has little effect on its special interests or qualities. Does not affect our ability to understand and appreciate the asset

11.2.7 Significance of Impact

Once the magnitude of the effect has been identified, this can be cross-referenced with the importance of the asset to derive the overall significance of impact, or the consequence of the change resulting from the scheme (see Table 11-3). The significance can be judged on a seven-point scale:

- Imperceptible – a change capable of measurement, but without significant consequences.
- Not significant – an impact which causes noticeable changes in the character of the asset, but without significant consequences.
- Slight impact – an impact which causes a noticeable change without affecting the special interests or qualities of the asset to any particular degree.
- Moderate impact – a change which alters the character or special qualities of an asset in a manner that is consistent with existing and emerging baseline trends.
- Significant impact – an impact which, by its character, magnitude, duration or intensity, alters the special interests or qualities of an asset.
- Very significant – an impact which, by its character, magnitude, duration or intensity significantly changes the special interests or qualities of an asset.
- Profound impact – an impact which obliterates the special interest or qualities of an asset.

Table 11-3: Significance of Impact Matrix

Magnitude of Effect	Importance of Cultural Heritage Asset			
	Local	**Regional**	**National**	**International**
Very High	Significant	Significant	Profound	Profound
High	Moderate	Significant	Significant	Profound
Medium	Slight	Moderate	Significant	Significant
Low	Imperceptible	Slight	Slight	Moderate

For the purposes of this chapter, moderate to profound impacts are classed as significant. Once a significant impact has been identified, additional mitigation can be applied to offset, reduce or compensate for any significant adverse effects, or to enhance positive effects. Reassessing the significance of impact after applying additional mitigation reflects the success rating of the mitigation and allows the level of residual effect and impact to be assessed.

11.3 The Existing and Receiving Environment (Baseline Situation)

11.3.1 Site Location and Description

A full site description is included in Chapter 2 Project Description and alternatives considered. Site Photographs are included as Appendix 11C which can be found in Appendix K of this EIAR.

The Proposed Development site occupies an area of ground 170m to the southwest of Donore Avenue (Plate 11.1), 120m to the east of Dolphin's Barn Street (Plate 11.2) and 160m to the north of South Circular Road (Plate 11.3). The northern extent of the Proposed Development site was previously occupied by the 1950s residential development of St. Teresa's Gardens (now demolished apart for the eastern flats), while the southern extent comprised a former sports ground formed by two sub-rectangular areas. The sports grounds were disused and heavily overgrown by 2013 with plant species characteristic of disturbed ground, suggesting they have been dug up (Archaeology Plan, 2013). These sub-rectangular areas extend to the west and south from the southern corner of the former site of St. Teresa's Gardens. The Proposed Development will occupy the entirety of the sub-rectangular area to the west and only the north extent (0.38 hectares) of the sub-rectangular area to south.

The Proposed Development site was visited on 7 July 2022. Access is via Donore Avenue through the remains of the St. Teresa's Gardens development (Plate 11.4). The majority of St. Teresa's Gardens flats have been demolished although the eastern flats are still extant (Plate 11.5).

The area to the northeast extent of the Proposed Development comprises open ground which is now overgrown (Plate 11.6). This area was previously occupied by a block of flats. The northern extent of the Proposed Development also comprises open ground which was previously occupied by a block of flats. The ground within this area is overgrown, although

evidence for existing services and ground investigations are visible (Plate 11.7). This area was subject to archaeological testing in 2021, although there are no clear signs of the trenches.

The southeast extent of the Proposed Development site comprises concreted surfaces and outdoor basketball courts surrounded by mesh fencing (Plate 11.8). The southern extent of the Proposed Development site originally comprised a playing field, however this is now overgrown with few details visible (Plate 11.9). The southwest extent was also originally under a playing field, although this area is now occupied by the builder's compound associated with the construction of a new laboratory for The Coombe Women and Infants University Hospital (Plate 11.10). The eastern part of the former playing field has been replaced with a stoned surface holding building supplies, spoil heaps and container offices (Plate 11.11), while the western part is used as a car park for the construction works (Plate 11.12).

The Proposed Development site is bounded to the southeast by the former Player Wills Factory (NIAH 50080768) (Plate 11.13), to the west by The Coombe Women and Infants University Hospital (Plate 11.14) and to the southwest by the remains of a former printing works, which are still extant including its chimney (Plate 11.15). The Margaret Kennedy Road housing development is located to the north of the Proposed Development site.

11.3.2 Geology

The Proposed Development site is underlain by bedrock consisting of dark limestone and shale (calp) of the Lucan Formation (Geological Survey Ireland). The Quaternary sediments within the area consist of till derived from limestones.

11.3.3 National Monuments

There are no National Monuments within the Proposed Development site or the surrounding study area.

11.3.4 Record of Monuments and Places (RMPs)

A review of the Record of Monument and Places (RMP) dataset identified 25 sites within 500m of the Proposed Development site (Figure 11-1 and Appendix 11D which can be found in Appendix K of this EIAR.). One of these, a watercourse (DU018-04304) that was part of the course of the 12th/13th century Abbey Stream, crosses the Proposed Development site. Archaeology Plan (2013) identified through cartographic evidence that the course of the stream crosses through the former St. Teresa's Gardens; this was corroborated during the archaeological monitoring of engineering test pits within the site in June 2014 (Giacometti, 2014).

Evidence for the Abbey Stream was uncovered within test pit 1 in the form of a silted-up channel. The Abbey Stream was an artificial branch of the River Poddle built during the medieval period to divert water through the Liberty of St Thomas' Abbey (later Liberty of Donore), and is thought to date to the late 12th or early 13th centuries (Giacometti, 2014). While initially under the control of the Abbey, the primary control of the water courses passed to the city during the 15th century. The line of the stream was culverted during the 17th century, although the section within the Proposed Development site appears to have remained open. The stream was sealed by a deposit which contained a single sherd of mottled ware pottery dating to the 17th century, suggesting that the stream was silted up by the 18th century.

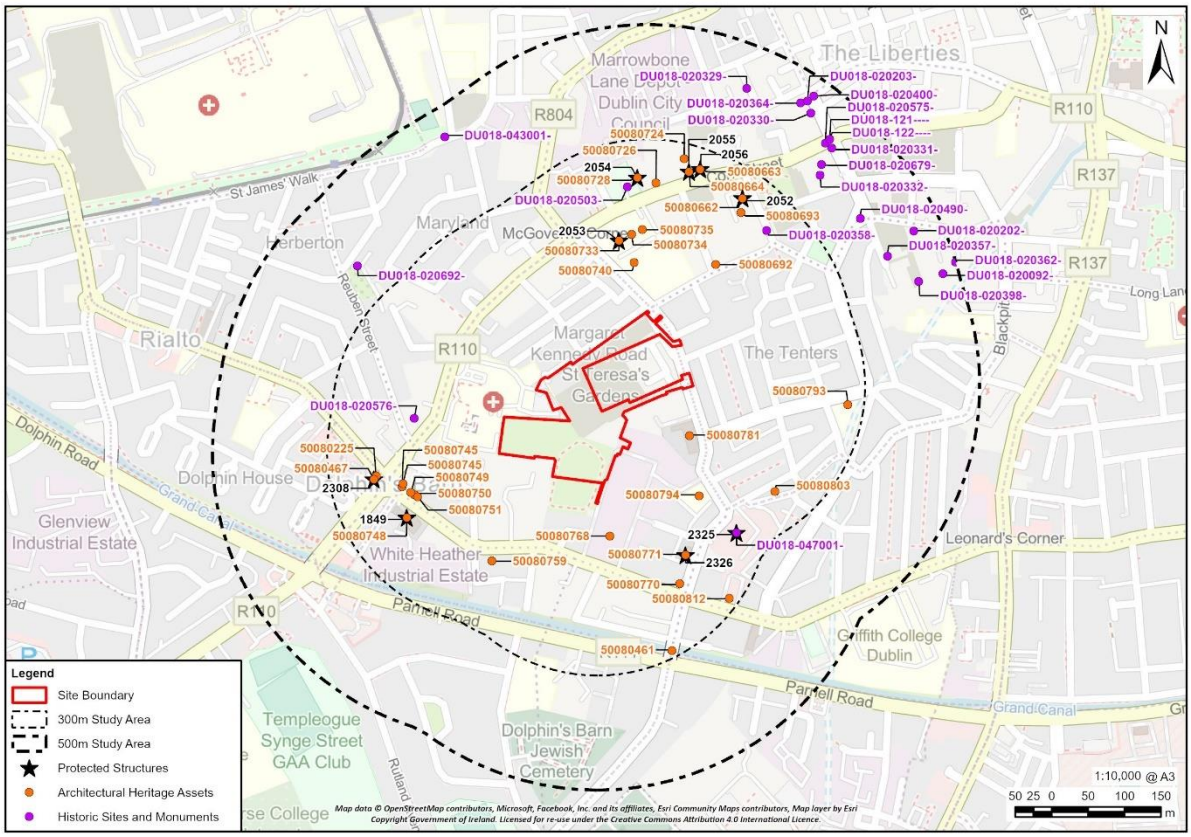

Figure 11-1: Heritage Assets within the Study Areas.

Channels were diverted from the Abbey Stream to power mills, including one that was controlled by a sluice known as 'Roaring Meg' located 22m to the northeast outside the Proposed Development site. These channels were created during the 18th century and cross to the northeast from the Abbey Stream outside of the Proposed Development site. Evidence for a second watercourse was also uncovered during the monitoring of test pit 2. This is thought to be the Tenter Water, which was a channelization of a natural stream, the Hangman's Water, which ran along the east boundary of the Proposed Development site before being interrupted by the Abbey Stream. The Tenter Water is the continuation of the Hangman's Water to the north of the Abbey Stream (Giacometti, 2014). Further archaeological testing was conducted in 2019 during the construction of a residential development (Giacometti, 2019). This found no evidence for the Abbey Stream, and it was surmised that it had been relocated to the boundaries of the site during the mid-20th century.

Further archaeological testing was conducted in August 2021 in order to confirm if the sub-surface line of the Abbey Stream continues within the Proposed Development site. 14 test trenches were excavated within accessible areas of the Proposed Development site, including the northern extent where the Abbey Stream was thought to continue (IAC, 2021). Trenches 2 and 3 were specifically positioned to target the northeast corner of the Proposed Development for this reason.

A linear cut (C10) was uncovered within the northern extent of Trench 3 (IAC, 2021). This linear cut (C10) extended northeast-southwest across Trench 3. It was 1.15m in width and 0.35m maximum depth with gradually sloping sides and a flat base. The fill material consisted of (C11), a compact black clay with frequent demolition inclusions, overlain by a grey silty clay

(C12) considered to be a flood deposit (C7). The grey silty clay (C12) was overlain by significant modern disturbance. The linear cut (C10) was not considered to be the remains of the Abbey Stream and the results of the archaeological testing show that the Abbey Stream is not located within the boundaries of the Proposed Development (IAC, 2021).

Another watercourse (DU018-020576) is located 154m to the west of the Proposed Development Site. This watercourse was uncovered during archaeological investigations in 1993 which were carried out in advance of the Coombe Relief Road (Hayden, 1993). It was located at a spot known as 'The Back of the Pipes' in Dolphin's Barn and is thought to be a section of the watercourse diverted from the Rivers Poddle and Dodder at Mount Argus. This watercourse was diverted in the mid-13th century in order to supply Dublin with clean water. The watercourse was uncovered at 1.8m below modern ground level and was filled with grey silt containing 17th and 18th century pottery. The watercourse continued northwards along St. James' Walk to the City Basin. This section of the watercourse is marked on the Down Survey map of the mid-17th century as 'the water that supporteth Dublin' and as 'The City Water' on Rocque's 18th century map of County Dublin. The section of the watercourse is located 421m from the Proposed Development site and is recorded as DU018-043001. Another section of water course (DU018-020692) is located 354m to the northwest at Herbeton Walk. This was uncovered during archaeological testing in 2002 and proved to be less than 0.5m deep and unlined (Hayden, 2002). A further section of water course (DU018-020575) was uncovered during excavations in 1993 on the north angle of Ardee Street and Cork Street (Hayden, 1993), part of the new course of the Poddle River diverted through the area in the 12th century.

The northeast extent of the Proposed Development site onto Donore Avenue is located within the Zone of Archaeological Interest for Dublin City (DU018-020). The Zone of Archaeological Interest for Dublin City (DU018-020) incorporates Donore Avenue, Cork Street and Dolphin's Barn Street.

An unclassified castle (DU018-047001) is located 252m to the southeast of the Proposed Development site, at the site of a printing works. This location is marked as the 'Site of Donore Castle' on the 1st edition map of 1837. The presence of the castle is primarily based on local tradition; Bradley (2000) notes that medieval records do not mention a castle within the manor of Donore and suggests that the original building may have been a mill. The earliest upstanding remains date to the 18th century, while archaeological testing by Swan in 2000 and Walsh in 2003 did not uncover any medieval remains or deposits. Archaeology Plan (2013) note that a 17th century house called Roper's Rest was located within the area and may have given rise to the local tradition of the Castle. The location of Donore Castle has been identified as a Protected Structure 2325 on the Dublin City Development Plan 2016-2022 and the draft Dublin City Development Plan 2022-2028.

The 1st edition OS map (1837) also shows a Quaker Burial Ground (DU018-020503) on Cork Street 310m from the Proposed Development site. The burial ground was located in a plot of ground adjacent to the later James Weir Home and some gravestones were still visible within the grounds during the 1990s (Archaeology Plan, 2013). A dwelling site (DU018-020358) is located 416m from the Proposed Development site in Weaver's Square, which had been settled by Huguenot cloth weavers during the early 18th century. The houses constructed within this area were gable fronted and forerunners to the 'Dutch Billys' which characterised much of the Dublin streetscape in the 18th century (Archaeology Plan, 2013). These houses have been demolished with no visible traces. Archaeological investigation in advance of

development in 2000 revealed the foundations for two houses, both of which had been rebuilt or remodelled during their lifespan (Scally, 2000). House No. 1 measured 7m long by more than 4m wide and lay on the southern side of the site. Only the front wall and party wall on the north side were apparent and the house appeared to have burnt down. House No. 1 was rebuilt with the ground to its northern side filled with clay and a second house, House No. 2, was built. Foundations of a large corner fireplace were located in the front room of House No. 2 while pottery recovered from the rubble fill of House No. 2 ranged from 18th- to 19th-century in date. Further archaeological testing within the area of the dwelling site (DU018-020358) in 2002 revealed evidence of multiple periods of activity, with buildings collapsed on the site to create platforms for further construction (Bolger, 2002).

Six further houses are noted on the RMP within the study area. All are located to the east of the Proposed Development at distances beyond 400m, within the historic urban expanse of Dublin. Four of the houses (DU018-020329, DU018-020364, DU018-020202 and DU018-020357) are listed as Dutch Billys. There are no longer any traces of these buildings. The two remaining houses are a stone gabled house (DU018-020490) and a 'Chamber Street type' (DU018-020358), which dates to the 18th century.

The remaining recorded RMP assets all represent a range of further urban activity which have been gleaned from cartographic activity. Two hospitals (DU018-020679 and DU018-020332) were located within close proximity to one another 400m to the northeast of the Proposed Development. Both are shown as religious houses on the Friends of Medieval Dublin map (1978) and listed as hospitals on the Dublin City Development Plan 1999.

The remaining assets represent a range of industrial related sites dating to the medieval and post medieval periods. Two mills (DU018-20400) and (DU018-020330) were associated with malting during the medieval period, while a bridge (DU018-020331) on Cork Street carried the road over the associated mill race. Another mill (DU018-121) was located to the north of the bridge, with a tannery (DU018-122) located adjacent to the mill. A mill complex (DU018-020092) located 482m to the northeast of the Proposed Development was formerly the property of St Thomas's Abbey; the mills were granted to William Brabazon in 1544, with two mills present in 1610. The associated mill pond (DU018-020398) was located 55m to the southwest.

11.3.5 Protected Structures

There are six Protected Structures as recorded on the Dublin City Development Plan 2016-2022 and draft Dublin City Development Plan 2022-2028 within the study area. None of these are located within the boundaries of the Proposed Development site (Figure 11.1 and Appendix 11D which can be found in Appendix K of this EIAR.). All are considered to be of regional importance. The closest is Bru Chaoimhin (RPS 2053), located 63m to the northeast of the Proposed Development site. This Protected Structure is the former fever hospital on Cork Street. It was founded by the Quakers in 1804 and existed at this location until it transferred to Cherry Orchard in 1960 (Archaeology Plan, 2013). The former fever hospital is also recorded as NIAH 50080733 – 50080735.

The Church of Our Lady of Dolours (RPS 1849), a Roman Catholic church dating to 1890, is located 194m to the southwest of the Proposed Development site. It occupies a prominent position at the junction of South Circular Road and Dolphin's Barn. It is also recorded on the National Inventory of Architectural Heritage (NIAH) as 50080748.

Saint Catherine and St. James Church of Ireland Church (RPS 2326) is located 195m to the southeast of the Proposed Development Site. This church was built in 1896 and was extended in 1906. It forms an elegant and well-formed landmark in the locality with its tower providing a focal point in the skyline. It is also recorded as NIAH 50080771. Rom Massey and Sons Undertakers (RPS 2308) is located 218m to the southwest of the Proposed Development Site on Dolphin's Barn Street. This is a former bank (Royal Bank of Ireland) which was built in 1925. It is considered to make an important contribution to the streetscape and is also recorded as NIAH 50080467. The location of Donore castle (RPS 2325) is located 72m to the southeast of the church. There are no visible upstanding remains associated with this Protected Structure.

The James Weir Home for Nurses (RPS 2054) is located 210m to the northeast at 104 Cork Street. Dating to the early 20th century, this building was constructed to provide accommodation for nurses working in the fever hospital to the southwest across Cork Street. The home is also recorded as NIAH 50080728.

11.3.6 National Inventory of Architectural Heritage – Buildings

The National Inventory of Architectural Heritage (NIAH) records 19 buildings within the study area around the Proposed Development site (Figure 11.1 and Appendix 11D which can be found in Appendix K of this EIAR.). None of these are located within the boundaries of the Proposed Development. Six are also recorded as Protected Structures, as have been discussed under this designation.

The closest NIAH asset is the Player Wills Factory (NIAH 50080768) located immediately adjacent to the Proposed Development site to the southeast. It consists of a detached nine-bay, three-storey factory, having projecting end-bays and central breakfront to the front (southwest) elevation arranged around a central courtyard with a glazed roof over the basement. It was built as a tobacco factory in 1935 and continued in use until 2005. It is a rare surviving example of the Art Deco style in Dublin.

The remaining NIAH buildings within the study area are listed in Table 11-4.

Table 11-4: Remaining NIAH buildings within the study area

NIAH. No	Distance to Proposed Development	Name	Building Address	Structure/ Original Use	Date
50080224	290m	Rialto Cinema	353 South Circular Road, Rialto, Dublin 8	Cinema	1935
50080759	203m	Dolphin Villa	287 South Circular Road, Dublin 8	House	1870
50080751	167m	Bee Cycles	380 South Circular Road, Dublin 8	Shop	1880
50080750	169m	Deveney's Off Licence	382 South Circular Road, Dublin 8	Shop	1890
50080749	171m	Rose Buds	384 South Circular Road, Dublin 8	Shop	1890
50080745	180m	A.C. Boles	390 South Circular Road, Dolphin's Barn Street, Dublin 8	House	1850
50080768	232m		248 South Circular Road, Donore Avenue, Dublin 8	Rectory	1900
50080794	168m	Saint Catherine's National School	Donore Avenue, Dublin 8	School	1900
50080781	141m	Church of Saint Theresa of the Child Jesus	Donore Avenue, Dublin 8	Church	1920
50080803	288m	Carrig	27 Merton Avenue, Dublin 8	House	1900
50080770-	227m		248 South Circular Road, Donore Avenue, Dublin 8	Rectory	1900
50080812	300m	Mason Technology	228 South Circular Road, Dublin 8	Synagogue	1920

11.3.7 Previous Archaeological Investigations

Examination of the Excavations Bulletin 1970-2022 has revealed 37 previous archaeological investigations within the study area. One of these investigations directly related to the Proposed Development site and was specifically carried out to inform on the presence of archaeological remains, in particular, the watercourse (DU018-04304) (IAC, 2021 and Appendix 11E which can be found in Appendix K of this EIAR.).

While this investigation found no evidence for the watercourse (DU018-04304), subsoil cut linear features of possible archaeological significance were noted in two areas – Archaeological Areas 1 and 2 (AA1-2). AA1 was located within the northern extent of the Proposed Development site, encompassing Trenches 1-3 and the northern extent of Trench 4. Ten linear features with maximum widths of 1.25m and depths of 0.6m were uncovered.

These features had been heavily disturbed by later development, with modern demolition debris present within the upper fills of all the features. Feature C4, recorded extending northwest to southeast within Trench 1, was considered potentially the oldest feature uncovered as it was filled by loose, light brown silty clay (C5) derived from the surrounding subsoil.

Linear (C21) was recorded in Trench 4 and had been heavily disturbed by the insertion of a cast iron pipe. However, in-situ wooden elements consisting of stakes, planks and posts were noted, with four elements recovered for examination. While tool marks were noted on a post, no artefactual evidence was recovered to suggest a date of construction for the wooden structure.

The second area, AA2, was located within Trench 8 and comprised a linear feature (C24) orientated northwest to southeast. This feature (C24) could not be fully investigated due to the depth of overburden from modern levelling materials. It was filled with a black clay with frequent clinker and demolition material inclusions (C25), very similar to that uncovered within the majority of linear features uncovered in AA1. As such, it was considered analogous with these features and may equate with an early 20th century channel diverted from the Abbey Stream to a laundry located to the west (IAC, 2021).

Four previous investigations were undertaken in the immediate vicinity of the Proposed Development site, including within the former St. Teresa's Gardens site to the immediate northeast of the Proposed Development (Giacometti, 2014 and 2019). These have already been discussed in regard to the watercourse (DU018-04304). The 2019 archaeological investigations uncovered the remains of an unusual 18th century building, which is marked as a mill on Wilson's map of 1798 (Giacometti, 2019). The building was a domestic residence by the 19th century and appeared to have its own domestic water system including a hydraulic ram. The remains were fully excavated in advance of construction. The investigation also found evidence for tanning and glue-making on the site.

An archaeological investigation was carried out within the Player Wills tobacco factory (NIAH 50080768) to the immediate southeast of the Proposed Development. The investigation took the form of three trenches excavated within the former factory (Walsh, 2006). No archaeological deposits or evidence for the city watercourse were identified.

In June 2019, archaeological monitoring of the excavation of slit trenches was carried out as part of geotechnical investigation works to inform preparation of the EIAR relating to the former Bailey Gibson factory, located to the immediate southwest of the Proposed Development site (McCutcheon Halley, 2020). The slit trenches were excavated within the former factory premises revealing demolition material to a depth of 0.7m overlying fill material to a depth of 1m. Nothing of archaeological significance was noted during the monitoring.

An archaeological investigation was carried out in 2011 within the Coombe Women and Infants University Hospital, which is located to the immediate west of the Proposed Development site (Bailey, 2011). Nothing of archaeological significance was uncovered.

Comprehensive evidence for an 18th century tannery was uncovered in 2001 during the realignment of Cork Street (Hayden, 2001) to the west of the Proposed Development site. The tannery was enclosed by a stone wall which contained brick and stone tanks used for dehairing the animal hides, while the tanning was conducted within 29 timber-lined tanks. A brick lined drainage system was also uncovered. The remains of late 18th century housing which

replaced the tannery were also uncovered. A later investigation in 2014 adjacent to the tannery revealed evidence for the 13th century watercourse (DU018-043001) (Dennehy, 2014). The watercourse (DU018-043001) was formalised by the construction of retaining walls, which had been truncated by a concrete sewer pipe. The remains of two 18th century houses were also uncovered.

Archaeological testing at the site of Donore Castle (DU018-047001) in 2003 did not uncover any evidence for the castle (Walsh, 2003). However, the brick culvert arch of the Poddle river was uncovered, as were the foundations for Post-Medieval buildings. Test excavation in 2005 of a large site at Mill Street and Blackpitts to the east of the Proposed Development site uncovered post-medieval activity associated with the Warrenmount Mills to the south-west, and 19th century and earlier tanneries (Walsh, 2005).

Archaeological testing at The Timberyard off the Coombe bypass was excavated during 2006 and 2007, revealing evidence of medieval activity and settlement activity dating to 1700 (Giacometti, 2006). This settlement activity comprised residential structures with outhouses, rubbish pits and water management features. Also uncovered was evidence for multi-period industrial activity and the buried remains of streetscape relating to Ardee Row and McClean's Row.

The remains of 19th century latrine and occupation debris were uncovered in 2004 during archaeological testing at 40-45 Cork Street to the north of the Proposed Development site (McConway, 2004), while the remains of a 19th century reservoir were uncovered at Pim Street in 2006 (Kehoe, 2006). In 2000, archaeological monitoring of groundworks was undertaken at 109 Cork Street to the northeast of the Proposed Development (Carroll, 2000). Six wood-lined pits were uncovered, which were dated to the 19th century. No further archaeological features were uncovered. A mid-19th century tannery was uncovered during testing at 115-117 Cork Street to the northeast of the Proposed Development. This testing in 2004 revealed that the tannery was dug into riverine silt associated with a tributary of the River Poddle which is located to the north (Walsh, 2004). A piece of moulded Dundry stone was recovered from the tannery. The remains of a further tannery were uncovered at the Mercy Convent on Cork Street in 2004 and 2005 (Elliott, 2005). This tannery existed at the location during the mid-19th century; evidence recorded included tanning boxes and the tannery floor. The remains of a wooden-pipe water system marked on the 1838 OS map was also uncovered.

Evidence for two mid-17th century tannery developments were excavated at Blackpitts to the east of the Proposed Development site, in advance of a hotel and student accommodation development in 2016 (IAC, 2021). These excavations, carried out under licence 15E0555, also uncovered the remains of a possible dismantled timber cage-work house re-used within the base of later 'Dutch Billy' style buildings.

Archaeological testing was also conducted in advance of the development of a new park at Chamber Street, Ormond Street and Cork Street in 2016 (Stirland, 2016). The site was previously occupied by a 20th century housing development which had severely disturbed the ground. Despite this, some evidence for the Georgian period settlement was uncovered, and the potential was noted that features and deposits associated with the early Georgian development of Dublin could survive at depths greater than the formation level of the proposed park.

The remaining 27 investigations within the study area uncovered nothing of archaeological significance. These are listed in Table 11-5.

Table 11-5: Archaeological investigations within the study area which uncovered nothing of significance

Licence. No	Site Address	Date
93E0019	4A Greenville Ave., South Circular Rd., Dublin	1993
97E0312	Suir Road, Dublin	1997
99E0501	Marrowbone Lane, Dublin	1997
00E0728	Mercy Convent, Cork Street Dublin	2000
00E0877	Marrowbone Lane, Dublin	2000
02E0912	46–47 Cork Street, Dublin	2002
03E0954	73 Cork Street, Dublin	2003
01E0537	84 Cork Street, Dublin	2001
02E0724 ext.	Weaver's Square, Dublin	2002
03E1667 ext	Warrenmount Mills, Mill Street, Dublin	2003
03E1807	69A Donore Avenue, Dublin	2003
03E1648	84a–88 Cork Street, Dublin	2003
03E0135	Marrowbone Lane, Dublin	2003
04E1340	Brown Street South, Dublin	2004
03E1537	90-97 Cork Street/49 Marrowbone Lane, Dublin	2003
03E1021	Ice rink, Dolphin Barn, Dublin	2003
04E0020	Cork Street/Cameron Street	2003
05E0315	Rutland Avenue Flats, Dolphin's Barn, Dublin	2005
05E0448	58B–61 Cork Street, Dublin	2005
04E0310	Cork Street/Cameron Street, Dublin 8	2005

Licence. No	Site Address	Date
04E0270	48–52 Cork Street, Dublin	2004
04E0270	Cork Street/Cameron Street, Dublin	2005
04E1237	Engine Alley and Molyneux Yard, Dublin	2004
06E0404	Fatima Mansions/Hereberton, Dublin	2006
08E0503	40–45 Cork Street/2–12 Donore Avenue, Dublin	2008
16E0026	Cork Street, Dublin 8	2016
16E0625	Griffith Barracks Multi-Denominational School, The Old Guardhouse, South Circular Road, Dublin	2016

11.3.8 Cartographic Research

Down Survey, Barony of Newcastle and Uppercross, Co. Dublin, C.1656

This is the earliest known map that shows the area of Dolphin's Barn and Donore, which would have been outside the walled city of Dublin at this time. The River Poddle is clearly marked dividing at 'The Tongue' (present day Mount Argus) with the left branch forming the western boundary of Dolphin's Barn to the south of the road to Crumlin. The eastern branch formed the Abbey Stream, which runs northeast towards Roper's Rest where it divides around the building before turning northwest, crossing the future location of St. Teresa's Gardens and the northeast extent of the Proposed Development site. There are no features marked within the Proposed Development site at this time.

The line of Cork Street / Dolphin's Barn Street is marked as a dotted line to the north of the Proposed Development site. The road is labelled '*the highway to Tallaght'* on the map. The discovery of the remains of the timber cage-work house at Blackpitts in 2016 (Section 11.3.7) is evidence of activity within the area at this time.

A Map of the city and suburbs of Dublin by Charles Brooking, 1728

This map shows the area of the Proposed Development site towards the middle of the 18th century (Figure 11-2 and Appendix D which can be found in Appendix K of this EIAR). The city has expanded beyond the city walls, with buildings along both sides of Cork Street and Dolphin's Barn. The future Donore Avenue is marked as a lane running south from Cork Street, providing access to Roper's Rest. The Abbey Water is not marked, and the Proposed Development site is shown as open ground. The French Huguenots had settled in the area by this stage, bringing cloth-working and also their distinct style of housing known as 'Dutch Billies', such as the houses (DU018-020358), (DU018-020329), (DU018-020364), (DU018-020202) and (DU018-020357). Leatherworking was also a major industry within the area, as evidenced by the tanning pits uncovered during archaeological excavations by Walsh in 2004 and 2005, and Elliott also in 2005 (Section 11.3.7)

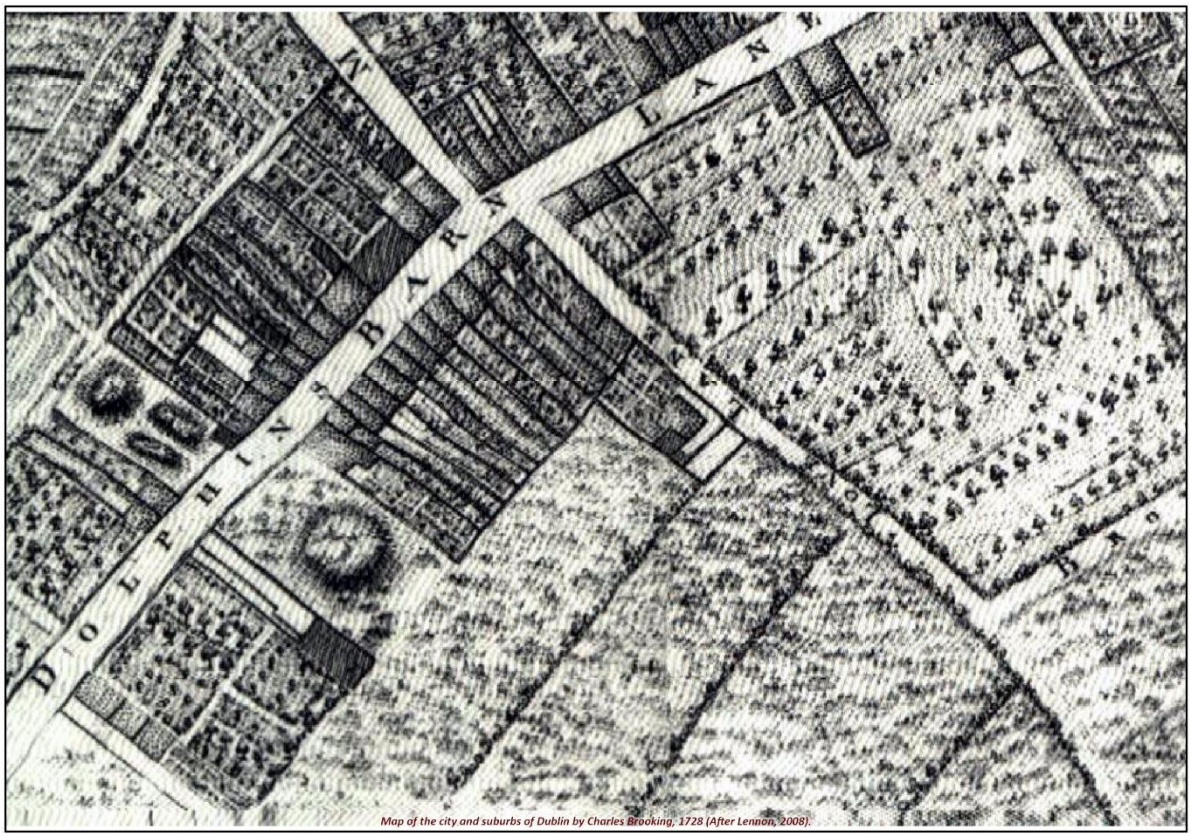

Figure 11-2: A Map of the city and suburbs of Dublin by Charles Brooking, 1728

An Exact Survey of the City and Suburbs of Dublin by John Rocque, 1756

Rocque's map of Dublin shows a sizeable city for the time, with impressive 18th century buildings mixed with surviving medieval and early modern urban fabric (Goodbody, 2014). The map only includes the northeastern extent of St. Teresa's Gardens, with only the extreme north of the Proposed Development site shown (Figure 11-3 and Appendix 11D which can be found in Appendix K of this EIAR.). This is marked as part of open ground subdivided into rectangular fields. No features are marked within the fields and the Abbey Stream is not shown crossing to the northwest, although it is shown to the north of Dolphin's Barn. Cork Street and Dolphin's Barn have development shown on both sides, but the future Donore Street remains largely undeveloped and appears to be still a country lane at this time.

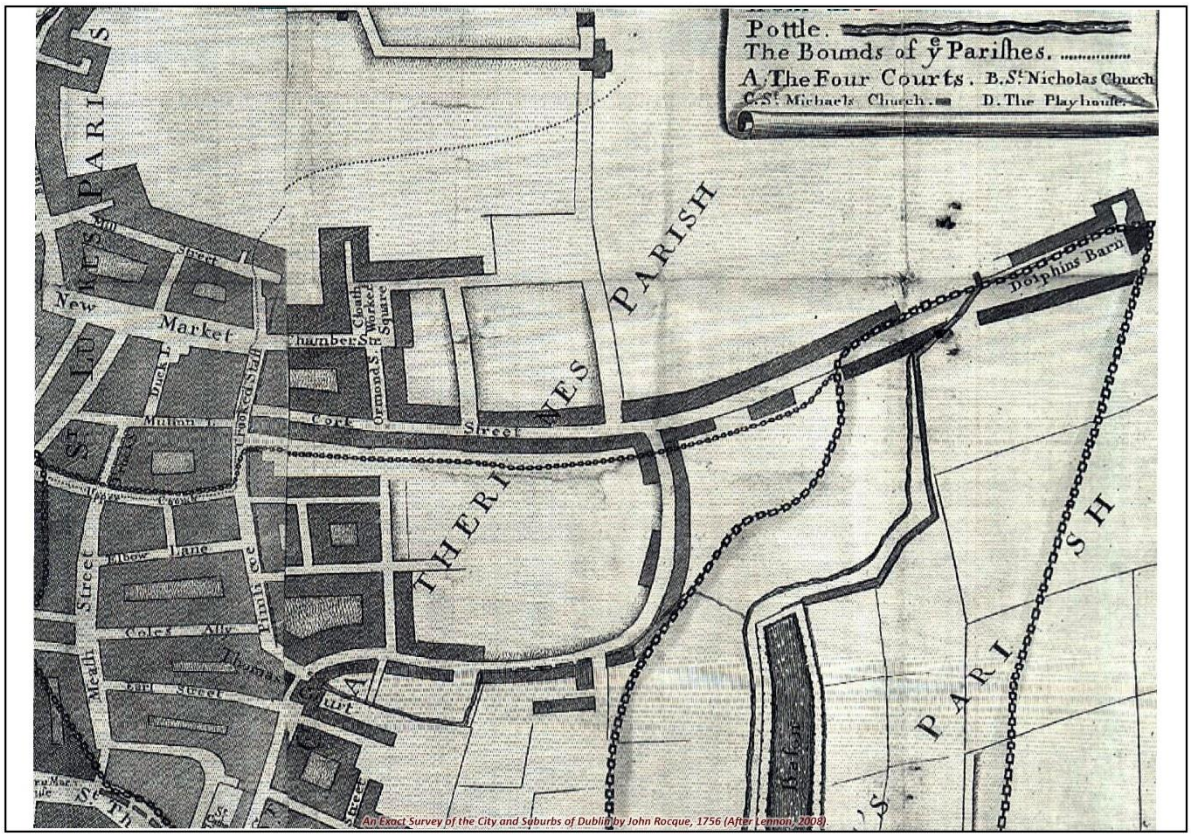

Figure 11-3: An Exact Survey of the City and Suburbs of Dublin by John Rocque, 1756

New Plan of the city of Dublin by William Wilson, 1801

Wilson's map shows the location of the Proposed Development site at the beginning of the 19th century (Figure 11-4 and Appendix 11D which can be found in Appendix K of this EIAR.). The area has witnessed considerable development, with the Grand Canal constructed and the lands between Ormond Street and Donore Avenue now fully built upon. The Proposed Development site is marked as open ground crossed on its northeast corner by the Abbey Stream, which appears as an open stream, joined by a stream from the south as it enters the limits of St. Teresa's Gardens. A succession of three channels is shown running northeast from the Abbey Stream to supply a larger channel, which runs south along the west side of Donore Street. A possible mill building is marked straddling this channel on the west side of Donore Street and immediately opposite Brown Street. This building is located within the boundaries of St. Teresa's Gardens, but outside the Proposed Development site.

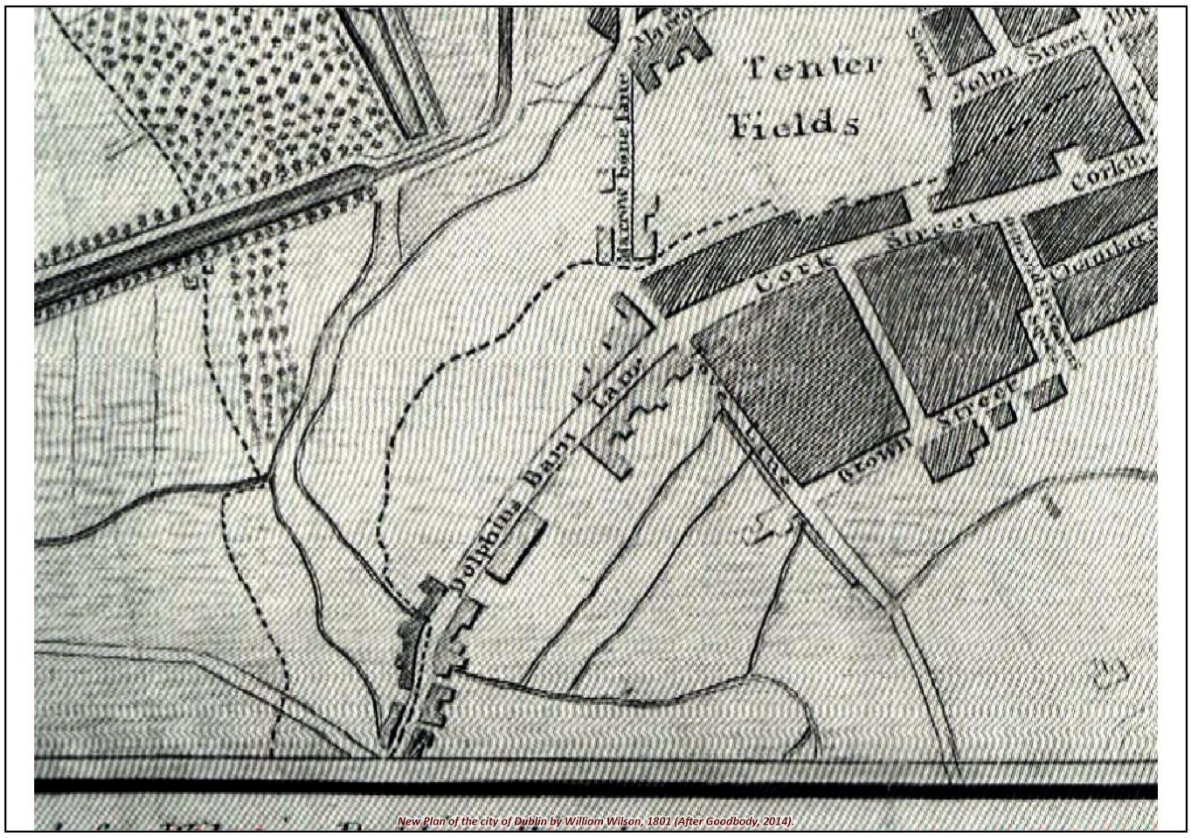

Figure 11-4: New Plan of the city of Dublin by William Wilson, 1801

Map of the county of Dublin by William Duncan, 1821

Duncan's map shows the area of the Proposed Development site during the first quarter of the 19th century. This map is drawn at a small scale with the result that few details are apparent. The Proposed Development site is shown as open ground crossed by the Abbey Stream and part of a larger area of open ground on the outskirts of the city. There has been some further development in the area from that shown on the Wilson map of 1801, with the Richmond Penitentiary (later Griffiths Barracks) constructed to the southeast and the Fever hospital (NIAH 50080735) off Cork Street to the north.

1st edition Ordnance Survey map 1837

This map sheet shows the area of the Proposed Development site in good detail towards the middle of the 19th century (Figure 11-5 and Appendix 11D which can be found in Appendix K of this EIAR.). The Proposed Development site remains under fields, with the channel of the Abbey Stream crossing its northeast corner following the course depicted on the previous maps. A channel is now shown running westwards from the Abbey Stream across the northern extent of the Proposed Development site, while the most northerly of the two channels previously shown running to the northeast is still extant. These two channels are not within the Proposed Development site.

There has been some further development within the immediate vicinity, with a long building range and associated gardens now occupying the area to the northeast of the Proposed Development site. A large structure with a curving surrounding wall is shown to the southeast of this. A nunnery and female school are now marked to the southwest of the Proposed Development site. Other development within the area includes the Quaker Burial Ground (DU018-020503) on Cork Street, while industrial activity within the area includes a calico printing mill and chemical works.

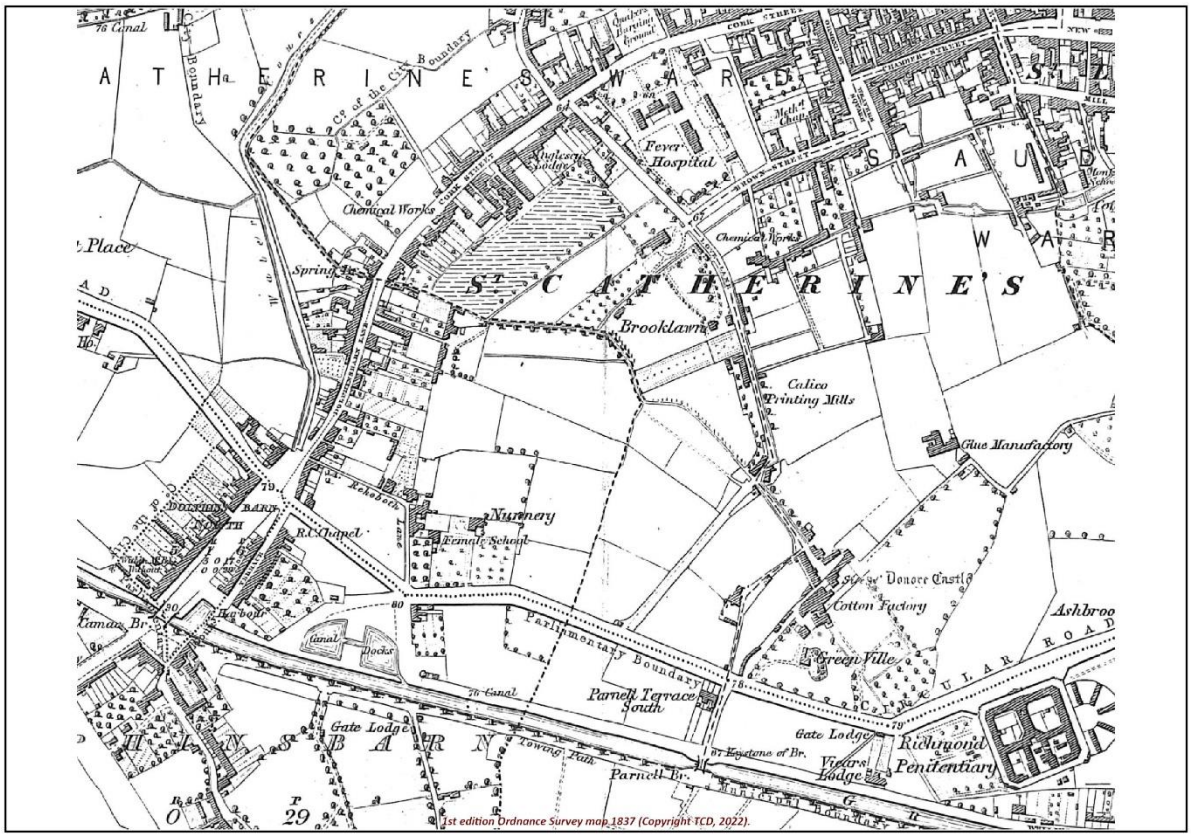

Figure 11-5: 1st edition Ordnance Survey map 1837

2nd edition Ordnance Survey map 1876

The 2nd edition Ordnance Survey map shows the area of the Proposed Development site towards the end of the 19th century (Figure 11-6 and Appendix 11D which can be found in Appendix K of this EIAR.). The Proposed Development site is still largely under greenfield, with the Abbey Stream crossing from southeast to northwest. This is labelled as the Poddle River on this map sheet; the two channels running north eastwards and the single channel running west across the Proposed Development site are still shown. The structures to the northeast of the Proposed Development site are still shown.

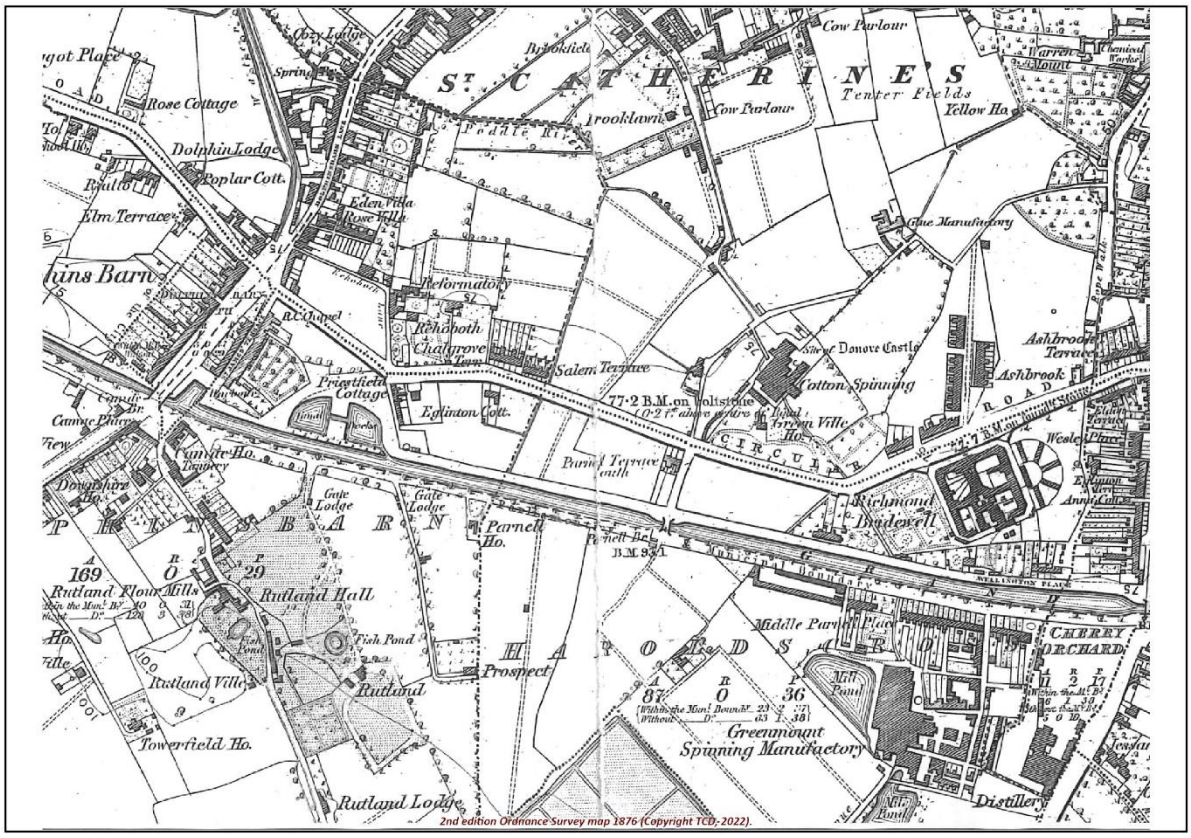

Figure 11-6: 2nd edition Ordnance Survey map 1876

Ordnance Survey map of Dublin 1912

This map sheet shows the area of the Proposed Development site during the first quarter of the 20th century (Figure 11-7 and Appendix 11D which can be found in Appendix K of this EIAR.). The Proposed Development site is still shown as open ground subdivided into fields, although urban development is now starting to encroach further, especially to the north, west and south. The Abbey Stream is clearly marked crossing its north extent with channels running off from it. The channel running to the west across the Proposed Development site is now shown to feed a laundry located at the southwest end of Eugene Street. A fireworks manufactory is now marked adjacent to the north of the Abbey Stream, with its associated magazine located a distance immediately abutting the stream. This may have been deliberate placing to ensure a ready water supply in the event of fire, although the results of the archaeological monitoring in 2014 suggest that the watercourses may have largely silted up by that stage (Giacometti, 2014).

A large oval exercise track is shown to the east of the Proposed Development site. This was associated with Brook Lawn house and would have been used to exercise horses. The Rehoboth tent and marquee factory is now marked to the immediate southwest of the Proposed Development site. This consisted of three buildings and a rope walk set within a large yard. An unnamed stream is clearly marked running northeast into the Abbey Stream. This is the Hangman's Water, which formed the eastern boundary of the Proposed Development site at that time.

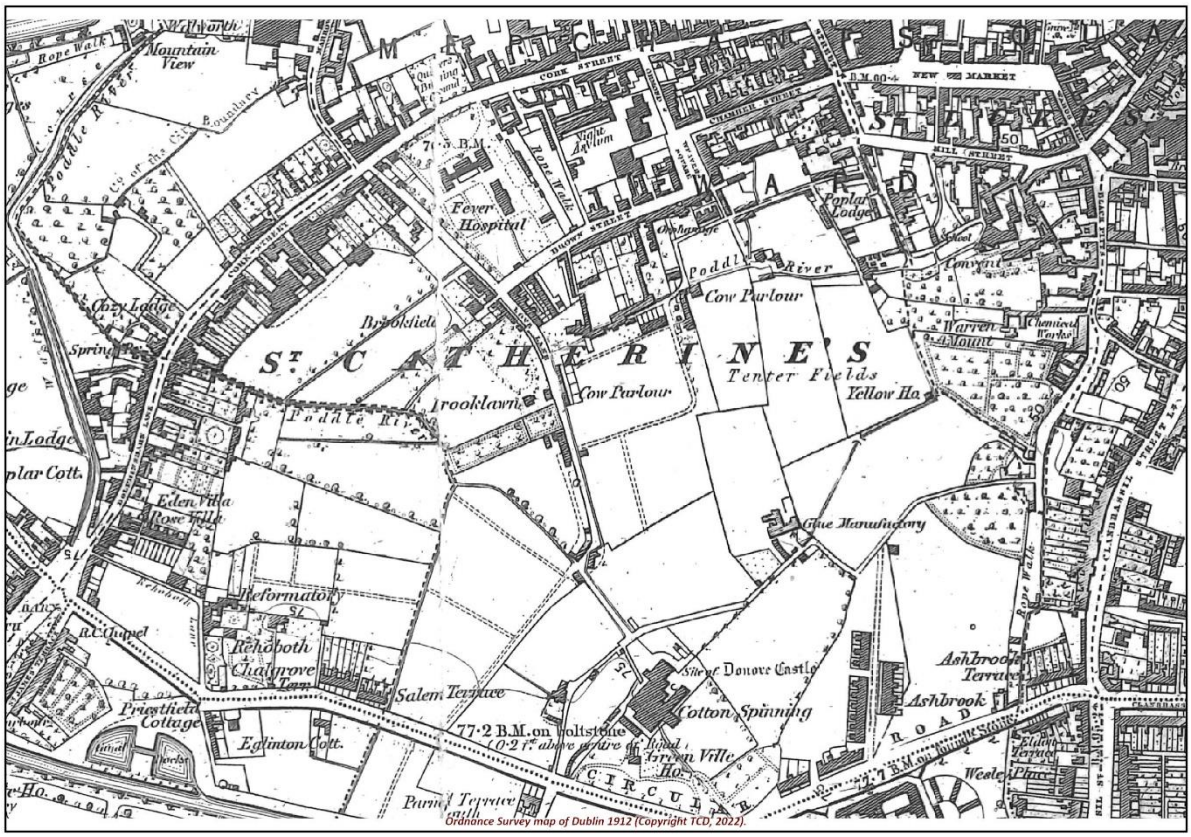

Figure 11-7: Ordnance Survey map of Dublin 1912

Ordnance Survey map of Dublin 1943-4

The middle of the 20th century saw the Proposed Development site still consisting of open ground, but completely surrounded by urban development (Figure 11-8 and Appendix 11D which can be found in Appendix K of this EIAR.). The Player Wills tobacco factory has now been built to the immediate southeast, while the tent and marquee manufactory has been replaced by a Factory and Printing Works. The latter is a high-density building complex occupying the entire footprint of the property.

The laundry is still marked to the west although the channel feeding it is no longer marked, possibly suggesting it has been culverted and buried. Similarly, the channels that ran to the northeast are no longer shown. The line of the Hangman's Water from the south and the Abbey Stream are still marked but were mostly culverted underground by this stage. The fireworks factory and its magazine have been removed, although the exercise track is still extant. The northwest extent of the this latter feature is missing, suggesting that it is now derelict.

Within 10 years of this map, the north extent of the Proposed Development site would be developed with the housing project of St. Teresa's Gardens, while the areas to the south would be converted to a sports ground.

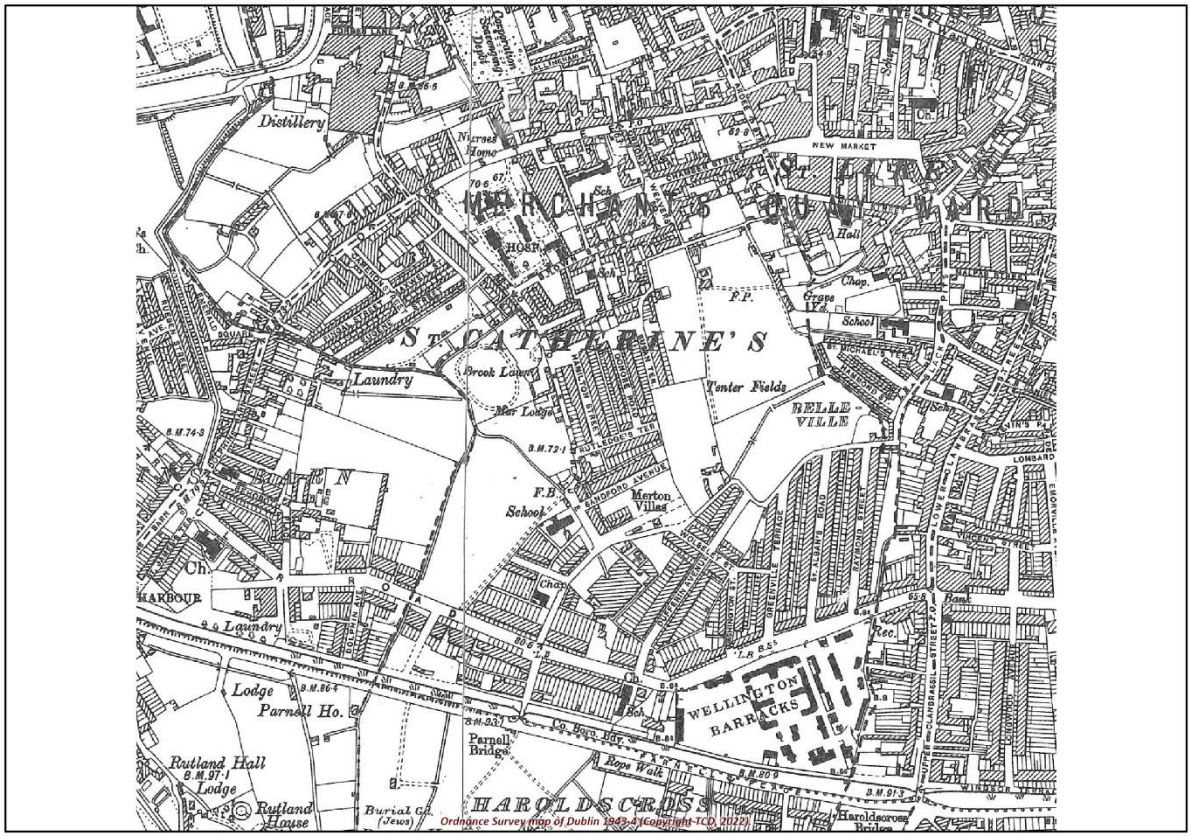

Figure 11-8: Ordnance Survey map of Dublin 1943-4

11.4 Characteristics of the Proposed Development

A full description of the Proposed Development is given in Chapter 2.

The Proposed Development will consist of the construction of a residential scheme of 543 no. apartments on an overall site of 3.26 ha (GFA of c. 53,227 sqm) containing the following mix of apartments:

- 225 No. 1 bedroom apartments (36 no. 1-person & 189 no. 2-person)
- 274 No. 2 bedroom apartments (including 52 No. 2 bed 3 person apartments and 222 No. 2 bed 4 person apartments)
- 44 No. 3 bedroom 5-person apartments
- A retail/café unit (168 sq.m.), mobility hub (52 sq.m.) and 952 sq.m. of community, artist workspace, arts and cultural space, including a creche, set out in 4 No. blocks.

The breakdown of each block will contain the following apartments:

- Block DCC1 comprises 111 No. apartments in a block of 6-7 storeys;
- Block DCC 3 comprises 247 No. apartments in a block of 6-15 storeys;
- Block DCC5 comprises 132 No. apartments in a block of 2-7 storeys;
- Block DCC6 comprises 53 No. apartments in a block of 7 storeys;

The Proposed Development will also provide for public open space of 3,408 sqm, communal amenity space of 4,417 sqm and an outdoor play space associated with the creche. Provision of private open space in the form of balconies or terraces is provided to all individual apartments.

The Proposed Development will provide 906 no. residential bicycle parking spaces which are located within secure bicycle stores. 5% of these are over-sized spaces which are for large bicycles, cargo bicycles and other non-standard bicycles. In addition, 138 spaces for visitors are distributed throughout the site.

A total of 79 no. car parking spaces are provided at undercroft level. Six of these are mobility impaired spaces (2 in each of DCC1, DCC3 & DCC5). 50% of standard spaces will be EV fitted. Up to 30 of the spaces will be reserved for car sharing (resident use only). A further 15 no. on-street spaces are proposed consisting of:

- 1 no. accessible bay (between DCC5 & DCC6)
- 1 no. short stay bay (between DCC5 & DCC6)
- 1 no. crèche set-down / loading bay (between DCC5 & DCC6)
- 1 no. set-down / loading bay (northern side of DCC5)
- 1 no. set-down/loading bay (northern side of DCC 3)
- 10 no. short stay spaces (north-east of DCC1)

In addition, 4 no. motorcycle spaces are also to be provided.

Vehicular, pedestrian and cyclist access routes are provided from a new entrance to the north-west from Margaret Kennedy Road. Provision for further vehicular, pedestrian and cyclist access points have been made to facilitate connections to the planned residential schemes on the Bailey Gibson & Player Wills sites for which there are extant permissions (Ref. No.'s ABP-307221-20 & ABP-308917-20).

The development will also provide for all associated ancillary site development infrastructure including site clearance & demolition of boundary wall along Margaret Kennedy Road and playing pitch on eastern side of site and associated fencing/lighting, the construction of

foundations, ESB substations, switch room, water tank rooms, storage room, meter room, sprinkler tank room, comms room, bin storage, bicycle stores, green roofs, hard and soft landscaping, play equipment, boundary walls, attenuation area and all associated works and infrastructure to facilitate the development including connection to foul and surface water drainage and water supply.

11.5 Potential Impact of the Proposed Development

11.5.1 Construction Phase

The Proposed Development will be constructed on land that was previously occupied by the St. Teresa's Gardens housing development in the north and a sports ground in the south. Prior to this, the land was largely located outside the city limits of Dublin until the 18th century and remained as open ground until the 1950s.

While there are no officially recorded Cultural Heritage assets within the Proposed Development site, cartographic evidence has revealed one archaeological feature which crosses its northeast extent. This is the former line of a watercourse (DU018-04304) which was part of the course of the 12th/13th century Abbey Stream. This appears to have remained open within the Proposed Development site and was not culverted as it was elsewhere. The stream appears to have silted up by the 19th century and was infilled after this. The Abbey Stream was used to provide water for industrial purposes, including to a laundry to the west. The channel to the laundry crossed the northern extent of the Proposed Development site. Additionally, the northeast extent of the Proposed Development site is located within the Zone of Archaeological Potential associated with Dublin City (DU018-020) on Donore Avenue.

There are no known archaeological or heritage assets within the southern part of the Proposed Development site, although it is located alongside the Hangman's Water, a north running stream located on the east boundary. Water is an important resource which attracts settlement and industrial activity. It is possible that such activity took place within the Proposed Development site adjacent to the Hangman's Water, especially during the periods pre-dating the cartographic evidence examined. Evidence of such activity could potentially survive as sub-surface archaeological features and deposits.

The northern extent of the Proposed Development site has been disturbed by groundworks associated with the construction and subsequent demolition of St. Teresa's Gardens. The open ground within the south of the Proposed Development site was developed as a sports ground, which appears to have been subsequently removed with the result that the area became overgrown, disturbed ground by 2013. These previous development groundworks will have impacted upon any sub-surface archaeological remains that may have existed. Further groundworks have been carried out in association with the construction compound of the Coombe Laboratory building in the southwest of the Proposed Development Site.

Despite this previous development, archaeological monitoring of ground investigation works in 2014 revealed evidence for the former Abbey Stream and other water courses, while archaeological testing within the Proposed Development site in 2021 noted subsoil cut linear features of possible archaeological significance surviving under the modern disturbance within investigation areas AA1 and AA2. There are no above ground visible features associated with these subsoil cut linear features, which remain *in situ* within the Proposed Development site beneath modern infill material. The survival of these remains also demonstrates the potential

for further archaeological features to be present within the parts of the Development site which were not accessible for trenching in 2021.

Given the recorded archaeological remains uncovered during previous works within the vicinity, any such archaeological features are likely to be of local interest and of low importance. Groundworks associated with the construction of the Proposed Development would severely impact upon any such archaeological remains should they exist and would alter the special interests or qualities of the asset. The magnitude of this impact would be very high leading to a significant effect.

Construction of the Proposed Development has the potential to impact the settings of heritage assets within the study area. These take the form of architectural heritage set within the urban environment around the Proposed Development. The closest is the Player Wills Factory (NIAH 50080768) to the immediate southeast (Plate 11.3), while other assets within the area include the Church of Saint Theresa of the Child Jesus (NIAH 50080781) (Plate 11.16), Saint Catherine's National School (NIAH 50080794) (Plate 11.17) on Donore Avenue, and the Church of Our Lady of Dolours (NIAH 50080748) on South Circular Road (Plate 11.18). These assets are considered of Regional importance.

There is the possibility of negative impact to the settings of these buildings due to the construction of the Proposed Development. While the surrounding terrain is urban, it is likely that the Proposed Development will be visible in views of these and the other heritage assets within the study area. Despite this, the presence of the Proposed Development will not impact the ability to understand or appreciate these buildings.

There is the possibility of temporary negative impact to the setting of the heritage assets from noise, dust and vibration from construction related traffic and activities. This would diminish the importance of these assets over the short-term. The surrounding urban landscape will assist in partially mitigating the potential impacts from noise, dust and vibration, while it should be noted that the heritage assets are already subject to noise, dust and vibration from road traffic, especially on Cork Street and South Circular Road. The change to setting during the construction phase would be such that the special interests or qualities of the heritage assets would be slightly affected, without a noticeable change, leading to a magnitude of impact of low, leading to a significance of effect of slight. The slight significance of effect would be short-term and adverse.

11.5.2 Operational Phase

Significant effects for the operation of the Proposed Development would derive from changes to the setting of heritage assets. These largely mirror the effects assessed for the permanent presence of the Proposed Development, as detailed above in the assessment of the construction phase. The change to setting due to the permanent presence of the Proposed Development during the operational phase would be such that the special interests or qualities of the heritage assets would be slightly affected, without a noticeable change, leading to a magnitude of impact of low, leading to a significance of effect of slight. The slight significance of effect would be adverse.

11.5.3 Potential Cumulative Impacts

Six adjacent developments have been identified immediately adjacent to the Proposed Development. These are:

- The Bailey Gibson permission (Ref. ABP-307221-20);
- The Bailey Gibson (BG2) Ref. ABP-311959-21
- The Player Wills permission (ABP-308917-20);
- The Coombe Laboratory Building permission (4049/19) and the Colposcopy Building permission (Ref. 3537/21); and
- The Part 8 permission for the demolition of the remaining two original flat complex blocks (Ref 2475/18).

These developments could have the likelihood to cause cumulative impact to the identified cultural heritage resource, by combining with the Proposed Development to affect the settings of the heritage assets within the study area during the construction and operation phases.

The Bailey Gibson permission (Ref. ABP-307221-20)

The Bailey Gibson permission (Ref. ABP-307221-20) will see the demolition of all buildings and structures on the site, including 9 no. buildings (11,234.42 sq.m GFA) and 1 no. ESB substation (21sq.m), to make way for development of the site to provide 416 no. residential units in 5 no. blocks that range in height from 2 to 16 storeys, together with residential amenities and services, communal open space and commercial uses (McCutcheon Halley, 2020).

There is the likelihood of negative impact caused by change to the settings of the heritage assets due to noise, dust, vibration and visual intrusion from the temporary construction related activity, which could diminish their importance. The Proposed Development will be constructed in phases, and it is possible that construction phasing will overlap with that of the adjacent Bailey Gibson permission. There is the possibility that construction noise, vibration and dust from the two developments could combine to impact the settings of heritage assets within the study area.

It is noted that this impact to setting will be temporary and confined to the construction phase. It is also noted that the heritage assets are already located within an environment where their settings are impacted by noise, dust and vibration from traffic.

The Bailey Gibson permission (Ref. ABP-307221-20) will comprise residential units in a range of heights up to 16 storeys. These could combine with the Proposed Development to create a visual impact to the settings of heritage assets. The Proposed Development and the Bailey Gibson permission are set within a ‘block’ bounded by roads and buildings on all sides. The proposed buildings will not screen views to heritage assets, nor will they impact the ability to understand and appreciate these buildings.

Given these conditions, the significance of the cumulative effect is judged to be slight.

The Bailey Gibson (BG2) (Ref. ABP-314171-22)

The Bailey Gibson (BG2) permission (Ref. ABP-314171-22) will see the demolitions of existing structures and construction of 345 residential units in 5 blocks ranging in height from 2-7 storeys on site of 1.53ha. This application concerns the same site detailed in the Bailey Gibson permission (Ref. ABP-307221-20) but differs in development with less residential units proposed. These residential developments are also shorter than those proposed in the existing permission.

The predicted impacts of this development are similar to those outlined within the Bailey Gibson permission (ABP-307221-20). There is the possibility of negative impact caused by change to the settings of the heritage assets due to noise, dust, vibration and visual intrusion from the temporary construction related activity, which could diminish their importance. The Proposed Development will be constructed in phases, and it is likely that construction phasing will overlap with that of the adjacent Hines-Bailey Gibson application. There is the possibility that construction noise, vibration and dust from the two developments could combine to impact the settings of heritage assets within the study area.

It is noted that this impact to setting will be temporary and confined to the construction phase. It is also noted that the heritage assets are already located within an environment where their settings are impacted by noise, dust and vibration from traffic.

The Hines-Bailey Gibson application (Ref. ABP-311959-21) will comprise residential units in a range of heights up to 7 storeys. These could combine with the Proposed Development to create a visual impact to the settings of heritage assets. The Proposed Development and the Hines-Bailey Gibson application are set within a 'block' bounded by roads and buildings on all sides. The proposed buildings will not screen views to heritage assets, nor will they impact the ability to understand and appreciate these buildings.

Given these conditions, the significance of the cumulative effect is judged to be slight.

The Player Wills permission (Ref. ABP-308917-20)

The Player Wills permission (ABP-308917-20) proposes to develop 471 no. Build to Rent units and 331 no. Shared Accommodation units, on a site of c. 2.89 hectares that includes the Player Wills site (2.39 hectares) and an additional 0.5 hectares to accommodate works to facilitate connections to municipal services and works proposed to public roads.

The development will require the demolition of all buildings excluding the original fabric of the Former Player Wills Factory (NIAH 50080768) to make way for development. Modifications and alterations are proposed to the Former Player Wills Factory Building to include the removal of 1 no. later addition storey (fourth storey) and the later addition rear (northern) extension, and the retention and modification of 3 no. existing storeys and addition of 4 no. storeys to provide for a shared accommodation scheme of 331 no. units with tenant amenities and active ground floor uses (McCutcheon Halley, 2020).

There is the likelihood of negative impact caused by change to the settings of the heritage assets due to noise, dust, vibration and visual intrusion from the temporary construction related activity, which could diminish their importance. It is possible that the construction phasing of the Proposed Development will overlap with that of the adjacent Player Wills permission. There is the possibility that construction noise, vibration and dust from the two developments could combine to impact the settings of heritage assets within the study area.

It is noted that this impact to setting will be temporary and confined to the construction phase. It is also noted that the heritage assets are already located within an environment where their settings are impacted by noise, dust and vibration from traffic, especially from the South Circular Road.

The Player Wills permission (ABP-308917-20) will include the conversion of the existing heritage asset into housing without raising the building's height. The new buildings will not combine with the Proposed Development to create a visual impact to the settings of heritage

assets. The proposed buildings will not screen views to heritage assets, nor will they impact the ability to understand and appreciate these buildings.

Given these conditions, the significance of the cumulative effect is judged to be slight.

The Coombe Laboratory Building permission (4049/19) and the Colposcopy Building permission (Ref. 3537/21)

The Coombe Laboratory Building permission (4049/19) is currently under construction and there will be no overlap with the construction phase of the Proposed Development. There will be no cumulative impact from dust, noise and vibration arising from construction.

The development is multi-storey and there is the possibility that it could combine with the Proposed Development to create a visual impact to the settings of heritage assets. The Coombe laboratory and the proposed buildings will not screen views to heritage assets, nor will they impact the ability to understand and appreciate these buildings.

Given these conditions, the significance of the cumulative effect is judged to be slight.

The Colposcopy Building permission (Ref. 3537/21) will be located within The Coombe Women and Infants University Hospital to the west of the Proposed Development. It will be set against existing buildings within the hospital. There is the likelihood of negative impact caused by change to the settings of the heritage assets due to noise, dust, vibration and visual intrusion from the temporary construction related activity, which could diminish their importance. It is likely that the construction phasing of the Proposed Development will overlap with construction of the Colposcopy Building. There is the possibility that construction noise, vibration and dust from the two developments could combine to impact the settings of heritage assets within the study area.

It is noted that this impact to setting will be temporary and confined to the construction phase. It is also noted that the heritage assets are already located within an environment where their settings are impacted by noise, dust and vibration from traffic, especially from Cork Street.

The Colposcopy Building could combine with the Proposed Development to create a visual impact to the settings of heritage assets. The proposed buildings will not screen views to heritage assets nor will they impact the ability to understand and appreciate heritage assets especially as the Colposcopy Building is set within the existing hospital complex.

Given these conditions, the significance of the cumulative effect is judged to be slight.

The Part 8 permission for the demolition of the remaining two original flat complex blocks (Ref 2475/18)

This development will see the remaining St. Teresa's Gardens blocks of flats demolished. It is possible that the demolition will overlap with the construction phasing of the Proposed Development. There is the possibility that noise, vibration and dust from the two developments could combine to impact the settings of heritage assets within the study area.

It is noted that this impact to setting will be temporary and confined to the construction phase. It is also noted that the heritage assets are already located within an environment where their settings are impacted by noise, dust and vibration from traffic from the surrounding roads.

The removal of the remaining St. Teresa's Gardens blocks of flats will completely open views to the Proposed Development from Donore Avenue. This will not impact the settings of any heritage assets. Given these conditions, the significance of the cumulative effect is judged to be slight.

11.5.4 "Do Nothing" Impact

The do-nothing scenario describes what would happen should the Proposed Development not be implemented at all. This would not result in any significant changes to the baseline cultural heritage resource. The magnitude of impact would be no change leading to a significance of effect of neutral.

11.6 Avoidance, Remedial & Mitigation Measures

11.6.1 Construction Phase

Impacts to known and unknown heritage assets within the Proposed Development site will be mitigated by appropriate archaeological mitigation works carried out at the pre-construction phase. This proposed mitigation is outlined below and illustrated in Figure 11-9.

The potential archaeological features uncovered in AA1 and AA2 should be resolved through archaeological excavation.

The previous archaeological trenching regime (2021) was specifically situated to target the area where the former line of the watercourse (DU018-04304) and laundry stream were located whilst also investigating the general archaeological potential of the Proposed Development site. This exercise was limited due to access restrictions, with the result that areas of the Proposed Development site remained untested and could contain unrecorded archaeological features. Similarly, the eastern extents of the Proposed Development site leading to Donore Avenue remain untested.

Given these conditions, it is proposed that these areas (above) are subject to archaeological testing at pre-construction phase (Figure 11-9 and Appendix 11E which can be found in Appendix K of this EIAR). This testing would most likely take the form of test trenching. Any archaeological features uncovered should be resolved through archaeological excavation.

All archaeological works will be agreed by the Archaeological Consultant and the National Monuments Service (NMS) and will be carried out in compliance with the National Monuments Acts 1930 – 2014 and Policy and Guidelines on Archaeological Excavation (Department of Arts, Heritage Gaeltacht and the Islands, 1999).

A suitably qualified and licensed Archaeological Contractor will be appointed to carry out the archaeological fieldwork. Relevant licenses will be acquired from the DoCHG/NMS and the National Museum of Ireland (NMI) for all archaeological works, which will be carried out in accordance with an Overarching Method Statement for Archaeological Works prepared by the Archaeological Consultant and agreed with the NMS. It is anticipated that all archaeological works will be completed pre-construction.

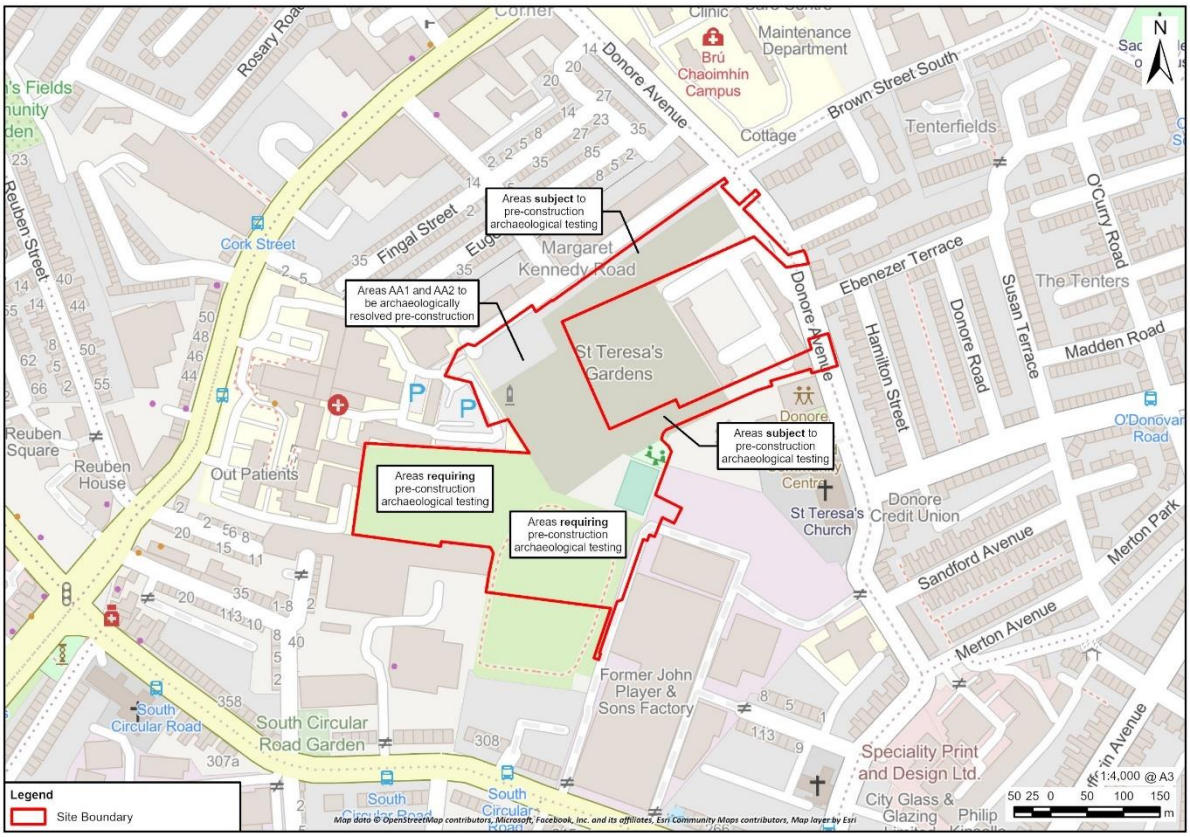

Figure 11-9: Proposed archaeological mitigation.

11.6.2 Operational Phase

Appropriate measures will have been implemented at construction phase to avoid or reduce adverse impacts. No further mitigation should be required at the Operational phase.

11.6.3 "Worst Case" Scenario

The 'worst case' scenario would see construction works carried out with no accompanying mitigation measures. This would allow the development to proceed but would risk severely impacting the known and potential unknown archaeological features within the Proposed Development site without the benefit of archaeological recording and enhancing knowledge regarding the development of Dublin.

11.7 Residual Impacts

11.7.1 Residual Cumulative Impacts From the Proposed Development

The archaeological remains present within previous archaeological investigation areas AAP1 and AAP2 are of local interest and therefore low importance. They will experience a significant impact from the Proposed Development. This will not change after mitigation and the magnitude of this impact would remain as very high, leading to a significance of effect of significant. The residual effect after mitigation is therefore assessed to be local, significant, adverse (of local input only) and long-term.

Potential currently unrecorded archaeological deposits which could be present within the Proposed Development site would experience a very high impact. Mitigation has been

proposed in the form of archaeological testing and excavation, if appropriate, to determine the presence/absence of such features and to preserve them by record. Based on the results of the baseline report, it is assessed that previously unrecorded archaeological assets within the Proposed Development site are likely to be of local value. The residual effect after mitigation is therefore assessed to be moderate, adverse and long-term.

11.7.2 Residual Cumulative Impacts from Other Developments

There are five other developments within the area immediately around the Proposed Development. The significance of the cumulative effect arising from these and the Proposed Development is judged to be slight. The assessment considers potential cumulative effects to the baseline arising from the Proposed Development and other developments within the immediate area and how these effects will be reduced through proposed mitigation.

No mitigation is proposed, and the residual cumulative impact will remain slight.

11.8 Monitoring

11.8.1 Construction Phase

It is anticipated that all archaeological testing and excavation will be carried out at pre-construction stage in areas identified where the Proposed Development has the potential to impact upon archaeological remains (Refer to Section 11.6.1).

If unexpected archaeological remains or artefacts are discovered during construction work, work in that area will cease and the area will be protected. An unexpected finds procedure will be included in the Overarching Method Statement for Archaeological Works. The Archaeological Consultant and the National Monument Service will be notified, and the unexpected finds procedure will be implemented, whereby the archaeological remains will be investigated by the licensed Archaeological Contractor and resolved to ensure minimal delay to the construction programme.

11.8.2 Operational Phase

No measures will be required at operational phase.

11.9 Interactions

The baseline study has identified heritage assets within the study area which could be impacted by the Proposed Development. These impacts concern the settings of the designated heritage assets during construction.

Landscape and Visual Effects

Interactions between Landscape and Visual Effects and Cultural Heritage concern the physical presence of the Proposed Development including the impact of any mitigation measures such as landscaping and planting on the setting of heritage assets, and damage caused to archaeological deposits caused by associated planting or earthwork embankments. Consideration of visual intrusion impacts are addressed in Chapter 10 (Landscape and Visual Effects).

Noise and Vibration

Interactions between Noise and Vibration and Cultural Heritage concern the change to the setting of heritage assets through noise intrusion, and changes in traffic levels and construction noise. These interactions relate to the construction phase only. Consideration of noise and vibration impacts are addressed in Chapter 9 (Noise and Vibration).

11.10 Difficulties Encountered When Compiling

No major difficulties were encountered while undertaking this assessment.

11.11 References

Archaeology Plan (2013) Archaeological Impact Assessment for Regeneration, St. Teresa's Gardens, Donore Avenue, Dublin 8 on behalf of Dublin City Council, City Architects Division, Housing and Residential Services, Civic Offices, Wood Quay, Dublin 8.

Bailey, F. (2011) Coombe Women and Infants University Hospital, Dublin in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports.

Carroll, J. (2000) 109 Cork Street, Dublin in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports.

Clarke, D. (1977) Dublin. Batsford, London.

Clarke, L and Stirland, J. (2016) Griffith Barracks Multi-Denominational School, The Old Guardhouse, South Circular Road, Dublin in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports.

Dennehy, E. (2004) Reubin Street/Dolphin, Dublin in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports.

Department of Arts, Heritage, and the Gaeltacht (1999) Frameworks and Principles for the Protection of the Archaeological Heritage. The Stationary Office, Dublin.

Department of Arts, Heritage and the Gaeltacht (2002) National Heritage Plan 2002-2007. Department of Arts, Heritage and the Gaeltacht, Dublin.

Department of Arts, Heritage and the Gaeltacht (2004) Frameworks and Principles for the Protection of the Archaeological Heritage. Department of Arts, Heritage and the Gaeltacht, Dublin.

Department of Arts, Heritage and the Gaeltacht (2011) Architectural Heritage Protection, Guidelines for Planning Authorities. The Stationary Office, Dublin.

Department of Environment, Heritage and Local Government (2009) Government Policy on Architecture 2009 – 2015. Department of Environment, Heritage and Local Government, Dublin.

Dublin City Council (2016) Dublin City Development Plan 2016-2022.

Dublin City Council (2022) Dublin City Development Plan 2022-2028.

Dublin City Council (2016) Dublin City Development Plan 2016-2022 Record of Protected Structures.

Dublin City Council (2016) Dublin City Development Plan 2022-2028 Record of Protected Structures.

Dublin City Council City Archaeologist's Report (06.11.2019): Application Number 4049/19 The Coombe Hospital, Cork Street, Dublin 8 new four storey laboratory building (1340m2).

Dublin City Council City Archaeologist's Report (04.11.2021): Application Number 3537/21 Planning permission for development at the Coombe Women and Infants University Hospital, Dolphin's Barn Street, Dublin 8, D08 XW7X on a 0.15 hectare site to the south-east of the hospital site, such site also including the existing Colposcopy building.

Environmental Protection Agency (2022) Guidelines on Information to be contained in Environmental Impact Assessment Reports. Environmental Protection Agency, Dublin.

Environmental Protection Agency (2003) Advice Notes on Current Practice in the Preparation of Environmental Impact Statements. Environmental Protection Agency, Dublin.

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

The Heritage Council (2000) Archaeology & Development: Guidelines for Good Practice for Developers. The Heritage Council, Dublin.

Giacometti, A. (2014) St. Teresa's Gardens, Donore Avenue, Dublin 8 in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports.

Goodbody, R. (2014) Dublin Part III, 1756 to 1847. Irish historic towns atlas no. 26. Royal Irish Academy in association with Dublin City Council.

Hayden, A. (1993) Coombe Bypass and Cork Street realignment, Dublin in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports.

Hayden, A. (2000) Marrowbone Lane, Dublin in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports.

Hayden, A. (2002) Reuben Street, Dublin in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports.

Hayden, A. (2003) Ice rink, Dolphin Barn, Dublin in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports.

Hayden, A. (2004) Brown Street South, Dublin in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports.

Hayden, A. (2005) Rutland Avenue Flats, Dolphin's Barn, Dublin in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports.

Hayden, A. (2004) 48–52 Cork Street, Dublin in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports.

Historic England (2017) Historic Environment Good Practice Advice in Planning Note 3. 2nd edition. The Setting of Heritage Assets. Historic England, Swindon

IAC Archaeology (2021) Archaeological Assessment at St. Teresa's Gardens, Donore Avenue, Dublin 8. Unpublished report prepared on behalf of AECOM Limited.

Kehoe, H. (1997) Suir Road, Dublin in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports.

Leahy, D. (2008) 40–45 Cork Street/2–12 Donore Avenue, Dublin in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports.

Lennon, C. (2008) Dublin Part II, 1610 to 1756. Irish historic towns atlas no. 19. Royal Irish Academy in association with Dublin City Council.

Lohan, K. (2003) 69A Donore Avenue, Dublin in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports.

Lohan, K. (2006) Fatima Mansions/Hereberton, Dublin in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports.

Lynch, R. 2003. Archaeological Assessment at Cork Street/Cameron Street Dublin 8. Licence 04E0020.

McConway, C. (2004) 40-45 Cork Street/2-12 Donore Avenue, Dublin in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports.

McCutcheon Halley (2020a) Proposed Strategic Housing Development, Former Bailey Gibson Site. 326-328 South Circular Road, Dublin 8. Volume II Environmental Impact Assessment Report.

McCutcheon Halley (2020b) Proposed Strategic Housing Development on the Former Player Wills site and undeveloped land owned by Dublin City Council at South Circular Road, Dublin 8. Volume II Environmental Impact Assessment Report.

McCutcheon Halley (2022) Bailey Gibson 2 Proposed Strategic Housing Development. Volume II Environmental Impact Assessment Report.

National Monuments Service, Department of Culture, Heritage and the Gaeltacht. Sites and Monuments Record, County Dublin

National Roads Authority (2005) Guidelines for the Assessment of Archaeological Heritage Impacts of National Road Schemes. National Roads Authority, Dublin.

National Roads Authority (2005) Guidelines for the Assessment of Architectural Heritage Impacts of National Road Schemes. National Roads Authority, Dublin.

Nelis, D. (2005) Archaeological monitoring at Cork Street/Cameron Street, Dublin 8. Licence 04E0310.

O'Carroll, E. (2004) Engine Alley and Molyneux Yard, Dublin in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports.

Phelan. S. (2003) 84a–88 Cork Street, Dublin in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports.

Planning and Development Act 2000 (Revised) http://www.irishstatutebook.ie/eli/2000/act/30/enacted/en/html

Reid, M. (1999) Marrowbone Lane, Dublin in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports.

Stirland, J. (2016) Cork Street, Dublin 8 in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports.

Stirland, J. (2016) Chamber Street, Ormond Street, Cork Street, Dublin in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports.

Sullivan, E.E. (2000) Mercy Convent, Cork Street Dublin in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports.

Swan, D.L. (1993) 4A Greenville Ave., South Circular Rd., Dublin in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports.

UNESCO Convention concerning the Protection of the World Cultural and Natural Heritage. Paris, 16 November 1972. Ratified 29/05/1984 http://whc.unesco.org/en/conventiontext/

Walsh, C. (2002) 46–47 Cork Street, Dublin in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports.

Walsh, C. (2001) 84 Cork Street, Dublin in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports.

Walsh, C. (2002) 46–47 Cork Street, Dublin in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports.

Walsh, C. (2002) Donore Avenue, Dublin in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports.

Walsh, C. (2002) Weaver's Square, Dublin in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports.

Walsh, C. (2003) 73 Cork Street, Dublin in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports.

Walsh, C. (2003) Marrowbone Lane, Dublin in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports.

Walsh, C. (2005) 58B–61 Cork Street, Dublin in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports.

Walsh, C. (2003) 90-97 Cork Street/49 Marrowbone Lane, Dublin in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports.

Walsh, C. (2003) Warrenmount Mills, Mill Street, Dublin in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports.

Walsh, C. (2004) 115-117 Cork Street, Dublin in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports.

Walsh, C. (2005) Mill Street/Blackpitts, Dublin in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports

Walsh, C. (2005) Cork Street/Cameron Street, Dublin in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports.

Walsh, C. (2006) Players Wills Factory, South Circular Road, Dublin in Bennett, I (Ed) Excavations.ie Database of Irish Excavation Reports.

Online Sources

Archaeological Survey of Ireland at http://webgis.archaeology.ie/NationalMonuments/FlexViewer/. Accessed July 2022

Excavations.ie Database of Irish Excavation Reports at https://www.excavations.ie/. Accessed

National Inventory of Architectural Heritage at http://buildingsofireland.ie/. Accessed July 2022

12 MATERIAL ASSETS: TRAFFIC, WASTE AND UTILITIES

12.1 Traffic

12.1.1 Introduction

This chapter of the EIAR has been prepared to assess the likely significant effects of the Proposed Development in terms of traffic and transport. This chapter provides an overview of the existing receiving environment, a detailed and robust assessment of the Proposed Development likely significant effects on the operation of the local road network during the short-term construction phase and long-term use of the site. Where necessary, this chapter also outlines mitigation measures to ensure any significant effects are minimised or avoided.

Full details of the Traffic Impact Assessment undertaken by AECOM are provided in the Traffic and Transport Assessment report included under separate cover and will be submitted a part of the planning application for the Proposed Development.

12.1.1.1 Quality Assurance and Competence

This Chapter was written by Jen Searle, CTPP, MSc, BA (Hons) and Hillary Herlihy BSc (Hons)

Jen is a chartered Associate Director in the Newcastle team in England and has over 13 years' experience providing transportation advice to both public and private sector clients alongside feasibility studies, traffic modelling, simulation and detailed highway design services. Jen leads the Newcastle team in developing Transport Assessments (TA), Travel Plans(TP) and junction modelling for both small and large developments. Specialisms include leading the development of projects for traffic modelling and feasibility planning; this encompasses designing and implementing transport and planning policy, transport assessments and scheme design. Jen is fully embedded in the planning process with her lead role in the development planning team within AECOM.

Hilary is a consultant collaborating with members of the traffic team in various projects throughout the Republic of Ireland

TTA's, scoping reports, MMP's, and EIAR inputs are part of the work that Hilary completes daily alongside members of her team. A diverse range of development applications are worked on with a focus on housing development. Recent projects include Energia solar farms and the associated traffic scoping for EIAR and abnormal loads assessment's contribution.

Hilary's experience includes, detailed report writing, understanding of development plan standards and ability to work with development traffic growth assessments.

12.1.2 Study Methodology

This chapter has been prepared in accordance with the following guidelines:

- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022);
- 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);
- Transport Infrastructure Ireland's (TII's) PE-PDV-02045 - Traffic & Transport Assessment Guidelines (2014);Guidelines for the Environmental Assessment of Road Traffic, 2003, Institute of Environmental Management & Assessment (UK Based); and
- TII PE-PAG-02017 - Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections.

There are also several relevant national, regional and local policies which the proposed development has been guided by and comply with. These include the following documents;

The Dublin City Development Plan 2022-2028 (DCC, 2022)

Design Manual for Urban Roads and Streets (DTTAS & DHPLG, 2019

National Cycle Manual (NTA, 2011)

12.1.2.1 Desktop and Site Audit Assessment

AECOM's Transport team has undertaken both a desktop and onsite assessment to identify the policy and legislation that is relevant to traffic and transport, to describe the baseline traffic conditions, and to identify the potential impacts associated with the proposed development upon the surrounding road network.

12.1.2.2 Significance of Impacts Methodology

Potential impacts of the proposed development (both positive and negative) are predicted for all significant transportation impacts. In accordance with the EPA (2022) guidelines, potential effects are characterised by considering parameters shown in

Table *12-1*.

Table 12-1: Potential Effect Parameters

Potential Effect Parameter	Description
'Quality' of Effects	**Positive Effects** – A change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of an ecosystem, or by removing nuisances or improving amenities). **Neutral Effects** – No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error. **Negative / Adverse Effects** – A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance).
Significance of Effects	**Imperceptible** – An effect capable of measurement but without significant consequences. **Not significant** – An effect which causes noticeable changes in the character of the environment but without significant consequences. **Slight 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.
Extent and Context of Effects	**Extent** – Describe the size of the area, the number of sites, and the proportion of a population affected by an effect. **Context** – Describe whether the extent, duration, or frequency will conform or contrast with established (baseline) conditions (is it the biggest, longest effect ever?).
Probability **Only Likely (and Significant) effects are assessed in this chapter**	**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.
Frequency and timing	**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. **Reversible Effects** – that can be undone, for example through remediation or restoration. **Frequency of Effects** – Describe how often the effect will occur (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually).

12.1.2.3 Significance of Effects

A qualitative approach was used in this evaluation, generally following the significance classification in

Table *12-1* and through professional judgement. The significance of a predicted impact is based on a combination of the sensitivity or importance of the attribute and the predicted magnitude of any effect. The effects are identified as beneficial, adverse or negligible, temporary or permanent and their significance as major, moderate, minor or not significant (negligible).

As outlined in Chapter 4 (EIA Process) of this EIAR, once the description of the effect, including magnitude, character, duration etc. has been identified, this can be cross-referenced with the importance of the sensitivity of the receptor to derive the overall significance of effect as per the EPA guidelines8.

This Material Assets Chapter in relation to traffic has a set Study Area or Zone of Influence (ZOI) in relation to the surrounding road network. The study area for the chapter was established based on the anticipated routing to the Site for construction and operational vehicles at points in which traffic could be most intensive. The size of the area is defined by the total trips generated from the proposals and their likely distribution on to the local road network.

Transport Infrastructure Ireland's (TII's) PE-PDV-02045 - Traffic & Transport Assessment Guidelines (2014) states roads would need to assess if Traffic to and from a proposed development exceeds 10% of the traffic flow on the adjoining road and 5% on the adjoining road if congestion is known to exist or the location is sensitive. Base on the known generation and distribution the study area is defined in Figure 12-1.

12.1.2.4 Consultation

A meeting was held with DCC Transportation Planning on 29 September 2021 to discuss transport matters only. Key 'take away' points from the meeting, with respect to this report were:

There were concerns about the low parking ratio proposed (0.1 spaces per unit);

Given the low parking ratio - proportionally more car share spaces are required – compared to nearby sites;

A social audit would be required;

Cycle parking should be line with the Sustainable Urban Housing: Design of New Apartments guidelines (December 2020) but visitor parking can be lower; and

Include provision for large bikes/car bikes and EV charging.

A further meeting was held with DCC Transportation Planning on 5th January 2022 Version 4 of this report was presented. Key 'take away' points from the meeting, with respect to the report were:

[8] EPA (2022).

- Generally happy with changes re. mobility management including the inclusion of the mobility management hub and location of management office;
- Welcomed increase in cycle parking, provision of larger bike parking spaces, and more spaces for car share facilities;
- There were still concerns re. car parking numbers being too low and further justification/ supporting information required;
- Access strategy and connection through to Bailey Gibson site; and
- Cargo bike spaces should also be provided for visitor and the location of these should be carefully considered e.g. located near the creche.
- The TTA that is associated with this EIAR addressed the points that were raised by DCC on January 5th, 2022

12.1.3 The Existing and Receiving Environment (Baseline Situation)

The development site is located within a network of roads that provide both pedestrian and vehicular access, SDRA 11 is shown in Figure 12-1.

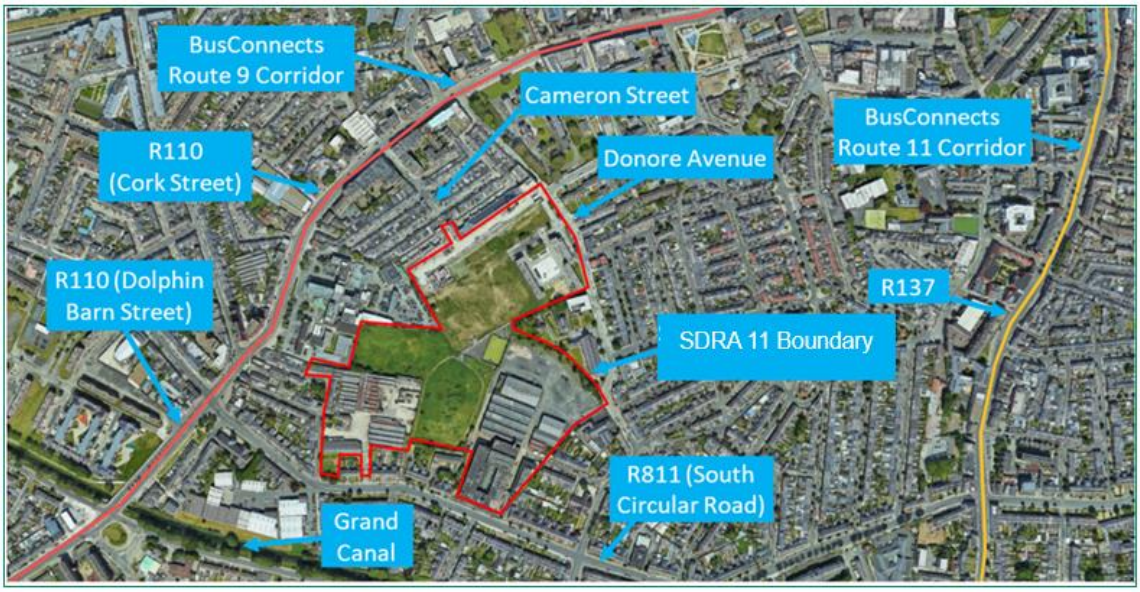

Figure 12-1: SDRA 11 Site Location

SDRA 11 is Strategic Development Regeneration area in Dublin 8, The SDRA 11 lands form a large urban block of approximately 13 hectares comprising Dublin City Council lands, lands currently controlled by the receivers acting for NAMA (known as Players Square / Players Wills and Bailey Gibson lands) and the Coombe Hospital Lands. The purpose of the Development Framework is to translate the requirements and principles of the current City Development Plan on the Planning and Development of the SDRA 11 lands. The SDRA 11 is referred to in Figure 12-2.

Figure 12-2: Proposed Development Site Area within the SDRA 11

The following details the different roads and footways that show the Proposed Development is easily accessible.

12.1.3.1 Donore Avenue

Donore Avenue is designated as a local street which features footways along both sides of the carriageway with uncontrolled crossings provided by means of blister strip paving and raised tables. The raised tables are provided at junctions to create safer crossing facilities with speed ramps provided between the junctions to help keep vehicle speeds low. Street lighting is provided along both sides of the carriageway.

12.1.3.2 South Circular Road

The South Circular Road is designated as a Regional Road (R811) which features footways along both sides of the carriageway. A bus lane is provided along a section of the carriageway for buses travelling east along the South Circular Road from the R110. Bus stops are provided along both sides of the carriageway. A signal-controlled junction is provided at the Donore Avenue / South Circular Road which features designated crossing facilities on the northern and western arm (dropped kerbs and tactile paving). A signal-controlled junction is provided at the R110 / South Circular Road which features designated crossing facilities on all arms of the junction, the north and south arm are staggered crossings. Public lighting is provided along both sides of the carriageway.

12.1.3.3 R110

The R110 is designated as a Regional Road and is to the west of the SDRA site no. 12. The R110 road features footways along both sides of the carriageway with a dedicated bus and cycle lane also being provided along both sides of the carriageway. Signalised junctions with designated crossing facilities are provided at the R110 / South Circular Road and R110 /

Donore Avenue / R804 junctions. A pelican crossing is provided at The Coombe Women & Infants University Hospital. Public lighting is provided along both sides of the carriageway.

12.1.3.4 Cameron Street

Cameron Street is a local street which features footways along both sides of the carriageway and serves as an access street to residential units along Eugene Street, Fingal Street, Maxwell Street. A raised table with tactile paving is provided at the intersection of Cameron Street / Fingal Street / Maxwell Street. Public Lighting is provided on approach to the R110 from Cameron Street.

12.1.3.5 Baseline Traffic Information

Irish Traffic Surveys (ITS) undertook Junction Turning Counts at various junctions within the designated study area on October 19th, 2022. The surveys were undertaken for 12 hrs on a neutral weekday within the school term.

Table 12-2: Trip generation based on 2016 Census Data from Small Area Population data In conjunction with TRICS

Mode of Travel	Morning (08:15 - 09:15)		Evening (16:00 - 17:00)	
	AM Arrivals	AM Departures	PM Arrivals	PM Departures
Vehicle Trip	25	47	46	25
Total One Way Flows	25	47	46	25
Total Two Way Flows	72		72	

The estimated total movements by the permitted development during the morning and evening peak hours were 72 and 72 two way flows respectively. As the development proposals are for a low car development with only 79 car parking spaces for residents and the development flows are below this number there will be adequate space available for the traffic flow arriving and departing from the proposed development.

For the base traffic flows, the typical weekday morning (08:15 – 09:15) and evening (16:00 – 17:00) peak hour periods were identified in terms of traffic volumes on the road network. These are the periods when traffic flows are greatest based on the ITS data, and therefore will be used for the purpose of the modelling analysis. Figure 12.3 illustrates the existing baseline traffic observed plus committed development in the vicinity of the site address with the full network flow diagram located in the Traffic and Transport Assessment and Figure 12.4 illustrates the trip distribution observed at the time the traffic surveys were undertaken in the locality of the Site access, a full distribution diagram is located in The traffic and Transport Assessment Appendix B (Appendix E of this EIAR).

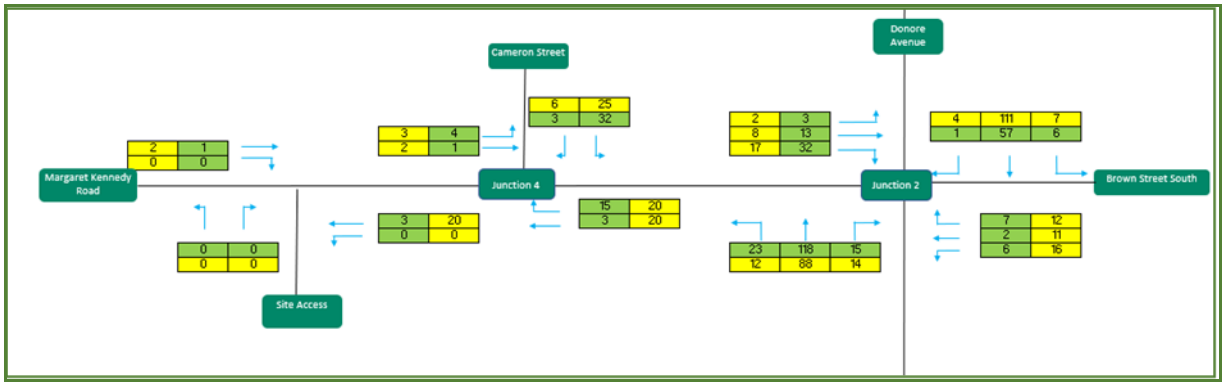

Figure 12-3: Network Flow Diagram in Full Baseline + Committed

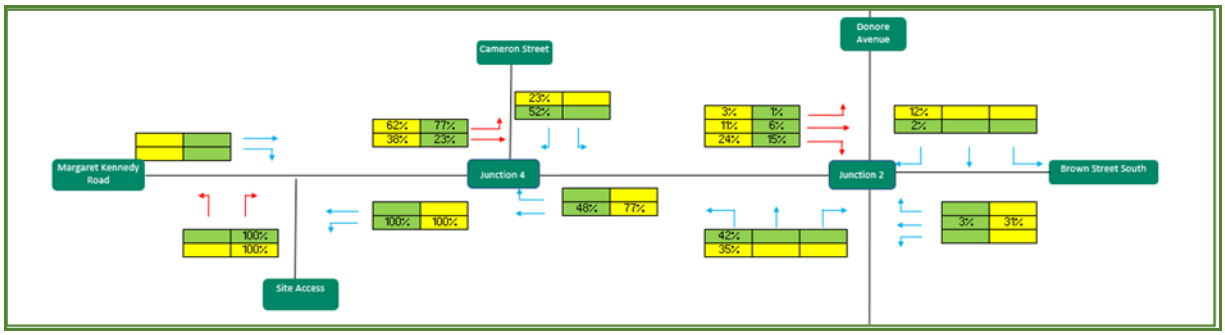

Figure 12-4: Trip Distribution In detail at Proposed Development Site

12.1.3.6 Sustainable Transport

Sustainable transport is considered a vital part of the city with cycling bus, LUAS and rail providing essential services for residents to get around. Fortunately, due to the location of the proposed site, numerous amenities and facilities are located nearby either within walking distance, cycle distance or other public transport modes. The following sub-sections demonstrate the availability and locality of various sustainable modes of transport in relation to the Proposed Development site.

12.1.3.7 Active Travel – Cycling

In the vicinity of the Proposed Development site, dedicated cycle lanes are only provided on the R110 to the west of the development; no dedicated cycle lanes are provided on the South Circular Road or Donore Avenue. It has been proposed by DCC to upgrade the cycle lanes along the R110, Donore Avenue and the South Circular Road. It is understood that the cycle facilities to be provided along the R110 will be part of the BusConnects redesign, however no timeframe has been set for this improvement scheme. There are no Dublin bike stations within the vicinity of the Proposed Development site. The existing cycling facilities are illustrated in Figure 12.5.

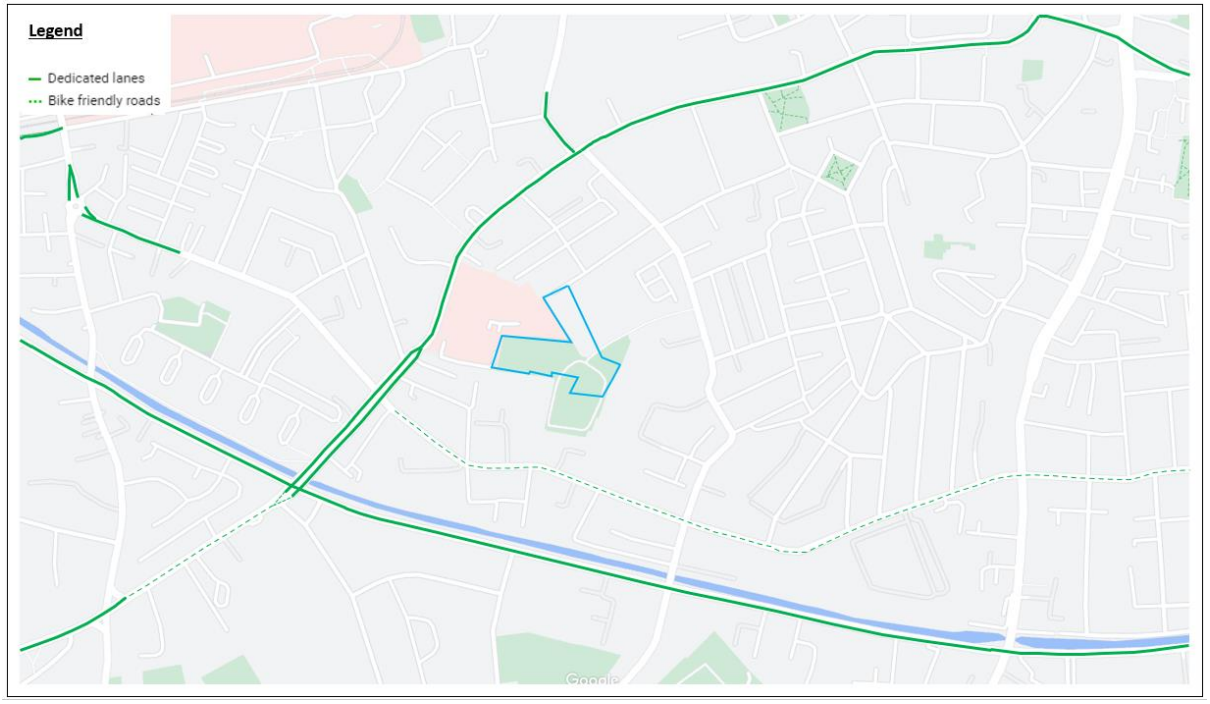

Figure 12-5: Existing Cycle Facilities

Figure 12.6 illustrates the current cycling facilities that exist as of 2022 based on desktop study and site visit undertaken by AECOM in February 2022.

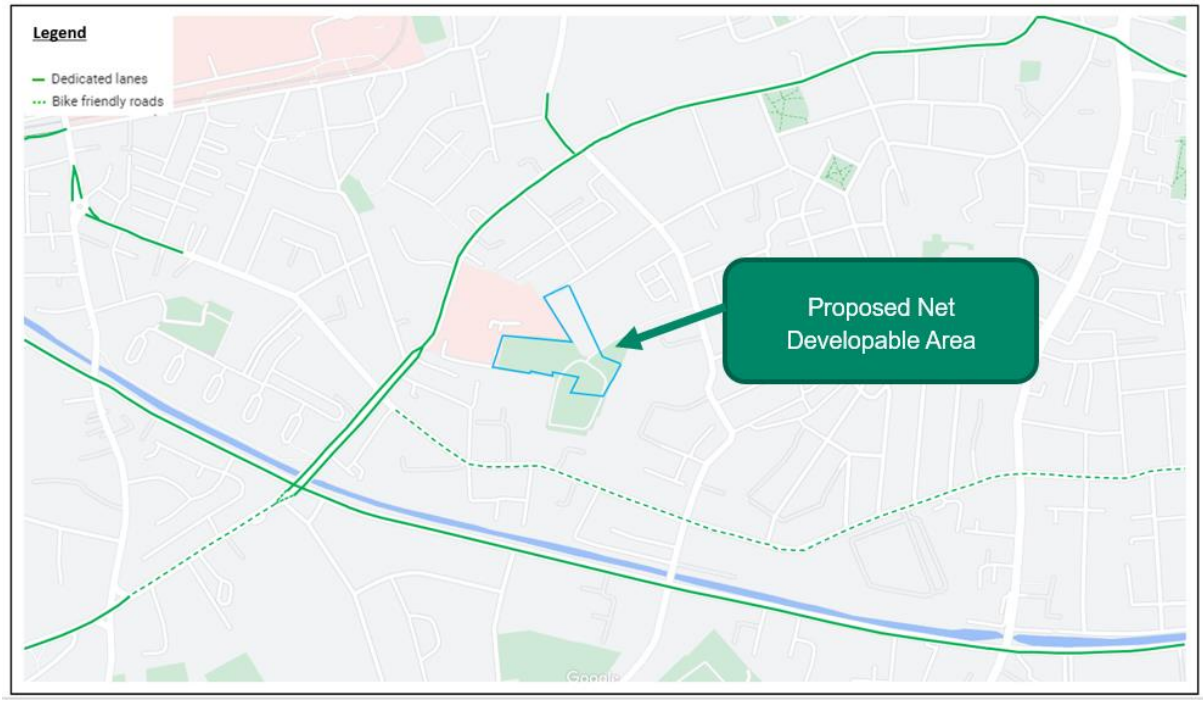

Figure 12-6: Current Cycling Facilities (AECOM)

In addition, Figure 12.7 illustrates the walking and cycling distance from the Proposed Development site. These distances are considered approximate due to the shapefile data AECOM had access to limiting the complete accuracy of the Isochrone. It is considered that this is a workable alternative.

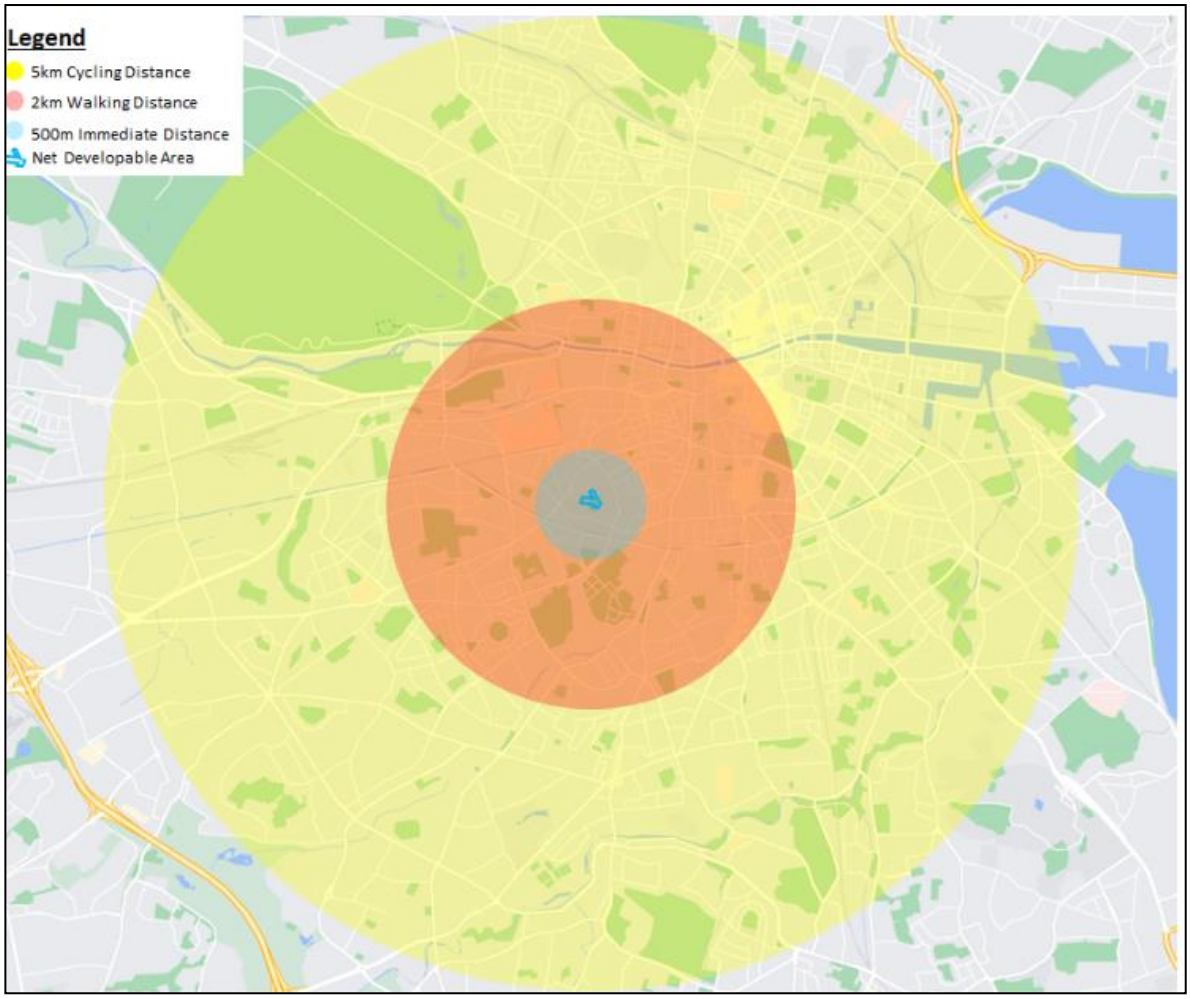

Figure 12-7: Isochrone of Walking Cycling distance from Proposed Development Site (Source: AECOM)

12.1.3.8 Sustainable Transport – Bus

As graphically illustrated in Figure 12-8, and Figure 12-9 the Proposed Development Site is situated to benefit from bus transport connections allowing all Proposed Development Site users to travel by this sustainable mode. There are 8 no. bus stops located within a 400m walking catchment of the site. These bus stops are operated by Dublin Bus.

Figure 12-8: Existing Bus Stops

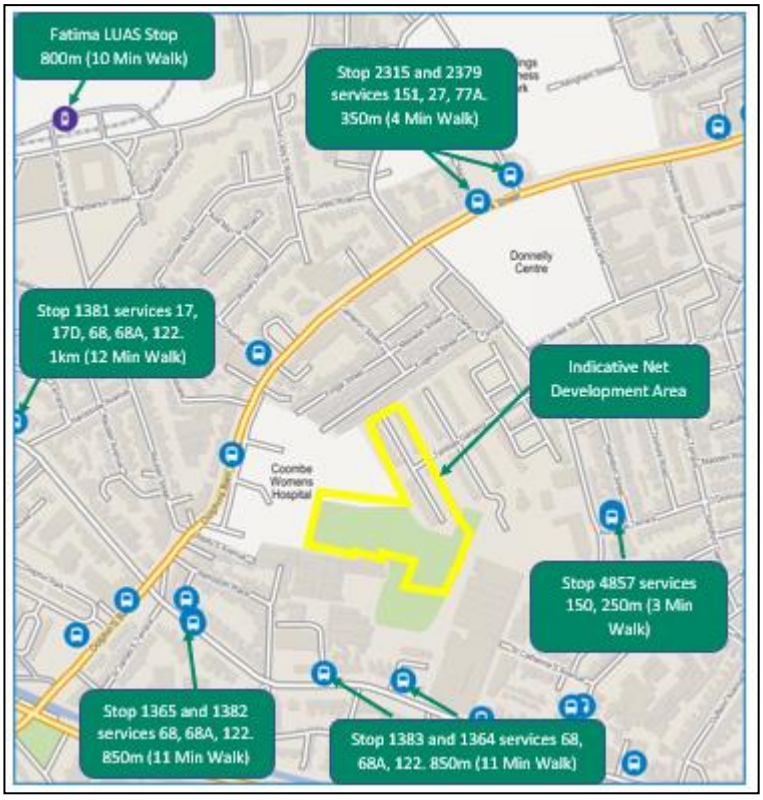

Figure 12-9: Existing Bus Stops with Walking Distances

Services available at stops surrounding the Proposed Development Site are shown in Table 12.3

Table 12-3: Bus Services and Routing

Route No.	Operator	Distance to Proposed Development Site	Route	Services Am and PM Peak Hours		
				Monday to Friday	Saturday	Sunday
17	Dublin Bus	1km (12 min walk)	Rialto -Crumlin - Nutgrove -UCD- Blackrock	1 service every 20 mins	1 service every 20 mins	1 service every 20 mins
27	Dublin Bus	350m (4 min walk)	Jobstown – Blessington Road – Cork Street- Malahide Road	1 service every 10 mins	1 service every 10 mins	1 service every 15 mins
56A	Dublin Bus	350m (4 min walk)	Tallaght – Ballymount Road – St. Luke's Avenue- Ringsend road.	1 service every 1 hours and 15 mins	1 service every 1 hours and 15 mins	1 service every 1 hours and 15 mins
68	Dublin Bus	850m (11 min walk)	Hawkins Street – Dolphins Barn -Rialto – Bluebell-Clondalkin - Greenogue	1 service every 1 hour	1 service every 1 hour	1 service every 1 hours and 15 mins
77A	Dublin Bus	350m (4 min walk)	Citywest Road – Old Blessington Road – Cork Street – Ringsend Road	1 service every 20 mins	1 service every 20 mins	1 service every 30 mins
150	Dublin Bus	250m (3 min walk)	Hawkins Street – Patrick Street – Donore Avenue - Rossmore	1 service every 20 mins	1 service every 20 mins	1 service every 30 mins
151	Dublin Bus	350m (4 min walk)	Docklands (East Road)- Dolphins Barn – Parkwest - Foxborough	1 service every 20 mins	1 service every 20 mins	1 service every 30 mins
122	Dublin Bus	850m (11 min walk)	Drimnagh Road – Herberton Road – South Circular Road – Dorset Street – Ashington Park	1 service every 15 mins	1 service every 20 mins	1 service every 20 mins

12.1.3.9 BusConnects

The NTA have published BusConnects Dublin, a €2 billion scheme that comprises a strategy to develop out continuous bus lanes along a series of bus corridors across Greater Dublin. The NTA envisages that the benefits will include improved bus service frequency and reliability, whilst also

providing cycling priority along key corridors in Dublin. If the BusConnects scheme goes ahead this can be facilitated without impacting the principles of the development.

The scheme includes a series of corridors into Dublin City Centre. Of relevance to this scheme is 'Spine D' with routes D1, D2, D3, D4 and D5 running along the R110 Cork Street to the west of the site. The benefit of the BusConnects Network Redesign include an overall increase in bus services of 23%, increased peak hour capacity and increased evening and weekend services.

12.1.3.10 Sustainable Transport – Light Rail

The Proposed Development Site is situated in proximity to the Fatima LUAS stop which is part of the LUAS redline which offers services east towards Connolly Station and west towards Tallaght and Saggart. Due to the frequency of the LUAS service, it is ideal to encourage residents of the proposed development to use this mode of transport for commuting. Red line LUAS trams operate at a frequency of 3-5 mins at peak hours and a frequency of 12 -15 mins at off peak hours. The Fatima Luas stop is situated 1.0 km (10-12 min walk) north of the Proposed Development site. Figure 12.10 illustrates the Proposed Development Site location in relation to the Fatima LUAS stop.

Figure 12-10: Existing LUAS Locations

On 13.10.22 and 18.10.22, AECOM surveyors assessed public transport capacities at various public transport stops surrounding St. Teresa's Gardens development site. These stops were monitored between peak hours of 07:00-10:00 and 16:00-19:00 and included the Fatima Luas stop and the following bus stops:

- Stops 1365, 1381and 1382 on the South Circular Road;

- Stops 2315 and 2379 on Cork Street; and
- Stop 4857 on Rutledge Terrace.

Surveyors were able to calculate the departing capacities of each of these services as well as analyse timetables and the overall frequency of services in the area.

The results of this survey as well as a brief analysis of each stop are outlined in Appendix E of the Traffic and Transport Assessment (Appendix E of the EIAR).

From the results of the public transport capacity assessment report, it is evident that there is adequate capacity on the public transport system stops within walking distance of the proposed development site.

The set Study Area or Zone of Influence (ZOI) in relation to the surrounding road network. The study area for the chapter was established based on the anticipated routing to the Site for construction and operational vehicles at points in which traffic could be most intensive.

Appendix E in the TTA details the Public Transport Capacity Assessment (Appendix E of the EIAR).

12.1.3.11 Sustainable Transport – Heavy Rail

The closest railway station to the Proposed Development Site is the Heuston Train Station located 2.0 km (23 min walk) north of the SDRA 11 site. Heuston Station is the terminal stop for the part of the Southwestern Commuter service which provides rail services west to Galway, Limerick, and Cork. Figure 12-11 illustrates the Proposed Development Site location in relation to Heuston Train Station.

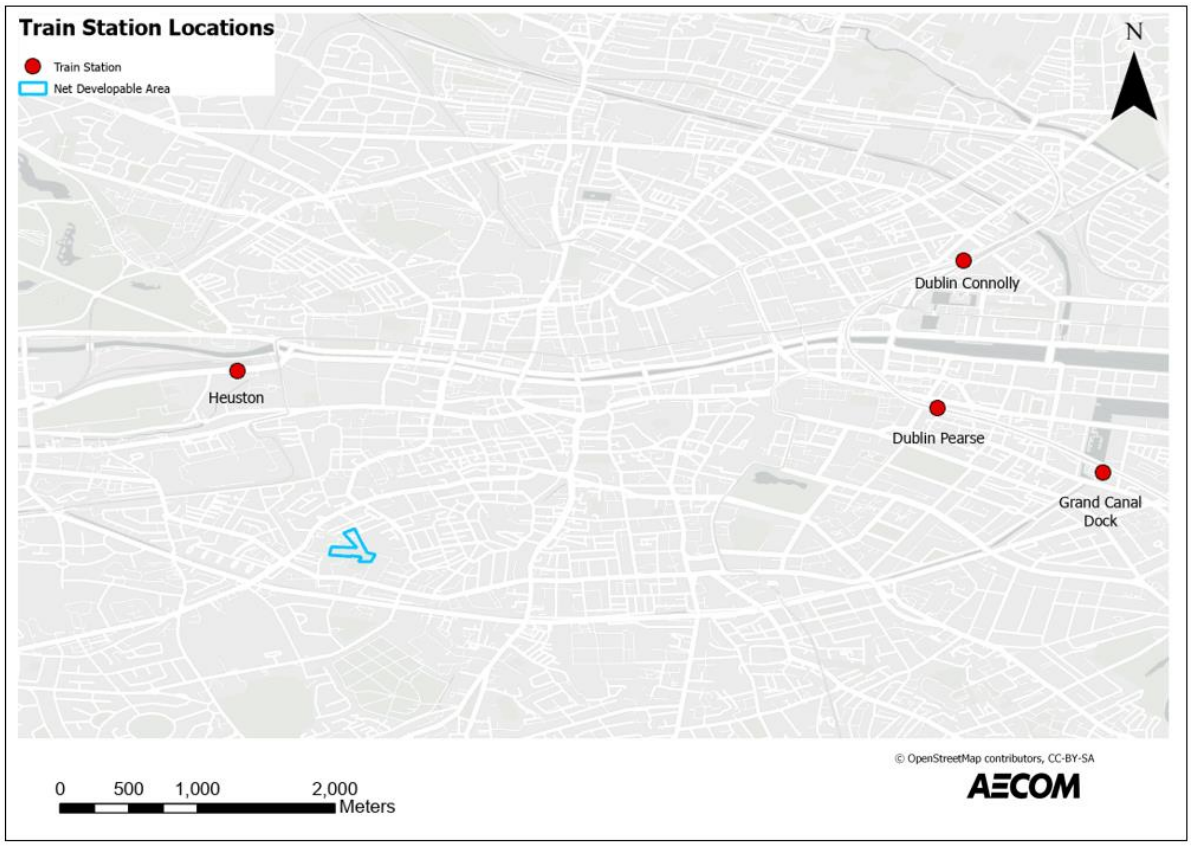

Figure 12-11: Train Station Proximity

12.1.3.12 Sustainable Transport – Car Club/Car Share

Whilst it is anticipated that commuting will generally be undertaken on foot, bicycle or public transport, existing car club/car share facilities are available in proximity to the Proposed Development.

Car club/car share members can book cars online or via the app for durations of as little as an hour. They then unlock the car with their phone or a membership card; the keys are in the car, with fuel, insurance and city parking all included. The benefits of such car sharing services include:

- The reduction of cars on the road and therefore traffic congestion, noise and air pollution;
- Frees up land traditionally used for private parking spaces;
- Encourages and potentially increases use of public transport, walking and cycling as the need for car ownership is reduced;
- Car sharing allows those who cannot afford a car the opportunity to drive, encouraging social inclusivity; and
- Car share replaces approximately 20-25 private car parking spaces.

12.1.3.12.1 Sustainable Transport – GoCar

There are 4 existing GoCar hire stations located within a 400m walking catchment of the Proposed Development site.

Carpooling is one option to encourage more sustainable travel choices. Having GoCar spaces near the site has the potential to encourage residents to use this service over a private car. The locations of the GoCar bases are illustrated in Figure 12-9. Table 12-2 indicates the distances from the Proposed Development site to the GoCar bases

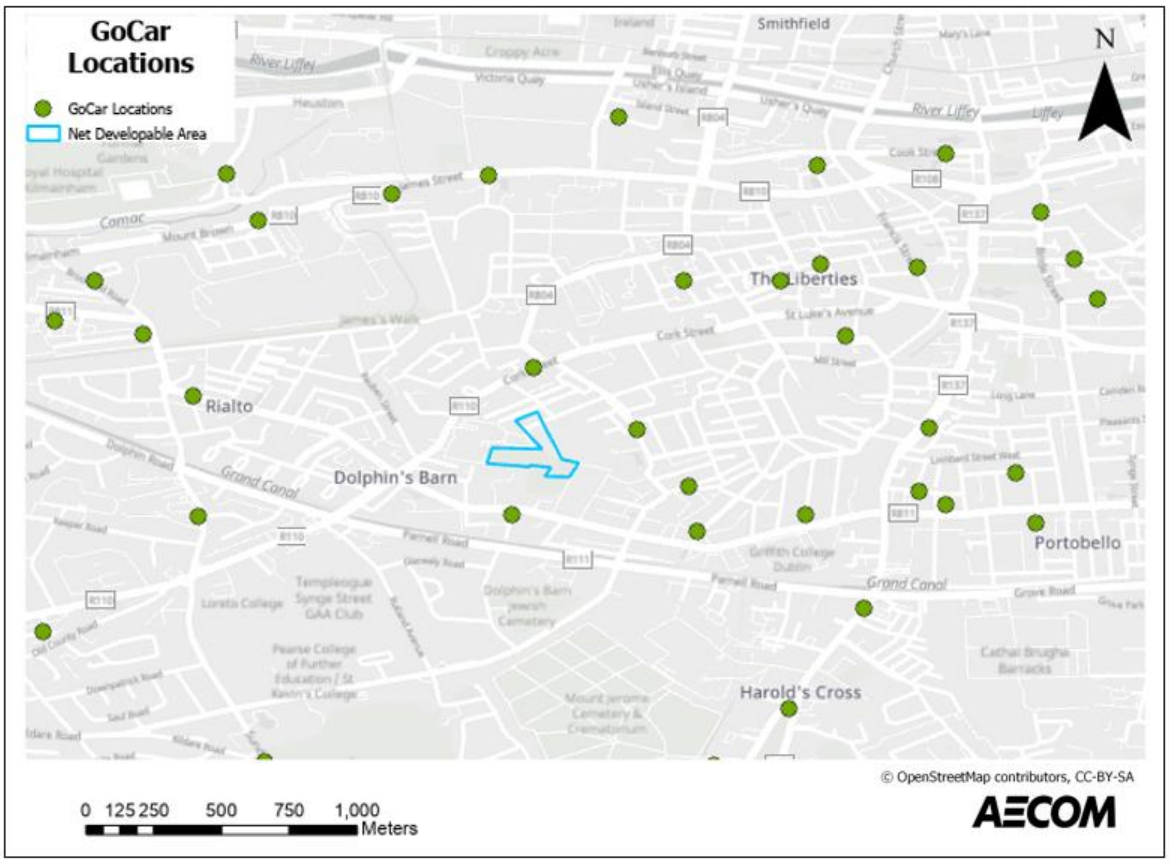

Figure 12-12: Go Car Bases

Table 12-4: GoCar Bases and Distances

Site Number	GoCar Location	Distance from Subject site
1	Cork Street (Opposite Lidl)	300m
2	Donore Avenue – Rutlidge Terrace	180m
3	Dolphin Avenue	900m
4	Merton Avenue	500m

12.1.3.12.2 Sustainable Transport – YUKO

There are 3 existing YUKO hire stations located within a 500m walking catchment of the Proposed Development site. YUKO provide a similar service to GoCar. Booking a car can be completed through the website or their app. All rented cars must return to the location that the user set off from.

The locations of the YUKO bases are illustrated in Figure 12-10 and further location details are located in Table 12-3

Table 12-5: YUKO Bases and Distances

Site Number	YUKO Location	Distance from Subject site
1	1 Harmon Street, St. Catherine's, Dublin 8	400m
2	29 Donore Avenue, St. Catherine's, Dublin 8	150m
3	Salisbury Apartments, 214 South Circular Road, Dublin 8	450m

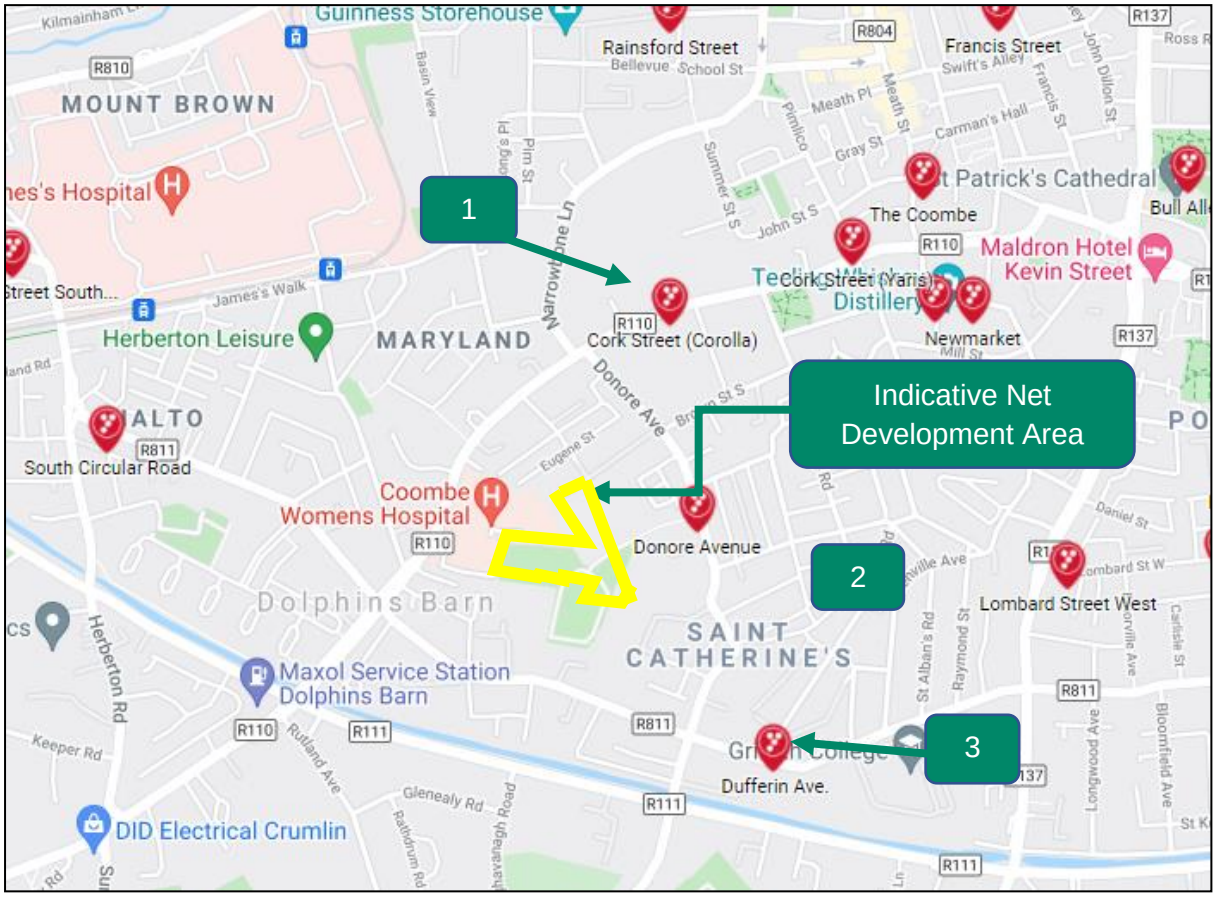

Figure 12-13 : YUKO Bases (Source www.yuko.ie)

12.1.4 Characteristics of the Proposed Development

The development will consist of the construction of a residential scheme of 543 no. apartments on an overall site of 3.26 ha.

The development (GFA of c. 53,227 sqm) contains the following mix of apartments: 225 No. 1 bedroom apartments (36 no. 1-person & 189 no. 2-person), 274 No. 2 bedroom apartments (including 52 No. 2 bed 3 person apartments and 222 No. 2 bed 4 person apartments), 44 No. 3 bedroom 5-person apartments, together with retail/café unit (168 sq.m.), mobility hub (52 sq.m.) and 952 sq.m. of community, artist workspace, arts and cultural space, including a creche, set out in 4 No. blocks.

The breakdown of each block will contain the following apartments:

- Block DCC1 comprises 111 No. apartments in a block of 6-7 storeys;
- Block DCC 3 comprises 247 No. apartments in a block of 6-15 storeys;
- Block DCC5 comprises 132 No. apartments in a block of 2-7 storeys; and
- Block DCC6 comprises 53 No. apartments in a block of 7 storeys;

The proposed development will also provide for public open space of 3,408 sqm, communal amenity space of 4,417 sqm and an outdoor play space associated with the creche. Provision of private open space in the form of balconies or terraces is provided to all individual apartments.

The proposed development will provide 906 no. residential bicycle parking spaces which are located within secure bicycle stores. 5% of these are over-sized spaces which are for large bicycles, cargo bicycles and other non-standard bicycles. In addition, 138 spaces for visitors are distributed throughout the site.

A total of 79 no. car parking spaces are provided at undercroft level. Six of these are mobility impaired spaces (2 in each of DCC1, DCC3 & DCC5). 50% of standard spaces will be EV fitted. Up to 30 of the spaces will be reserved for car sharing (resident use only). A further 15 no. on-street spaces are proposed consisting of:

- 1 no. accessible bay (between DCC5 & DCC6)
- 1 no. short stay bay (between DCC5 & DCC6)
- 1 no. crèche set-down / loading bay (between DCC5 & DCC6)
- 1 no. set-down / loading bay (northern side of DCC5)
- 1 no. set-down/loading bay (northern side of DCC 3)
- 10 no. short stay spaces (north-east of DCC1)

In addition, 4 no. motorcycle spaces are also to be provided.

Vehicular, pedestrian and cyclist access routes are provided from a new entrance to the north-west from Margaret Kennedy Road. Provision for further vehicular, pedestrian and cyclist access points have been made to facilitate connections to the planned residential schemes on the Bailey Gibson & Player Wills sites for which there are extant permissions (Ref. No.'s ABP-307221-20 & ABP-308917-20).

The development will also provide for all associated ancillary site development infrastructure including site clearance & demolition of boundary wall along Margaret Kennedy Road and playing pitch on eastern side of site and associated fencing/lighting, the construction of foundations, ESB substations, switch room, water tank rooms, storage room, meter room, sprinkler tank room, comms room, bin storage, bicycle stores, green roofs, hard and soft

landscaping, play equipment, boundary walls, attenuation area and all associated works and infrastructure to facilitate the development including connection to foul and surface water drainage and water supply.

Figure 12-14 illustrates the proposed general arrangement.

Figure 12-14: Proposed General Arrangement (Source: AECOM drawing no. STG-AEC-S1b-00-00-DR-C-0000001)

12.1.4.1 DCC Parking Standards

In line with the current DCC Development Plan, for Zone 1 the car parking ratio of 0.5 parking spaces per dwelling is stipulated and for zones 2 and 3 the car parking ratio is 1 car parking space per dwelling. The Proposed Development site is situated within Zone 1. These standards are illustrated in Table 12.6. It should be noted that these are maximum values.

Table 12-6: Car parking Requirements

National Standards	Car Parking Requirements	Maximum Car parking standard	Number of Car Parking Spaces Required	Total Number of Car Parking Spaces Required
DCC Development Plan Standards (2022-2028)	Apartments (543)	0.5 car space per dwelling	272	272

The current DCC Development Plan states that *"Parking Zone 1 occurs along generally within the Canal Cordon and within North Circular Road in recognition of active travel infrastructure and opportunities and where major public transport corridors intersect"*

It is anticipated that the traffic impacts generated from the social and cost rental accommodation element of the proposed development will be smaller in volume than the mainstream housing due to the socio economic standing of the proposed demographic within the site. Proof is provided through the Census 2016 data analysis, indicating high levels of walking and active travel transport choices. Therefore the proposed lower car parking facilities in the proposed site will be adequate to the proposed development resident demographic and location.

The Sustainable Urban Housing: Design Standards for New Apartments Guidelines (December 2020) states that *'the quantum of car parking or the requirement for any such provision for apartment developments will vary, having regard to the types of location in cities and towns that may be suitable for apartment development, broadly based on proximity and accessibility criteria.*

In Central and/or Accessible Urban Locations, larger scale and higher density developments, comprising wholly of apartments in more central locations that are well served by public transport, the default policy is for car parking provision to be minimised, substantially reduced or wholly eliminated in certain circumstances. The policies above would be particularly applicable in highly accessible areas such as in or adjoining city cores or at a confluence of public transport systems such rail and bus stations located in close proximity'

It is also noted that in the Dublin City Development Plan 2022-2028, has included the site in Zone 1 and the following text is taken from the Appendix 5

"*A relaxation of maximum car parking standards will be considered in Zone 1 and Zone 2 for any site located within a highly accessible location. Applicants must set out a clear case satisfactorily demonstrating a reduction of parking need for the development based on the following criteria:*

- *Locational suitability and advantages of the site.*
- *Proximity to High Frequency Public Transport services (10 minutes' walk).*
- *Walking and cycling accessibility/permeability and any improvement to same.*
- *The range of services and sources of employment available within walking distance of the development.*
- *Availability of shared mobility.*
- *Impact on the amenities of surrounding properties or areas including overspill parking. (see Appendix F Social Audit)*
- *Impact on traffic safety including obstruction of other road users.*
- *Robustness of Mobility Management Plan to support the development*."

12.1.5 Potential Impact of the Proposed Development

The Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022) outlines a number of factors that are used to describe likely significant effects. These include quality of effects, significance of effects, extent of effects, probability of

effects, duration of effects and the type of effects. These factors are used to assess the likely significant effects of the Proposed Development.

There are currently no definitive criteria for assessing "significance of effects" for traffic impacts for EIA in Ireland. Transport Infrastructure Ireland's (TII's) PE-PDV-02045 - Traffic & Transport Assessment Guidelines (2014) provides thresholds for determining when to carry out a traffic assessment for a planning application, which are:

"Traffic to and from the development exceeds 10% of the existing two-way traffic flow on the adjoining highway."

"Traffic to and from the development exceeds 5% of the existing two-way traffic flow on the adjoining highway, where traffic congestion exists or will exist within the assessment period or in other sensitive locations".

If a Proposed Development is likely to increase traffic by 10% (or 5% in traffic sensitive or congested areas), the planning application should be accompanied by a Junction Capacity Analysis Assessment. It should be noted that the TII guidance does not provide criteria for assessing significance of impacts for EIA purposes.

Table 12-7 details the junctions with the highest percentage impact and over the TII threshold stated above are the site access junction and the Donore Avenue/Margaret Kennedy Road/ Brown Street South junction.

A comparison was made between the pre-development and post-development scenarios, to identify the percentage impact of the development.

The projected percentage impact of the operational traffic on the surrounding road junctions in the year of opening (2026) is set out in Table 12-7.

A junction capacity analysis is detailed in the Traffic and Transport Assessment

Table 12-7: Junction Percentage Impact Assessment

Location	Existing Two-Way Vehicle Trips	Development Trips	% Increase	Existing Two-Way Vehicle Trips	Development Trips	% Increase
Site Access	4	72	1719%	22	72	328%
Junction 1	2261	1	0%	2485	78	3%
Junction 2	283	65	23%	301	87	29%
Junction 3	432	19	4%	443	22	5%
Junction 4	59	72	122%	76	97	127%
Junction 5	1728	14	1%	1495	14	1%
Junction 6	1641	17	1%	1408	20	1%
Junction 7	3902	0	0%	2848	1	0%
Junction 8	3630	0	0%	2051	1	0%

Chapter 6 of the associated TTA presents the findings of the junction analysis.

12.1.5.1 Traffic Generation

The Trip Rate Information Computer System (TRICS) has been interrogated to calculate the quantum of vehicle trips likely to be generated by a development of the scale and type proposed. Trip generation data is collected for the 'peak' times which is defined as the busiest time of the morning and afternoon.

Traffic Surveys were undertaken in October 2022 by Irish Traffic Surveys. The baseline traffic flows observed at the junctions adjoining the proposed site access are illustrated in Figure 12-15. Flow Diagrams in full are detailed in full in Appendix B of the TTA (Appendix E of the EIAR).

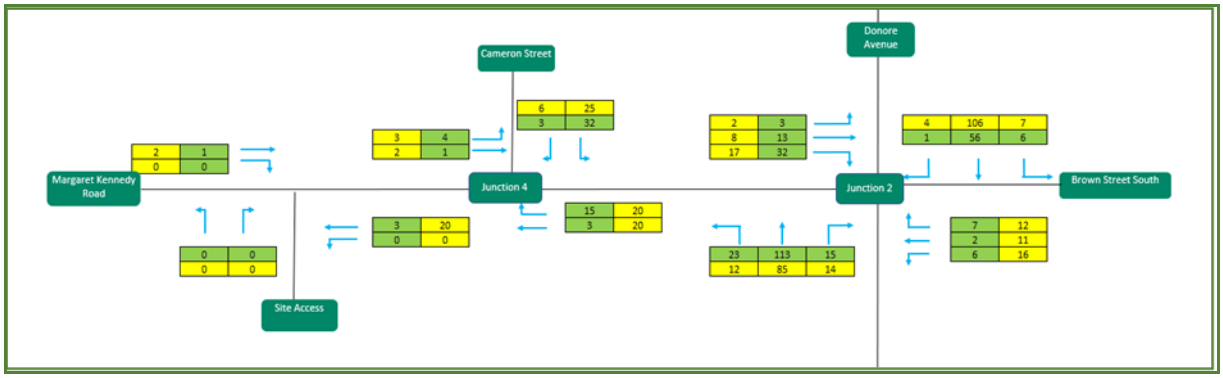

Figure 12-15: Baseline Traffic Flows

Base Traffic surveys on the surrounding local road network were undertaken in October 2022 and this data showed the peak times for the morning and evening peak hours were 08:15 – 09:15 and 16:00 – 17:00 respectively.

The anticipated trip generation for the AM and PM peaks can be found on *Table 12-8*.

Table 12-8: Proposed People Trip Generation TRICS (version 7.9.1)

Land Use	Morning (08:15 - 09:15)		Evening (16:00 - 17:00)	
	AM Arrivals	AM Departures	PM Arrivals	PM Departures
Total People Council Flats	66	211	218	97
Total People Creche	47	16	7	19
Total	113	227	225	115

It is best practice to use Journey to Work Census data to distribute proposed traffic onto the local network. The 2022 Census results for Journey to work have not yet been published and therefore AECOM has reviewed the Census 2016 data available from the Central Statistics Office (CSO) to determine the existing commuting patterns and car ownership within the surrounding area of the development site.

Census 2016 figures obtained from the Central Statistics Office (CSO) detail the means of travel to work, school or college (i.e., on foot, bicycle, car driver etc.) for people aged 5 years and over for the electoral division of Rehoboth Place and Eugene Street in which the Proposed Development site falls. These figures are shown in Table 12.9 together with mode shares of each of the means of travel.

Table 12-9: Existing Journey Patterns

Means of Travel	Work	School or College	Total	Mode Share (%)
On foot	1117	711	1828	34.9%
Bicycle	661	136	797	15.2%
Bus, minibus or coach	508	229	737	14.1%
Train, DART or LUAS	341	82	423	8.1%
Motorcycle or scooter	14	2	16	0.3%
Car driver	978	37	1015	19.4%
Car passenger	72	188	260	5.0%
Van	54	0	54	1.0%
Other (incl. lorry)	2	0	2	0.0%
Work mainly at or from home	105	3	108	2.1%
Total	**3852**	**1388**	**5240**	**100.0%**

Table 12.9 demonstrates that 19% of individuals surveyed drive to their place of work / education, approximately 14% take the bus. 35% of commuters walk to their place of work or education while 15% cycle. This would further indicate that the Proposed Development is well situated to take advantage of the existing sustainable travel infrastructure in the area.

It should be noted, the 2016 Census data is old however it is the only data available until the 2022 census data is published. Due to Covid-19 the number of people who work from home has likely increased. Without evidence AECOM are not able to state how many people are now working from home and therefore perceive the data presented in Table 12.6 to be a worst case analysis of mode share.

Based on the 2016 census data presented and the TRICS generation the total vehicular trip generation for the Proposed Development in shown in Table 12.10.

Table 12-10: Trip generation based on 2016 Census Data from Small Area Population data

Mode of Travel	Morning (08:15 - 09:15)		Evening (16:00 - 17:00)	
	AM Arrivals	AM Departures	PM Arrivals	PM Departures
Vehicle Trip	25	47	46	25
Total One Way Flows	25	47	46	25
Total Two Way Flows	72		72	

The estimated total vehicle movements by the permitted development during the morning and evening peak hours were 72 and 72 two way flows respectively. As the development proposals are for a low car development with only 79 car parking spaces for residents, AECOM believe the trip generation presented in Table 12.10 is a realistic view of how the development will operate once built.

The Proposed Development site is proposed to be a low car development. The public transport network nearby is considered to be well established and operating within capacity that would enable for a low car development to thrive on the proposed development site. The AECOM Public Transport and Capacity Assessment report details these findings further in Appendix E in the TTA (Appendix E of the EIAR). The purpose of the low car development is to encourage through traffic management the use of public transport and active modes of travel to the proposed residents and users of the proposed development site. the reliance on private car use is discouraged through the reduced level of car parking spaces provided within the proposed development. The proposed development provides secure bike parking which will encourage residents to use this mode of transport more frequently. The suggested mobility hub will provide residents with live times of local public transport so that they can plan their journey accordingly. Due to the location of the site a low car development will be viable, and it is well situated between various public transport routes.

Table 12-11: Car Parking Requirements

National Standards	Car Parking Requirements	Maximum Car parking standard	Number of Car Parking Spaces Required	Total Number of Car Parking Spaces Required
DCC Development Plan Standards (2016-2022)	Apartments (543)	0.5 car space per dwelling	272	272

12.1.5.2 Construction Phase

All environmental protection measures contained within this Traffic Statement will be incorporated into a detailed Construction Environmental Management Plan (CEMP) by Enviroguide Consulting. Prior to commencement of construction works the contractor will draw up detailed Method Statements which will be informed by this Outline Construction Methodology, environmental protection measures included within the planning application, measures proposed within the CEMP, and the guidance documents and best practice measures to be implemented in full during the construction phase.

It is expected that the construction phase of the development is to take approximately 35months. Table 12.12 is the estimated development program and will be conducted in the following phases.

Table 12-12: Development Program

	Stage	Start Date	Finish Date
Phase 1	Enabling Works	2024	2024
	Piling	2024	2025
	DCC3	2024	2027
	DCC6	2024	2026
	DCC5	2025	2026
Phase 2	Enabling Works	2025	2025
	Piling	2025	2025
	DCC1	2025	2027

All contractor vehicles will park within the development site area, it is recommended that as part of the construction management plan the contactor designates an area within the confines of the proposed site dedicated to operative car parking. There will be no parking permitted on the surrounding road network or estate roads by the contractor or site operatives. The exact location of the car parking for construction staff will be confirmed by the contractor on site.

Trip generation during the construction period is based on the preliminary construction programme, gross floor area of the development and the estimated quantity of excavated material to be removed off site. The trip generation calculation includes movements both to and from site and also includes for the removal of waste off site. For a typical month over the 35-month construction period, a typical day would see 50 two way HGV movements per day and 38 two way staff trips per day. This equates to a total of 88 vehicle trips per day.

12.1.5.3 Construction Trip Generation

The average hourly trip generation for construction activities are set out in Table 12.13. it is assumed that the majority of construction staff will use public transport and shared vehicles

Table 12-13: Peak Hour Construction Trip Generation (Source: AECOM Construction Access Presentation)

	Am		PM	
	In	Out	In	Out
Staff Vehicles/Day	19	0	0	19
HGV's /Hour	4	4	4	4

12.1.5.4 Construction Route

As part of the construction traffic planning several route options were considered. Option 3 has been specified as the preferred option. Figure 12-16 details the tracking of the construction vehicles around the proposed construction route and also details visibility splays and tracking for the access point, which will be used during construction only, onto Donore Avenue.

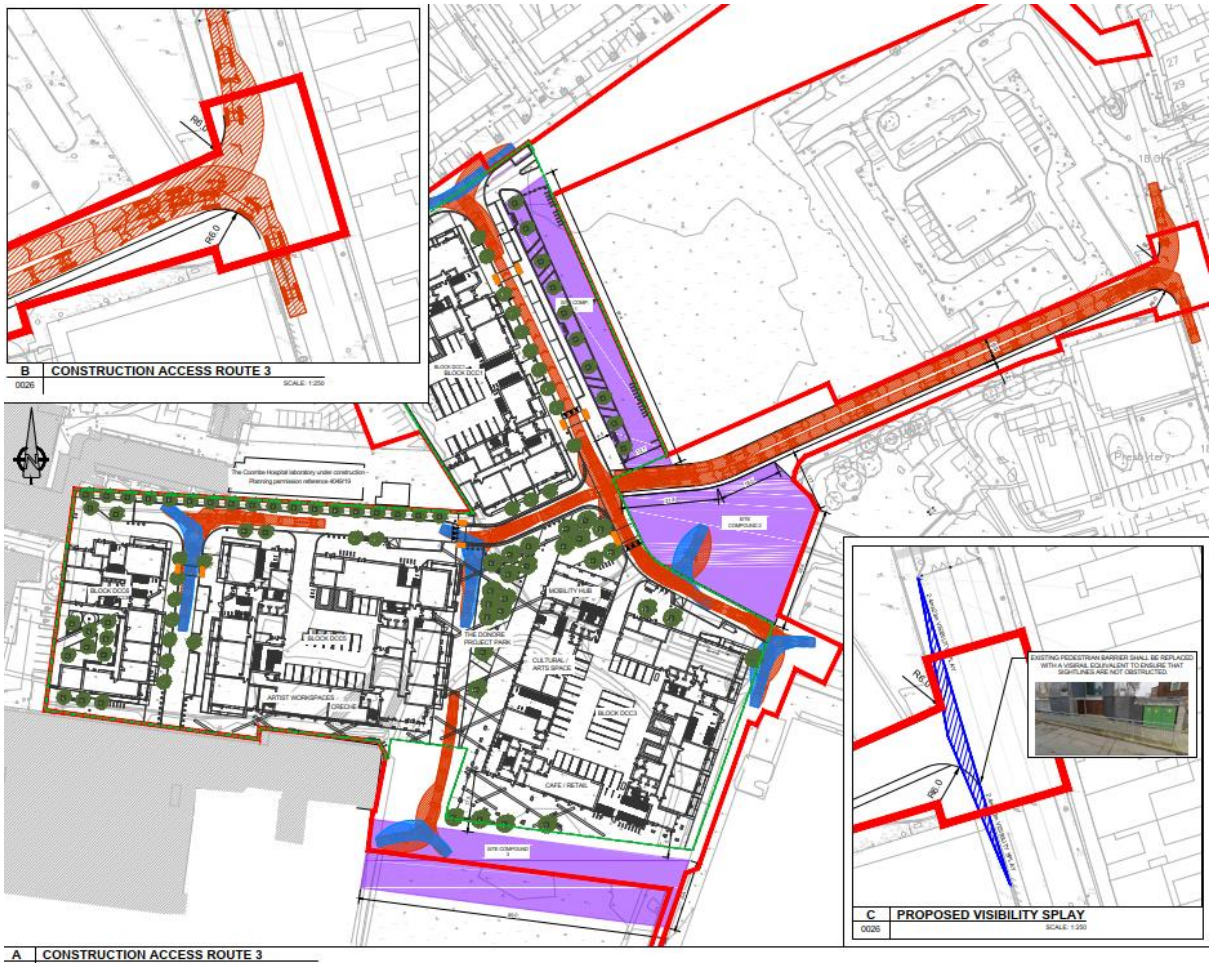

Figure 12-16: Construction Access Route (AECOM Drawing: STG-AEC-S1b-00-00-SK-C-0000026)

It is required that all construction traffic will use the suggested routes in order to minimise construction impacts on the surrounding road network. any third-party contractors carrying out works will be contractually obliged to use the suggested construction traffic routes. This will be implemented by the site manager. The suggested routes are:

Routes to / from west

R111 > R812 > R811 towards M50
R111 > R148 towards M50

Routes to / from north & Dublin Port

R811 > R137 towards N1
R811 > R137 > Winetavern St. towards R148

This routing has been illustrated in Figure 12.17

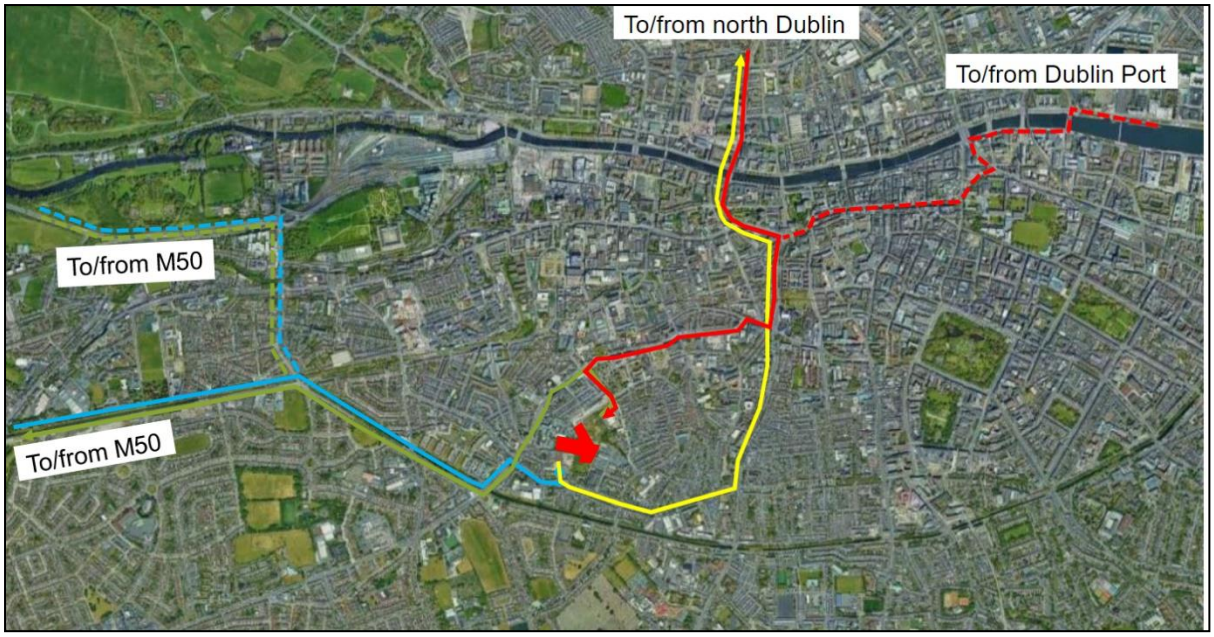

Figure 12-17: Proposed Construction Route (Source: AECOM Construction Access Presentation)

Construction traffic is expected to use South Circular Road as shown in Figure 12.18.

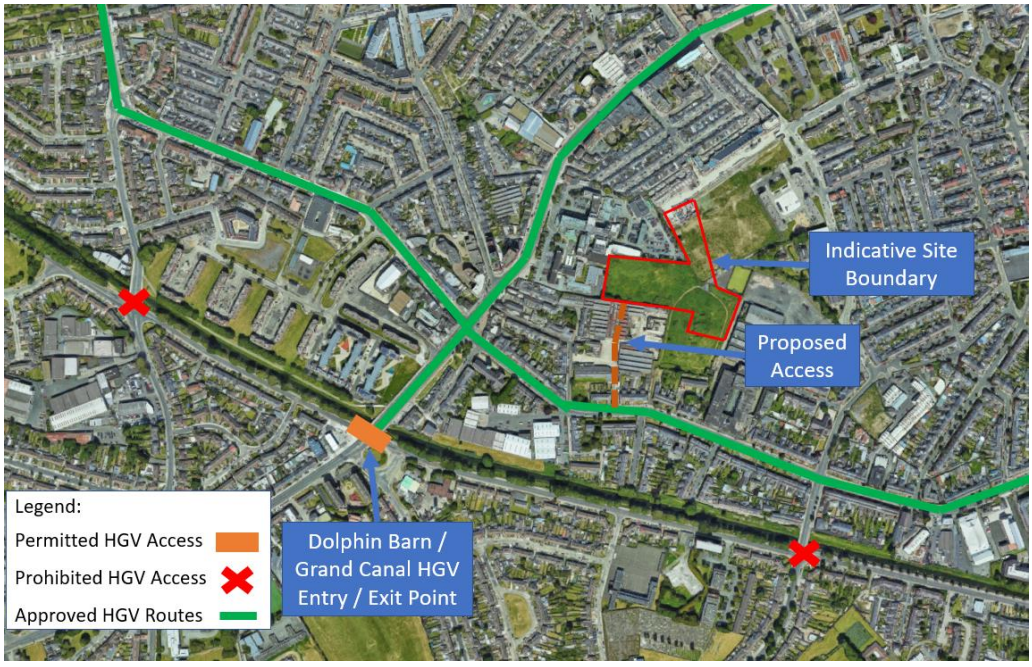

Figure 12-18 Proposed Construction Access routes

AECOM commissioned Baseline Traffic Surveys in October 2022 by Irish Traffic Surveys. The surveys were undertaken for 12 hrs on a neutral weekday within the school term. This was to understand existing traffic conditions in the vicinity of the site within the study area. Based on the traffic volume outlined in Table 12-13 suggests the construction traffic will have a neutral imperceptible temporary effect on the study area in relation to the baseline flows observed.

12.1.5.5 Potential Cumulative Impacts Construction

The additional population that will be generated by the Proposed Development coupled with the Player Wills and Bailey Gibson developments and the anticipated development in the wider SDRA 11 area will increase the demand on existing social infrastructure capacity.

Traffic levels proposed by Player Wills 1 is 54 two flows in the AM and 62 two way flows in the PM Traffic levels proposed by Bailey Gibson is 42 two flows in the AM and 34 two way flows in the PM.

Both Player Wills 1 and Bailey Gibson 1 proposed additional traffic generation will contribute to the flows within the junctions in the study area of the proposed development site.

Table *12-15* details the junction impact assessment results with the committed/ cumulative developments included.

Each of these developments requires a construction and environmental management plan (CEMP) to manage each of the construction phases. Subject to adherence to measures contained in the individual plans, the cumulative effect of these developments is likely, short term and not significant.

These developments will generate additional population locally and the consequent effect will be increased demand for local services. However, the effect is locally moderate with a permanent effect.

12.1.5.6 Potential Cumulative Impacts Operation

AECOM understands that committed developments are those that have been granted planning permission and that are either under construction but not completed or construction has yet to start. Therefore this would include Bailey Gibson 1 and Player Wills 1. Figure 12.19 indicates the baseline observed traffic flows plus the committed traffic flows. Analysis has been undertaken to investigate the impact the committed developments would have on the existing network in conjunction with the proposed development vehicle trips. The percentage impact analysis included in the TTA includes the committed development as part of the flows to observes a worst case scenario.

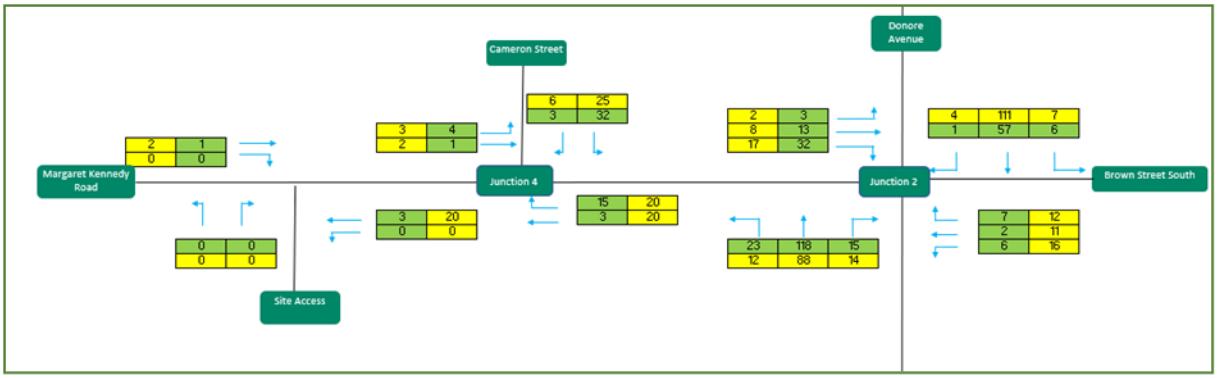

Figure 12-19: Baseline Plus Committed Development Observed Traffic flows

12.1.5.7 Cumulative Developments

Player Wills, Phase 1 and Phase 2 construction of 492 no. Build to Rent (BTR) apartments, 240 no. Build to Rent shared accommodation along, creche and associated site works. Including 280 car parking spaces (249 on basement, 31 on-street parking and creche/taxi set down and loading bays), 903 long stay cycle parking spaces and 110 short-stay bicycle spaces in addition Phase 2 will consist of units 403 BTR, with envisaged car parking spaces of approx. 81.

Bailey Gibson, demolition of all existing structures on site and the construction of 416 no. residential units (4 no. houses and 412 apartments) and associated site works

In addition to the background growth the cumulative development of the full SDRA 11 area has also been assessed. The residential vehicular traffic demand for the Player Wills and the Bailey Gibson site have been estimated using the same method as was used to determine the additional trip generation created from the proposed development site.

Table 12-14: Combined Peak Hour Vehicular Trips for the associated SDRA 11 Committed/ Cumulative Developments

Site	08:00-09:00		17:00-18:00	
	Arrivals	Departures	Arrivals	Departures
Bailey Gibson	9	33	23	11
Player Wills 1	12	42	39	23
Total	21	75	62	34

12.1.5.8 "Do Nothing" Impact

In the do-nothing scenario the Proposed Development site would continue to function under its current state as a brownfield site with no additional construction or development traffic having an impact on the SDRA 11.

If the proposed development site was not granted planning permission but the site was built out as per the SDRA 11 guiding principles, the effects would mirror the proposed development due to the SDRA 11 designation for the site to be majority residential.

If the proposed development was not granted planning permission but the extant permissions were built the percentage impact on the junctions' effects would be a reduction on the percentage impacts stated in

Table *12-15*

Mitigation measures for the planned and continued use of the proposed development site as a low car development is detailed in the Mobility Management Plan. Any mitigation measures proposed are intended for the use of the Donore Project proposed development site only.

Table 12-15: Junction Percentage Impact Assessment Results

Location	Existing Two-Way Vehicle Trips	Development Trips	% Increase	Existing Two-Way Vehicle Trips	Development Trips	% Increase
Site Access	4	72	1719%	22	72	328%
Junction 1	2261	1	0%	2485	78	3%
Junction 2	283	65	23%	301	87	29%
Junction 3	432	19	4%	443	22	5%
Junction 4	59	72	122%	76	97	127%
Junction 5	1728	14	1%	1495	14	1%
Junction 6	1641	17	1%	1408	20	1%
Junction 7	3902	0	0%	2848	1	0%
Junction 8	3630	0	0%	2051	1	0%

12.1.6 Avoidance, Remedial & Mitigation Measures

12.1.6.1 Construction Phase

A Framework for a Construction Traffic Management Plan (CTMP) is to be provided as part of the LDA Planning Application and separate to the EIAR. A formal CTMP would then require to be developed in consultation with Dublin City Council, The Land Development Agency (Applicant)and other stakeholders should consent be granted. The CTMP would set out the following mitigation measures;

- The necessary agreements and timing restrictions for construction traffic, for example Monday- Friday working only, prohibition during school drop off and pick up times and prohibition during loading times at commercial premises.
- Details of a proposed Condition Survey on Access routes
- Proposals for maintenance of the agreed routes for the duration of the construction phase;
- Proposals for monitoring and agreeing maintenance costs;
- The mechanism for managing and monitoring the CTMP manage all aspects of the plan;
- Route signage;
- Maintaining access to commercial/business premises. For example temporary accommodation works and additional information signage;
- Details of the advanced notification to the general public warning of any construction transport movements, specifically abnormal loads;
- Preparation of a Green Travel Plan for staff;
- Details of information road signage warning road users of construction traffic movements;

- Arrangements for regular road maintenance and cleaning, e.g. road sweeping in the vicinity of the Proposed Development site access point as necessary, wheel cleaning/dirt control arrangements;
- Contractor speed limits; and
- Community and emergency services liaison details.
- The use of Park and Share facilities for construction staff;
- The promotion of electric vehicles for Park and Stride and general car/van access;
- Any potential mitigation to consider cumulative construction traffic can be addressed via the final CTMP.

12.1.6.2 Operational Phase

A Mobility Management Plan (MMP) submitted under a separate cover which is intended to reduce the need for car travel. The measures included in the MMP are as follows:

- Appointment of Mobility Manager;
- Welcome Travel Pack with details of local transport network, maps of local amenities, detail of on-site facilities, incentivises for sustainable travel (taster tickets) and initial subsidised use of Car Club;
- Marketing and Travel information and Personalised Travel Planning to be provided by Mobility Manager;
- Walking and Cycling Challenges and promotion events;
- 30 on-site GoCars assumed exclusive use of residents.

12.1.6.3 Worst Case Scenario

The traffic assessments have been conducted in the peak hours of 8:00-9:00am and 17:00-18:00pm as this represents the busiest case in terms of background traffic conditions and traffic from the Proposed Development and is therefore considered a worst-case scenario.

12.1.7 Residual Impacts

The increase in traffic is likely to result in minimal residual environmental effects in terms of temporary construction traffic.

The management of the minimal residual effects is achieved with a Construction Traffic Management Plan (CTMP).

12.1.7.1 Demolition and Construction Phase

The impact of the construction phase in terms of traffic and transport will be negative, not significant, local, and short-term. The measures outlined in the CTMP, as set out previously in this chapter, will help alleviate the impact of the additional traffic and limit the impact to outside the busier peak hours. The measures, including wheel washing and dust mitigation, will also ensure the standard of the public road network is maintained in terms of dust and dirt from construction traffic.

12.1.7.2 Operational Phase

With the mitigation measures in place, the impact of the Proposed Development on traffic and transport will be not significant, negative, local and long-term. The Proposed Development site is ideally situated to have an extremely low car mode share and with the supporting measures identified in the MMP in place car traffic may be lower than that assumed in the modelling

assessment. However, even with a higher car mode share modelled the impact will be slight. The delays for traffic on the local network are in general minor with no significant delays modelled as result of the additional development.

12.1.8 Monitoring

12.1.8.1 Construction Phase

The construction phase will be monitored by the appointed site manager and regular progress reports will be prepared. The manager will ensure the mitigation measures outlined will be implemented and adhered to.

12.1.8.2 Operational Phase

A mobility manager will be appointed from within the management company to ensure the implementation of the Mobility Management Plan. They will also be responsible for the undertaking of post occupation travel surveys and act as a point of contact for residents for all mobility and access related issues.

12.1.9 Interactions

AECOM Traffic have assessed the interaction traffic will have on the remainder of the EIAR chapters. Traffic will have interaction with the following chapters only:

Noise and Vibration: Road traffic noise during the construction phase of the Proposed Development site is considered to lead to negative noise effects on sensitive receptors in the study area. Through the implementation of appropriate noise control measures the residual effects will be moderate, local and short term for the majority of locations surrounding the Proposed Development site. During the operational phase of the Proposed Development site the traffic noise levels associated is expected to produce low levels of noise and vibration pollution to the area due to the 'low car zone' nature of the Proposed Development site. This will have a likely temporary neutral effect on the study area.

Landscape and Visual: Road closures, potential traffic management and signage will have an effect upon the local landscape and views towards the construction site. During Operational phases of the Proposed Development site the Proposed Development itself will take a space in the landscape and visual aspect of the area. This will have a likely temporary neutral effect on the study area.

12.1.10 Difficulties Encountered When Compiling

No difficulties have been encountered while compiling this chapter.

12.1.11 References

Design Manual for Urban Roads and Streets (DMURS), March 2013, Department of Housing, Planning and Local Government & Department of Transport.

Traffic and Transport Assessment Guidelines, May 2014, Transport Infrastructure Ireland (TII).

Project Appraisal Guidelines for National Roads Unit 5.3 - Travel Demand Projections, October 2021, TII. Project Appraisal Guidelines for National Roads Unit 5.1- Construction of Transport Models, October 2016, TII.

Dublin City Development Plan 2022-2028, Guidelines on the information to be contained in Environmental Impact Assessment Reports, Environmental Protection Agency, 2022

12.2 Material Assets: Waste and Utilities

12.2.1 Introduction

Material assets have been defined as "*Resources that are valued and that are intrinsic to specific places, they may be either human or natural origin and the value may arise for either economic or cultural reason'*" (EPA 2002).

This definition was further expanded by the EPA in 2022 in *'Guidelines on the information to be contained in Environmental Impact Assessment Reports'* which states:

'The meaning of this factor is less clear than others. In Directive 2011/92/EU it included architectural and archaeological heritage. Directive 2014/52/EU includes those heritage aspects as components of cultural heritage. Material assets can now be taken to mean built services and infrastructure. Traffic is included because in effect traffic consumes roads infrastructure. Sealing of agricultural land and effects on mining or quarrying potential come under the factors of land and soils.'

The scope and definition of Material Assets within the context of the EIA process has been defined by the EIA Directive as including Architectural and Archaeological Heritage or Cultural Heritage. These elements are assessed separately in Chapter 11 under Archaeology & Cultural Heritage.

This Chapter of the Environmental Impact Assessment Report (EIAR) provides an assessment of the potential impacts of the Proposed Development on Material Assets or physical resources in the environment of human origin including built services and infrastructure comprising:

- Electricity Supply,
- Gas Supply,
- Information and Communications Technology,
- Surface Water Drainage,
- Water Supply and Demand,
- Wastewater Management, and
- Waste Management

Natural resources (water, land, biodiversity, air etc) are addressed in their respective chapters. The Building Lifecycle Report produced by Metropolitan Workshop (2022), and included in this EIAR as Appendix L, provides details of the raw materials that it is envisaged will be used as building materials for the Proposed Development.

12.2.1.1 Quality Assurance and Competence

This Chapter was prepared by Enviroguide Senior Environmental Consultant Nikita Coulter. Nikita Coulter has a B.Sc. in Zoology (Hons) from University College Dublin, an M.Sc in Biodiversity and Conservation and a Postgraduate Diploma in Environmental Engineering from Trinity College Dublin, and a NEBOSH accredited International Diploma in Environmental Risk Management. Nikita has 8 years professional experience as an Environmental Compliance Specialist.

12.2.2 Study Methodology

The methodology adopted for the assessment takes cognisance of relevant guidelines, in particular the following:

- Environmental Protection Agency (EPA) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EIAR) (2022)
- EPA (2021) Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects

The scope of work undertaken for the impact assessment included a desk-based study of built services, utilities and waste management infrastructure within the study area. The desk study involved collecting all the relevant data for the Proposed Development site and surrounding area, including published information and details pertaining to the Proposed Development provided by the Applicant and the Design Team. Information on utilities and waste in the vicinity of the site of the Proposed Development was assembled by reviewing the following information:

- ESB Networks Utility Maps
- Irish Water Utility Plans
- Gas Networks Ireland Service plans
- EIR E-Maps
- Infrastructure Report (AECOM, 2022)
- Utility Survey Report (Murphy Geospatial, 2022)
- Mechanical & Electrical Planning Application Report (AECOM, 2022)
- Building Lifecycle Report (Metropolitan Workshop, 2022)
- Hydrological & Hydrogeological Risk Assessment Report (Enviroguide Consulting, 2022)
- Site-Specific Flood Risk Assessment (AECOM, 2022)
- Construction and Demolition Waste Management Plan (Construction Phase) (AECOM, 2022)
- Operational Waste Management & Recycling Strategy (Operational Phase) (AECOM, 2022)
- Construction Environmental Management Plan (Enviroguide Consulting, 2022)
- http://mywaste.ie
- EPA's Waste Application, Licence or Environmental Information Search Engine https://epawebapp.epa.ie/terminalfour/waste/index.jsp,
- National Waste Collection Permit Office (NWCPO) – Waste Collector and Waste Facility Permit Search Engine http://www.nwcpo.ie/permitsearch.aspx

All phases of the Proposed Development were considered in the assessment of potential impacts on Material Assets within the study area. Assessment of the likely impact of features of the Proposed Development, was carried out in accordance with the following codes of practice, guidelines, legislation, and plans:

- ESB Networks National Code of Practice for the Customer Interface Version 5 (2021)
- ESB Networks Construction Standards for MV Substation Buildings (2019)
- Irish Water Code of Practice for Water Infrastructure Connections and Developer Services Design and Construction Requirements for Self-Lay Developments July 2020 (Revision 2)

- IS EN752, Drain and Sewer Systems Outside Buildings
- Water Services Acts 2007 to 2017
- Greater Dublin Regional Code of Practice for Drainage Works
- Greater Dublin Sustainable Drainage System (2005)
- CIRIA Report c753 “The SuDS Manual” (2015)
- Section 3.2 of the Urban Development and Building Heights: Guidelines for Planning Authorities (2018)
- Waste Framework Directive (Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste) as amended by Directive (EU) 2018/851.
- European Union (Waste Directive) Regulations 2011 - 2020, S.I. No. 323 of 2020
- Waste Management Acts 1996 to 2011
- Eastern-Midlands Region (EMR) Waste Management Plan 2015-2021

12.2.2.1 Prediction and Assessment of Impacts

Impacts were predicted and assessed based on the EPA Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (2022), and by using the definitions detailed in Tables 12-11 to 12-15. Impacts vary from negative to neutral or positive, and also vary in significance on the receiving environment.

Table 12-16: Terminology used to assess the quality potential impacts & effects

Quality of Effects / Impacts	Definition
Negative	A change which reduces the quality of the environment.
Neutral	No effects or effects that are imperceptible, within the normal bounds of variation or within the margin of forecasting error.
Positive	A change that improves the quality of the environment.

Source: EPA, 2022

Table 12-17: Terminology used to assess the significance of potential impacts & effects

Significance of Effects / Impacts	Definition
Imperceptible	An effect capable of measurement but without significant consequences.
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters a sensitive aspect of the environment.
Profound	An effect which obliterates sensitive characteristics.

Source: EPA, 2022

Table 12-18: Terminology used to assess the duration of potential impacts/effects

Duration of Effects / Impacts	Definition
Momentary	Effects lasting from seconds to minutes
Brief	Effects lasting less than a day
Temporary	Effects lasting one year or less
Short-term	Effects lasting one to seven years
Medium-term	Effects lasting seven to fifteen years
Long-term	Effects lasting fifteen to sixty years
Permanent	Effects lasting over sixty years
Reversible	Effects that can be undone, for example through remediation or restoration

Source: EPA, 2022

Table 12-19: Definition of the Extent and Context of Effects

Quality	Definition
Extent	Describe the size of the area, the number of sites, and the proportion of a population affected by an effect.
Context	Describe whether the extent, duration, or frequency will conform or contrast with established (baseline) conditions (is it the biggest, longest effect ever?)

Source: EPA, 2022

Table 12-20: Definition of the Probability of Effects

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

Source: EPA, 2022

Figure 12-15 (extracted from the EPA Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, 2022) shows how the character of the predicted impact in relation to the sensitivity of the receiving environment can determine the significance of the impact.

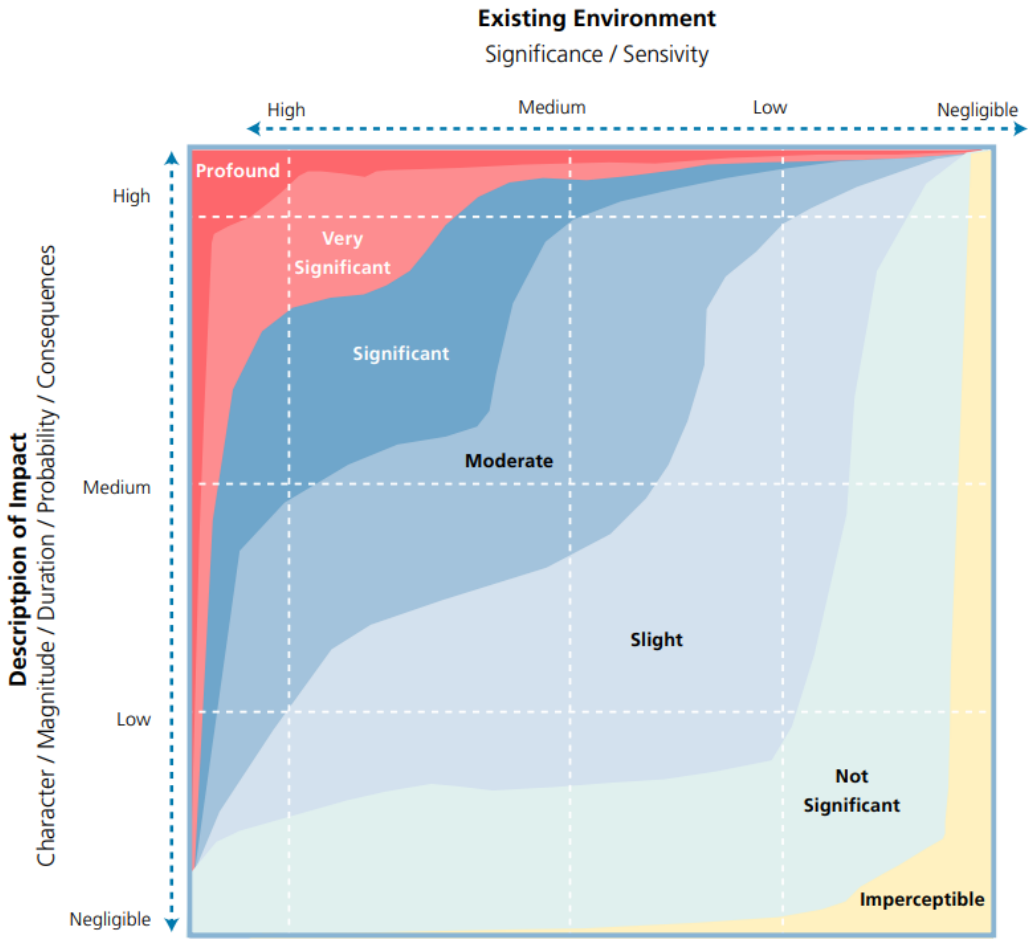

Figure 12-20: Chart showing typical classifications of the significance of impacts (EPA, 2022, Guidelines on the Information to be Contained in Environmental Impact Assessment Reports)

12.2.3 The Existing and Receiving Environment (Baseline Situation)

12.2.3.1 Site Location

The Proposed Development is located at the site located on the former St. Teresa's Gardens, Donore Avenue, Dublin 8. The site is bound by Donore Avenue to the north-east, Margaret Kennedy Road to the north-west, The Coombe Women and Infants University Hospital to the west, the former Bailey Gibson factory buildings to the south-west, and the former Player Wills factory to the south-east The Proposed Development will consist of the construction of a residential scheme of 543 no. apartments on an overall site of 3.26 ha. with a net development area of 2.05 ha. The landholding comprises the site of the former St. Teresa's Gardens Flat Complex, which have since been demolished save for two blocks closest to Donore Avenue.

12.2.3.1.1 Land Use History

Historical mapping and aerial photography available from the Ordnance Survey of Ireland website (OSI, 2022) were reviewed and key observations on-site and off-site are summarised in Table 12-16.

Table 12-21: Historical Land Use

Date	Information Source	Site Description
1837-1842	**OSI map 6inch**	**On-site:** The Proposed Development site is shown as open fields divided by field boundaries. **Off-site:** The surrounding lands are predominantly open fields divided by field boundaries with a number of unidentified houses to the west of the Site There is a convent and a female school 66.2m south of the site. The grand canal is located 264m south of the site. The Circular Road is located 121m south of the site. There is a hospital located 192m north of the site.
1888-1913	**OSI map 25inch**	**On-site:** No significant changes. **Off-site:** The area surrounding the site is made up of residential houses.
1830-1930	**OSI Cassini map 6inch**	**On-site:** There is a factory and printing works on the western part of the site. **Off-site:** There is a laundry located outside the western boundary of the site. There is tobacco factory located outside the southern boundary of the site. There is a school situated 98m east of the site and a cinema 178m west of the site. The Griffith Barracks is located 441m south-east of the site.
1995	**OSI Aerial photography**	**On-site:** The northern section of the site comprises a number of residential blocks and the eastern section of the site is shown as greenfield. **Off-site:** The addition of more housing estates surrounding the site. The Coombe Hospital is situated outside the western boundary of the Site.
2000	**OSI Aerial photography**	**On-site:** No significant changes. **Off-site:** No significant changes.
2005	**OSI Aerial photography**	**On-site:** No significant changes. **Off-site:** No significant changes.
2005-2012	**OSI Aerial Photography**	**On-site:** No significant changes. **Off-site:** No significant changes.
2013-2018	**OSI Aerial photography**	**On-site:** Some of the residential blocks are shown to be demolished in the northern portion of the site. **Off-site:** No significant changes.
2022	**Google Maps Photography**	**On-site:** Residential buildings are shown bounding the north-western site boundary. The residential units in the northern portion of the site are no longer shown and the rest of the land holding is undeveloped. **Off-site:** No significant changes.

12.2.3.2 Immediate Surroundings

The Proposed Development site forms part of a larger area zoned '*Z14 - Strategic Development and Regeneration Areas (SDRA)*', under the Development Plan 2022-2028. The Proposed Development site forms part of a wider area known as the St. Teresa's Gardens & Environs which has been designated in the Dublin City Development Plan 2022 – 2028 as a Strategic Development & Regeneration Area (SDRA 11) which is Zoned Z14.

Adjoining the site, is the former Player Wills and Bailey Gibson sites, including the St. Teresa's church site on Donore Avenue (c4.6 hectares), which has been subject of recent large scale

planning applications for residential development. Also adjoining the site is the Coombe Hospital site (2.32 hectares), which is proposed to be re-located to the St. James's Hospital Campus, creating a longer-term opportunity site. Overall, therefore, SDRA 11 equates to c13Ha.

12.2.3.3 Local Settlement and Land Use

The Proposed Development site benefits from close access to a whole range of amenities in the general Dolphin's Barn/South Circular Road area, in addition to the high-quality public transport provided by both LUAS and city bus routes. A Community and Social Audit (CSA) Report has been prepared for the Proposed Development. The CSA Report concludes that the Proposed Development site is accessible to a range of leisure facilities including football / rugby / GAA clubs, a number of public parks, a number of education facilities and a substantial amount of community facilities located throughout the neighbourhood. As such the facilities that the local area currently offers are very good and will be able to support the Proposed Development.

12.2.3.4 Utility Survey

Murphy Geospatial were contracted to carry out a full Ground Penetrating Radar (GPR) & Utility Survey on behalf of AECOM and to provide a Utility Survey Report (2022) for the site of the Proposed Development. The intention of this survey was to detect, locate and record all existing utilities and highlight any anomalies in the required area for upcoming works. The survey start date was 17.05.2021, please refer to Murphy Geospatial Utility Survey Report No. 39995 and the associated drawing MG39995_U_Rev3 (Figure 12-16) for precise details of the location of the following underground utilities:

- Electrical lines
- Gas pipelines
- Telecommunications cables
- Stormwater network
- Watermains
- Foul sewer network

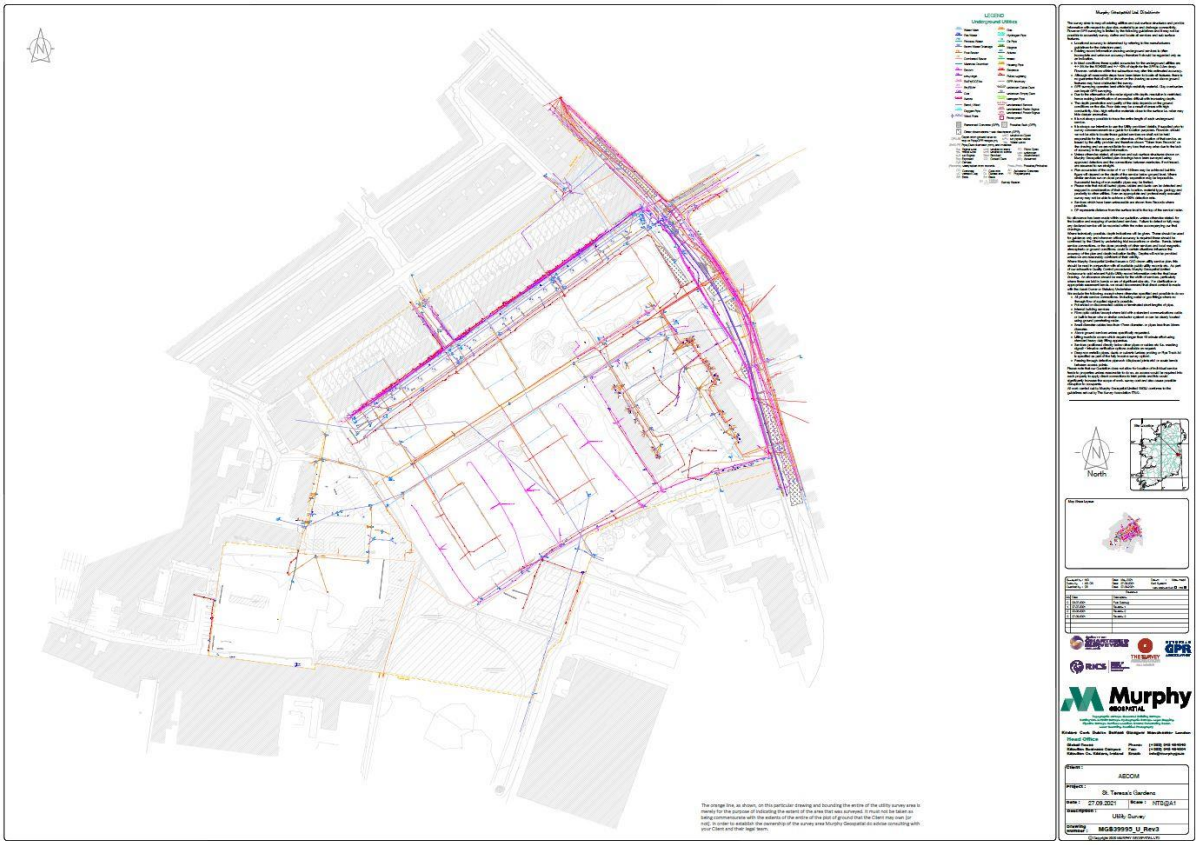

Figure 12-21: Murphy Geospatial (2022) Drawing MG39995_U_Rev3

12.2.3.5 Power Supply

12.2.3.5.1 Electricity Supply

The electricity supply grid infrastructure on the island of Ireland is owned and maintained by ESB Networks and operated on a day-to-day basis by EirGrid. The grid today comprises of two types of networks, transmission lines which carry very large amounts of electricity long distances connecting power stations to local transformer stations and local distribution grids which carry electricity from the transformer stations into individual consumers' premises. The distribution system delivers electricity from the transmission system to 2.3 million customers in Ireland, operating at 110kV in the Dublin area.

Underground electrical lines were identified by Murphy Geospatial (2022) on the site of the Proposed Development connecting to private properties, buildings and electrical boxes. Some electrical lines were shown on ESB records drawing but couldn't be located and verified on site during the survey. These have been noted by the surveyors and it is recommended to treat their location as indicative only. Public lightning cables were also identified within the survey area. Due to site works and ground condition it is possible that, according to records drawings, there are additional buried /removed public lightning cables inspection covers on the site.

12.2.3.5.2 Gas supply

Gas Networks Ireland (GNI) builds, develops, and operates Ireland's gas infrastructure, maintaining over 14,521 km of gas pipelines and two sub-sea interconnectors. GNI is

responsible for connecting all new gas customers to the network, and for work on service pipes and meters at customers' premises, on behalf of all gas suppliers in Ireland. Gas infrastructure is evident through the centre of and around the site boundary.

Murphy Geospatial note in their Utility Survey Report (2022) that due to the non-metallic nature of gas pipelines, no signal was detected of the gas pipes which are shown on GNI drawings crossing the survey area. No signal was also detected of the gas valves found within survey area. Gas pipes were identified based on GPR results however due to the signal being absorbed by the pipe material rather than reflected back to radar antenna, it was not possible to verify location of all the gas pipes in the survey area. The location of two gas pipes which were found in slit trenches dug as part of a previous project were shown in western section of the site. Sections of gas pipes are shown on records drawings but could not be located and verified on site. These have been noted by the surveyors and it is recommended to treat their location as indicative only.

12.2.3.6 Information and Communications Technology (ICT)

National Broadband Ireland was set up by the Irish Government to facilitate the roll out of fibre broadband across the Country. The Department of the Environment, Climate and Communications have developed an interactive map which details the progress of the rollout of the National Broadband Plan. The High-Speed Broadband map[9] identifies locations and premises as amber or blue and the map is updated on a quarterly basis. Amber areas depict target areas for the State intervention of the National Broadband Plan. Blue areas indicated that commercial operators have instated or are in the process of delivering high speed broadband services. The site of the Proposed Development is located within a blue area and high-speed broadband is available.

In terms of mobile telecommunication for transmission and reception, the closest mobile communications mast hosting Vodafone, Three and Eir antenna is located approximately 190m north of the site of the Proposed Development. Additional masts are located within a 250m radius of the site to the east and the west.

Murphy Geospatial identified Eir ducts with connections to private properties, poles, and building inside manholes on the site of the Proposed Development (Utility Survey Report, 2022). Eir records indicate presence of additional connections possibly buried in Eir manholes located in central area of the site. Virgin/UPC cables were found within survey area. Virgin records indicate additional connections where exposed Virgin cables were found but no signal was detected from the cables, and it is also possible that there are additional buried Virgin chambers onsite. Aurora ducts/cables were found in one manhole onsite however are there was no signal, these ducts/cables were unable to be traced across the site.

Chambers, ducts and cables which are shown on records drawings, but which could not be located and verified on site have been noted by the surveyors, and it is recommended to treat their location as indicative only (Murphy Geospatial, Utility Survey Report, 2022).

[9] https://www.gov.ie/en/publication/5634d-national-broadband-plan-map/#interactive-map

There was no evidence of BT or ENET cables found within survey area, and there is no BT or ENET network in the area according to the records drawings.

12.2.3.7 Local Hydrology and Hydrogeology

The site of the Proposed Development is located in the Liffey and Dublin Bay Catchment (Catchment I.D 09) and in the Dodder_SC_010 Sub-catchment (Sub-catchment I.D.09_16) (EPA, 2022). The site is located within Hydrometric Area 09 and within the Poddle_010 River Sub-basin (EPA, 2022). The EPA records a number of surface waterbodies located within 2km of the site which include the following:

- The Grand Canal Main Line (EU code: IE_09_AWB_GCMLE) is located approximately 0.27km to the south of the Site but does not have a hydraulic connection to the Site;
- The Camac River (EU Code: IE_EA_09C020500) is located approximately 1.1km north-west of the Site and flows in a northeast direction where it joins the Liffey Estuary Upper transitional waterbody. No direct connection can be identified from the Site to this waterbody;
- The Poddle Stream (EPA Code: 09P03) is located approximately 0.6km east of the Site and flows in a northwards direction where it joins the Liffey Estuary Upper transitional waterbody, which is located approximately 1.3km north of the Site. The River Poddle is culverted as it passes the site. This reduces the likelihood of there being a hydraulic pathway to the river via groundwater migration. A hydraulic connection is identified from the Site to this waterbody via the existing surface water drainage network at the Site; and
- The Liffey Estuary Upper transitional waterbody (EU Code: IE_EA_090_0400) is located approximately 1.3km north of the Site and is connected to the Liffey Estuary Lower transitional waterbody (EU Code: IE_EA_090_0300) and to the Dublin Bay coastal waterbody (EU Code: IE_EA_090_0000).

The bedrock aquifer beneath the site is within the Dublin GWB (EU Code: IE_EA_G_008). The Dublin GWB covers some 837km^2 and occupies an area across Co. Dublin, Co. Kildare, and Co. Meath (GSI, 2022).

The GSI description of the Dublin GWB identifies that the dominant recharge process in the Dublin City area will be from leaking sewers, mains and storm drains where the ground has been surfaced, while elsewhere recharge will occur via rainfall percolating through the subsoil. Due to generally low permeability of the aquifers within Dublin Urban GWB, a high proportion of the recharge will run off and discharge rapidly to surface watercourses via the upper layers of the aquifer (GSI, 2022). Dublin Urban GWB is at risk due to point and diffuse sources of pollution which are normally found in an urban environment such as contaminated land and leaking sewer networks (GSI, 2022).

The GSI (Dublin GWB Report) identifies that the general groundwater flow direction in the aquifer is towards the coast and also towards the River Liffey and Dublin City. This aquifer is not expected to maintain regional groundwater flow paths. Groundwater circulation from recharge to discharge points will more commonly take place over a distance of less than a kilometre. The majority of groundwater flow will be a rapid flow into upper weathered zone but flow in conduits is commonly recorded at depths of 30 to 50 metres below ground level.

12.2.3.8 On-site Surface Water Drainage

The regional topography generally slopes towards the north and to the east around the site of the Proposed Development. A surface water (SW) drainage network has been identified within the site of the Proposed Development which collects SW from gullies and private properties and discharges to a public SW culvert located on Donore Avenue. Murphy Geospatial (2022) Utility Survey Report identified SW pipes inside several manholes and gullies onsite, with sections joining to combined sewer networks. Due to some pipes being blocked, some storm water network routes and connections could not be fully traced. Murphy Geospatial have recommended that IW records should be confirmed with further investigation, such as a CCTV survey of the pipelines. The existing surface water (SW) drainage network at the site is comprised of the following pipelines:

- A 150mm connection directs SW from lands located to the south-west of the site (previously the Bailey-Gibson warehouse) through the site to a 300mm SW sewer located in lands west of the site before discharging to a 1m stormwater culvert located to the north of the site on Donore Avenue.
- The remains of a 1,030mm SW concrete culvert was identified in the northern portion of the site which flows to a storage a surface water network located to the west of the site which is then directed to a 450mm sewer located adjoining the eastern site boundary.
- The 450mm sewer directs water towards the north, however, the outfall location for this requires further investigation.

As existing SW drainage traverses the proposed buildings, diversion of these networks through and around the site will be required to connect this to the proposed SW drainage network as detailed in the Infrastructure Report (AECOM, 2022)

12.2.3.9 Water Supply and Demand

Water main pipes/valves have been identified inside manholes at the site of the Proposed Development, but no signal was detected from these pipes. No signal was also detected from sluice valves, water meters and hydrants located within survey area. Due to lack of the signal and GPR results being not fully conclusive, it was not possible to verify location of all water main pipes in this area and some sections of the water main network were marked on the drawing with ‘records’ or ‘assumed’ notes. It is recommended to treat their location as indicative only (Murphy Geospatial, 2022, Utility Survey Report)

12.2.3.10 Wastewater management

During the Utility Survey, foul sewer pipes were identified inside manholes within the site of the Proposed Development collecting effluent from surrounding buildings and private properties and discharging to manholes offsite on the main road (Murphy Geospatial, 2022, Utility Survey Report). The existing foul drainage network at the site of the Proposed Development comprises a 225mm combined sewer, which currently collects wastewater from The Coombe Women and Infants University Hospital lands located west of the site and discharges to an existing 1,020mm combined sewer on Donore Avenue (refer to Figure 12-17) (AECOM, Infrastructure Report, 2022). Foul water from the site is ultimately discharged via mains sewer to Ringsend Wastewater Treatment Plant (WWTP) and the treated effluent from the WWTP is discharged to Dublin Bay.

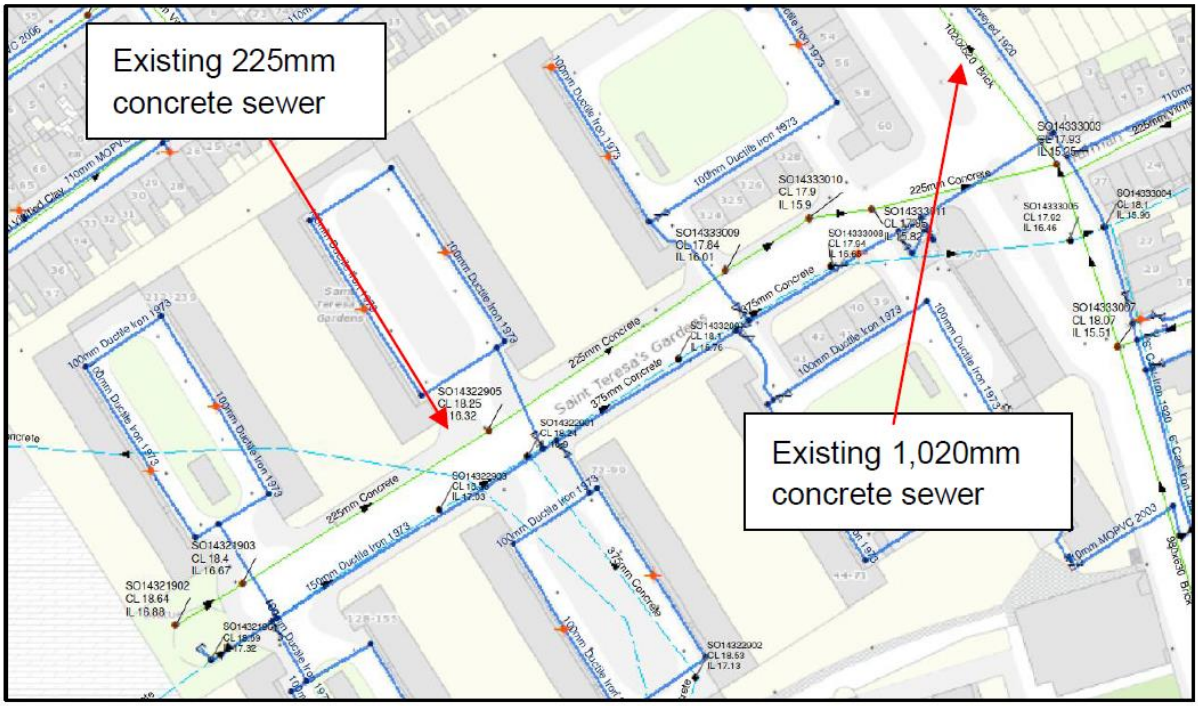

Figure 12-22: Irish Water Records Map with Existing Foul Sewers (Source: AECOM, 2022 Infrastructure Report)

12.2.3.11 Waste Management

The Eastern-Midlands Region (EMR) Waste Management Plan 2015-2021 provides the structure for the prevention, reduction and management of waste in 12 local authority areas, including Co. Dublin and Dublin City Centre. Dublin City Council (DCC) is the local authority responsible for setting and administering waste management activities in the area of the Proposed Development. The EMR hosts a number of permitted and licensed waste facilities for management of construction and demolition (C&D) waste and municipal waste. These include soil recovery facilities, material recovery facilities, inert C&D waste facilities, hazardous waste treatment facilities, waste transfer stations, two waste-to-energy facilities and municipal waste landfills.

The site of the Proposed Development is currently a brownfield site and has no waste management systems in place at present, however, the site is well located in regard to accessible waste management infrastructure for future residents. Within an approximate 1km radius of the site of the Proposed Development there are 4 no. Bring Banks, 1 no. Civic Amenity/Recycling Centre (DCC Bring Centre, Eamonn Ceannt Park, Rutland Grove, Crumlin, Dublin 12 is located approximately 800m south of the Proposed Development), 2 no. WEEE Recycling Points and 2 no. Lightbulb Drop-off Points (refer to Figure 12-18).

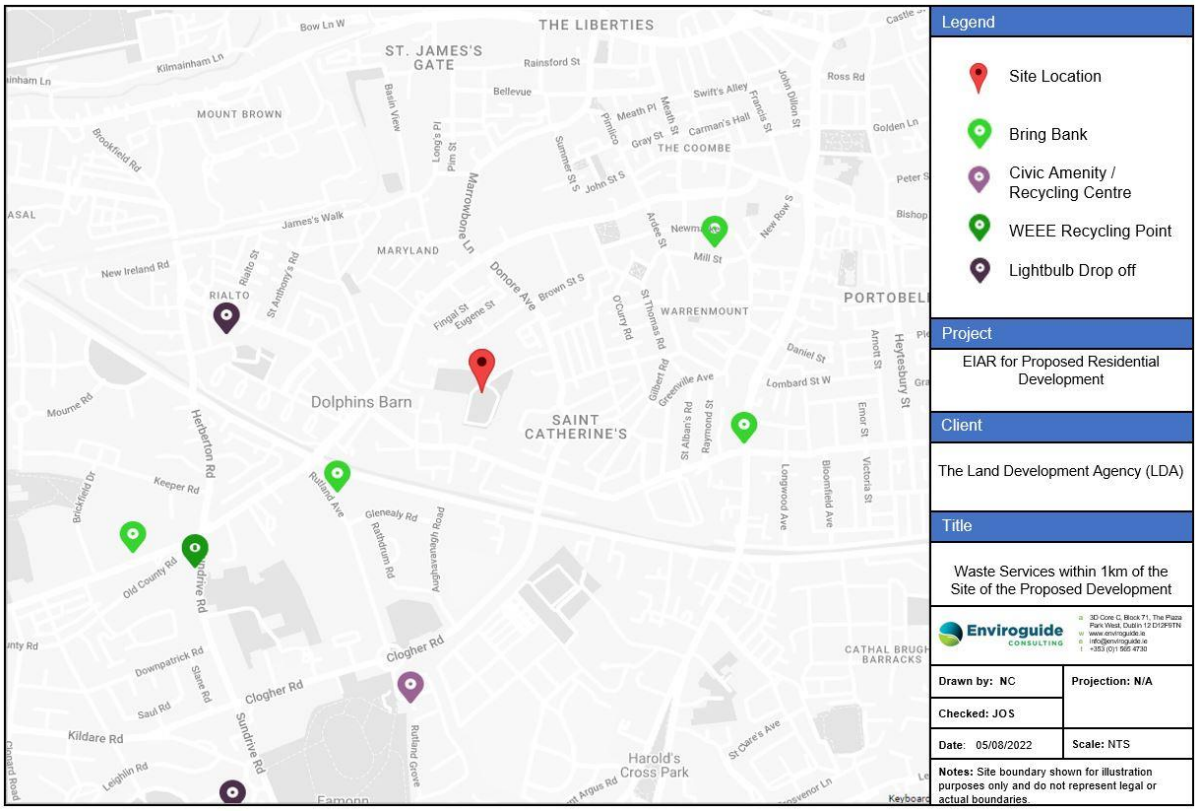

Figure 12-23: Waste Services within 1km of the Site of the Proposed Development (Source: https://www.mywaste.ie/waste-service-locator/)

12.2.4 Characteristics of the Proposed Development

The Proposed Development will consist of the construction of a residential scheme of 543 no. apartments on an overall site of 3.26 ha (GFA of c. 53,227 sqm) containing the following mix of apartments:

- 225 No. 1 bedroom apartments (36 no. 1-person & 189 no. 2-person)
- 274 No. 2 bedroom apartments (including 52 No. 2 bed 3 person apartments and 222 No. 2 bed 4 person apartments)
- 44 No. 3 bedroom 5-person apartments
- A retail/café unit (168 sq.m.), mobility hub (52 sq.m.) and 952 sq.m. of community, artist workspace, arts and cultural space, including a creche, set out in 4 No. blocks.

The breakdown of each block will contain the following apartments:

- Block DCC1 comprises 111 No. apartments in a block of 6-7 storeys;
- Block DCC 3 comprises 247 No. apartments in a block of 6-15 storeys;
- Block DCC5 comprises 132 No. apartments in a block of 2-7 storeys;
- Block DCC6 comprises 53 No. apartments in a block of 7 storeys;

The Proposed Development will also provide for public open space of 3,408 sqm, communal amenity space of 4,417 sqm and an outdoor play space associated with the creche. Provision of private open space in the form of balconies or terraces is provided to all individual apartments.

The Proposed Development will provide 906 no. residential bicycle parking spaces which are located within secure bicycle stores. 5% of these are over-sized spaces which are for large bicycles, cargo bicycles and other non-standard bicycles. In addition, 138 spaces for visitors are distributed throughout the site.

A total of 79 no. car parking spaces are provided at undercroft level. Six of these are mobility impaired spaces (2 in each of DCC1, DCC3 & DCC5). 50% of standard spaces will be EV fitted. Up to 30 of the spaces will be reserved for car sharing (resident use only). A further 15 no. on-street spaces are proposed consisting of:

- 1 no. accessible bay (between DCC5 & DCC6)
- 1 no. short stay bay (between DCC5 & DCC6)
- 1 no. crèche set-down / loading bay (between DCC5 & DCC6)
- 1 no. set-down / loading bay (northern side of DCC5)
- 1 no. set-down/loading bay (northern side of DCC 3)
- 10 no. short stay spaces (north-east of DCC1)

In addition, 4 no. motorcycle spaces are also to be provided.

Vehicular, pedestrian and cyclist access routes are provided from a new entrance to the north-west from Margaret Kennedy Road. Provision for further vehicular, pedestrian and cyclist access points have been made to facilitate connections to the planned residential schemes on the Bailey Gibson & Player Wills sites for which there are extant permissions (Ref. No.'s ABP-307221-20 & ABP-308917-20).

The development will also provide for all associated ancillary site development infrastructure including site clearance & demolition of boundary wall along Margaret Kennedy Road and playing pitch on eastern side of site and associated fencing/lighting, the construction of foundations, ESB substations, switch room, water tank rooms, storage room, meter room, sprinkler tank room, comms room, bin storage, bicycle stores, green roofs, hard and soft landscaping, play equipment, boundary walls, attenuation area and all associated works and infrastructure to facilitate the development including connection to foul and surface water drainage and water supply.

12.2.4.1 Construction Phase

The Construction Phase for the Proposed Development will take place over a 35-month period, which will include site clearance and construction activities. A Construction and Environmental Management Plan (CEMP) has been prepared for the Proposed Development by Enviroguide Consulting (2022) and has been submitted with this application. The CEMP sets out the provisions for the Construction Phase of the Proposed Development.

There are a number of potential effects that may arise during the Construction Phase, which are subject to assessment in the relevant chapters of the EIAR and related application documentation. The CEMP includes a series of measures which will ensure that the potential effects from the Construction Phase are addressed. This list is non-exhaustive, but covers the major issues which are considered in the CEMP:

1. Traffic Management
2. Road Cleaning
3. Working Hours

4. Construction Methodology
5. Noise and Vibration
6. Sediment and Water Pollution Control Plan
7. Biodiversity Protection Measures
8. Surface Water Drainage Works

Construction activities will take place in two main phases. Phase 1 comprises the construction of apartment blocks DCC3, DCC5 and DCC6. During Phase 1, site drainage will be installed during the enabling works and temporary construction haul roads will also be constructed. Phase 2 comprises the balance of the housing in block DCC1.

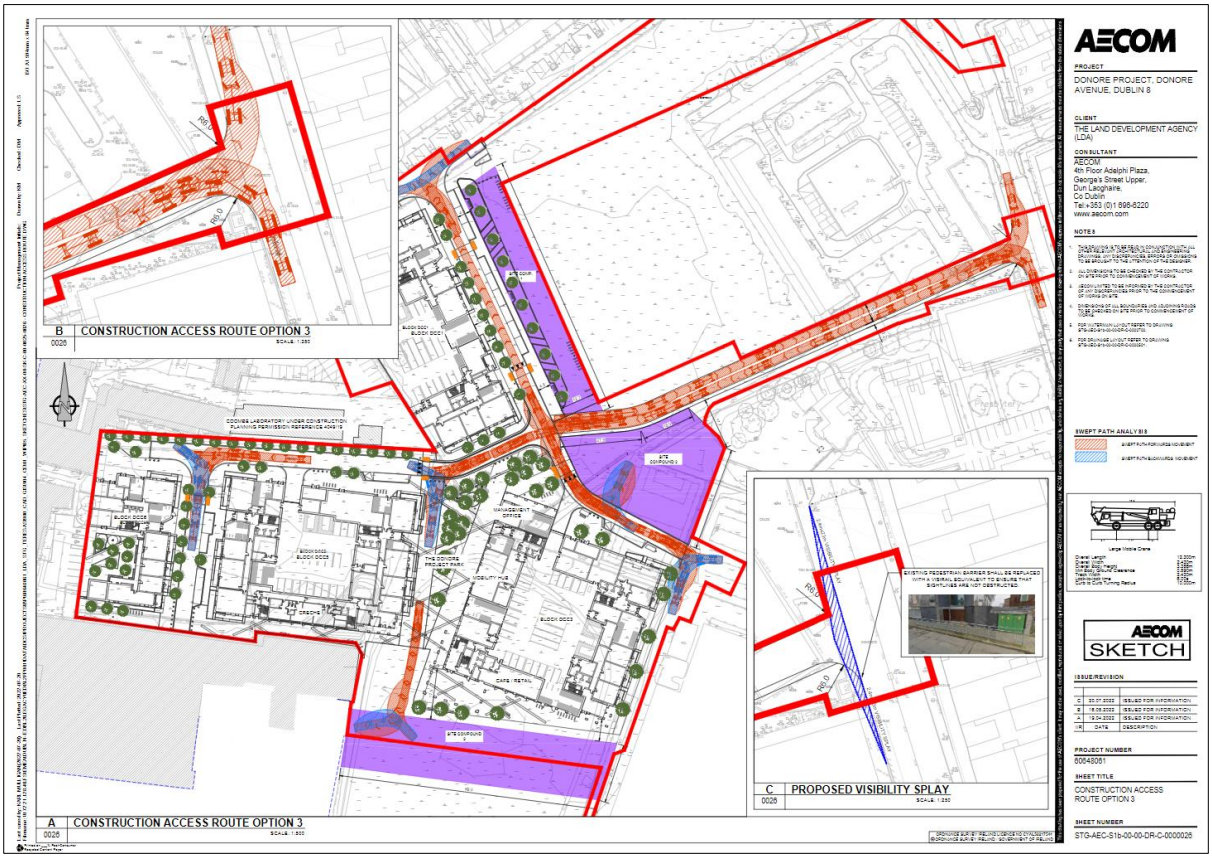

Figure 12-24: Construction Haul Routes

The construction methodology that will be utilised on the site of the Proposed Development will have four main attributes to minimise the impact of the Construction Phase:

1. Protection of Adjacent Areas
2. Excavation and Rock Breaking
3. Material Hoisting
4. Waste Management

12.2.4.1.1 Health and Safety

The Proposed Development will comply with all relevant Health and Safety legislation and best practice during the construction phase. Where possible potential risks have been omitted from the design so that the impact on the Construction Phase is reduced. The CEMP addresses these issues in greater detail.

12.2.4.1.2 Site Access

The site will be accessed from Donore Avenue to the north. A temporary haul road during the period of construction will be taken directly from Donore Avenue to the northeast of the site at a point next to the Donore Community Centre.

12.2.4.2 Operational Phase

The Proposed Development will comprise residential and commercial use consistent with the permitted land use zoning for the area, Z14. The Operational Phase of the Proposed Development will consist of the normal day-to-day operations necessary for the management of a predominantly residential development, and the ongoing maintenance of the residential dwellings, retail unit, creche and public outdoor areas.

12.2.5 Potential Impact of the Proposed Development

This section assesses the potential impact of the Proposed Development on the Material Assets of the study area. It is intended that a centralised heating system serve the Proposed Development with the primary plant being housed within Block DCC5 plantroom. It should be noted that a central management company will be required to manage the centralised heating scheme.

12.2.5.1 Power Supply

12.2.5.1.1 Construction Phase

A Mechanical & Electrical Planning Application Report (hereafter referred to as the "M&E Report") (AECOM, 2022) has been prepared for the Proposed Development, which provides details on the mechanical and electrical services that will be installed at the Proposed Development.

Construction related activities will require temporary connection to the local electrical supply network. The Main Contractor will apply for a power supply from ESB Networks to power both the construction compound and the construction site. The size of supply will be calculated to ensure it is sufficient to power both the site compounds and construction site activities. Temporary diesel generators will also be used on site during the Construction Phase.

It is provisionally proposed, subject to ESB approval, that the ESB standard substations will be located as follows:

- DCC 1 – 1 no. single 1000kVA Tx substation
- DCC 3 – 1 no. double 1000kVA Tx substation
- DCC 5 – 1 no. double 1000kVA Tx substation
- DCC 6 – 1 no. single 1000kVA Tx substation

The substations capacity includes the provision of Electrical Vehicle Charger requirements.

Figure 12-25: Existing & Proposed ESB Network (Source: AECOM, 2022, Mechanical & Electrical Planning Application Report)

Connecting a new multi-unit housing development to the electricity distribution system must be carried out in accordance with ESB Networks' specifications, and in particular with the guidance provided in the documents ESB Networks National Code of Practice for the Customer Interface Version 5 (2021) and ESB Networks Construction Standards for MV Substation Buildings (2019). The developer must undertake the preparatory work such as installation of ducting and provision of substation plinth or building. Once the preparation work has been completed to a satisfactory standard, ESB Networks will commence installation of the electricity cabling/lines and any other necessary equipment. A temporary suspension of the network locally to facilitate the connection works may be required during the Construction Phase, and an additional temporary suspension will also occur when power is provided to the Site of the Proposed Development. These temporary suspensions will be controlled by ESB Networks as the statutory undertaker and in accordance with standard protocols.

Connecting a new multi-unit housing development to the gas network system must be carried out in accordance with Gas Networks Ireland's specifications. The developer must employ the services of a registered mechanical installer or plumber and select and register with a natural gas supplier. A temporary suspension of the network locally to facilitate the connection works may be required during the Construction Phase. These temporary suspensions will be controlled by Gas Networks Ireland as the statutory undertaker and in accordance with standard protocols.

As part of the early development works and in conjunction with Gas Networks Ireland, a new gas service will be connected to the main line passing through the site to serve the centralised heating system plantroom within Block DCC5. The existing GNI service passing through the site will need to be adapted and modified as required.

The likely effect of the potential impact of the Construction Phase of the Proposed Development on the local electrical supply network and on the local gas supply network will be temporary, slight, and negative to neutral, depending on the length of temporary network suspensions.

12.2.5.1.2 Operational Phase

Electricity will be required to provide public lighting, domestic lighting, power supply and heating for each individual unit for the Proposed Development. All public and amenity lighting will use low energy LED light fittings and be installed in line with DCC specifications. LED light fittings with presence-detection will also be used throughout circulation areas and will be locally controlled in apartments. Electric car charging facilities will be provided in the car park in line with Government policy.

Low Temperature Hot Water (LTHW) is to be generated by a centralised system incorporating Air to Water Heat Pumps and a Gas Fired Boiler System. The Air to Water Heat Pumps will operate as the lead heat generator producing LTHW at circa 50 degrees Celsius (ºC), which will be provided to each apartment to distribute heat for space heating and domestic hot water generation. The gas fired boiler will be used to raise the water temperature to circa 70ºC for circulation to each residential unit. The use of natural gas to in dwellings is very common in urban housing developments due to its convenience. High efficiency gas fired condensing boilers convert gas to heat energy with an efficiency of over 90%. A heat interface unit (HIU) will be provided in each apartment to distribute the LTHW and domestic hot water. Space heating will be provided via wall mounted radiators. The heat supplied to each apartment and commercial unit will be metered and billed accordingly (M&E Report, AECOM, 2022). Although the centralised heating system will initially rely on fossil fuels, the centralised option offers the most opportunity for reducing energy use as new future energy upgrade technologies become available.

The Operational Phase of the Proposed Development will create a permanent increase in demand on the national electricity supply network and on the gas supply network. However, the likely effect of the potential impact from the Operational Phase on the power supply networks is likely to be neutral and not significant in the long term.

12.2.5.2 Information and Communications Technology (ICT)

12.2.5.2.1 Construction Phase

The Mechanical & Electrical Planning Application Report (AECOM, 2022) notes that existing EIR telecom ducts are located to the north of the Proposed Development (Block DCC 1), along Margaret Kennedy Road, and it is assumed the new network tie-in point with the EIR network will be along Margaret Kennedy Road. The query regarding network tie-in has been raised with EIR and the exact location is subject to further discussion with EIR. The existing Aurora Telecom Network are located to the northeast of the Proposed Development. The query regarding network tie-in has been raised with Aurora Telecom and the exact location is subject to further discussion with Aurora. A new arrangement of 2 no. 110mm EIR ducting network is

to be provided to the Proposed Development. Information provided by Virgin Media indicates that there is infrastructure within Margaret Kennedy Road, and it is assumed this will be the connection point for the Proposed Development, again, subject to further discussions with Virgin Media. Both EIR and Virgin Media ducting network will be provided to the Proposed Development so the option for provision of access to all providers is available to each household (AECOM, 2022).

If the aforementioned connections to the existing networks are not conducted in accordance with best practice, the Construction Phase of the Proposed Development has the potential to impact on local telecoms & ICT connectivity. However, due to the temporary and phased nature of the Construction Phase the effect of the potential impact of the Construction Phase on the local telecoms network is considered negative to neutral, slight and temporary.

12.2.5.2.2 Operational Phase

The impact of the Operational Phase of the Proposed Development on the telecoms network is likely to be a marginal increase in demand. As the site of the Proposed Development is well located within an area where high speed broadband is available from multiple providers, the effect of the impact from the Operational Phase on the telecoms network is likely to be neutral and not significant in the long term.

12.2.5.3 Local Hydrology and Hydrogeology

It is noted that specific issues relating to Hydrology associated with the Proposed Development are set out in Chapter 7 of this EIAR. There will be no abstraction required from surface water bodies or groundwater aquifers at the site of the Proposed Development during the Construction or Operational Phase, and there will be no direct discharges of untreated water to surface water or groundwater during the Construction or Operational Phase.

12.2.5.3.1 Construction Phase

The Groundwater Vulnerability at the Site of the Proposed Development is recorded by the Geological Survey Ireland (GSI) as Low (L) (GSI, 2022). “Groundwater Vulnerability” can be defined as the ease with which groundwater may be contaminated by human activities. The Water Framework Directive Status of ‘good’ has been assigned to the groundwater body of the Dublin Groundwater Body (GWB) and to the coastal water body of Dublin Bay however, the surface water bodies of the Poddle Stream and the Camac River in the vicinity of the site are ‘Poor’.

Surface water at the site currently either infiltrates the ground and enters the existing surface water drainage network discharging to the Poddle Stream at an outfall point located 0.65km north of the site or migrates offsite as overland flows onto the adjacent roads and into the existing public drainage network. Groundwater flow direction beneath the site is to the north-east towards the Liffey River and the Poddle Stream. The site is mostly unpaved and there will be excavated and stripped soil during the Construction Phase however there will overall be an increase in hardstand areas (buildings, paved surfaces) introduced to the site during the Operational Phase of the Proposed Development. This could impact on the recharge potential at the site, but this will be only a localised area of the aquifer. Taking account of the urban setting of the site, the presence of clayey strata in the overburden, the generally low permeability and limited capacity of the bedrock aquifer to accept recharge, there will be no overall impact on the groundwater recharge of the overall bedrock aquifer within the Dublin

GWB. Based on the available data, there will be no requirement for large-scale dewatering of groundwater across the entire site. There may be a requirement for localised dewatering during the construction of foundation excavations and installation of other subsurface structures. Overall, it is considered that any impact on the hydrogeological regime of the locally important aquifer is unavoidable and will be 'negative', 'imperceptible', 'temporary' ('long-term' during post construction/operational phase) within a very localised zone of the aquifer only and there will be no impact on the flow regime of receiving surface water bodies.

12.2.5.3.2 Operational Phase

A Site-Specific Flood Risk Assessment (SSFRA) (AECOM, 2022) was undertaken for the site of the Proposed Development. The SSFRA identified that as a result of the proposed flood risk management and mitigation measures and taking account of climate change, the residual risk of flooding for 100-year to 1000-year flood events is low (AECOM, SSFRA, 2022), hence the potential impact of flooding associated with the Proposed Development is likely to have a neutral, imperceptible and long-term effect on the Proposed Development and the study area.

The likely effect of the impact of the Operational Phase of the Proposed Development on the hydrogeological regime of the locally important aquifer is deemed to be negative and imperceptible in the long-term, but only within a very localised zone of the aquifer and there will be no impact on the flow regime of receiving surface water bodies.

12.2.5.4 Surface Water Drainage

A Site-Specific Hydrological Risk Assessment has been completed for the Proposed Development (Enviroguide Consulting, 2022). Additionally, specific details relating to the potential impacts of the Proposed Development on Surface Water Quality are set out in Chapter 7 of this EIAR.

12.2.5.4.1 Construction Phase

There are existing surface water (SW) pipelines traversing the site at the locations of Proposed Development, and it will be necessary to divert these SW pipelines. The SW pipeline which traverses the proposed Block DCC5 drains a portion of runoff from the existing Bailey Gibson warehouse. It is proposed to drain this portion of catchment into the proposed network, meaning this runoff will be attenuated. The attenuation tank proposed for the Proposed Development is designed to also account for future developments within SDRA 11. A diversion is also required for the 300mm SW pipeline which traverses the location of the proposed DCC1 Block. The proposed diversion will alter the route to flow north in The Coombe Women and Infants University Hospital car park (parallel to the DCC1 Block) before turning east below the existing boundary wall, into the proposed SW pipeline which enters the Margaret Kennedy Road, runs within the road for 10m, before running under the proposed footpath, crossing the proposed road and then running adjacent to road and ultimately discharging unattenuated to the same location in Donore Avenue as before (Refer to Figure 12-21).

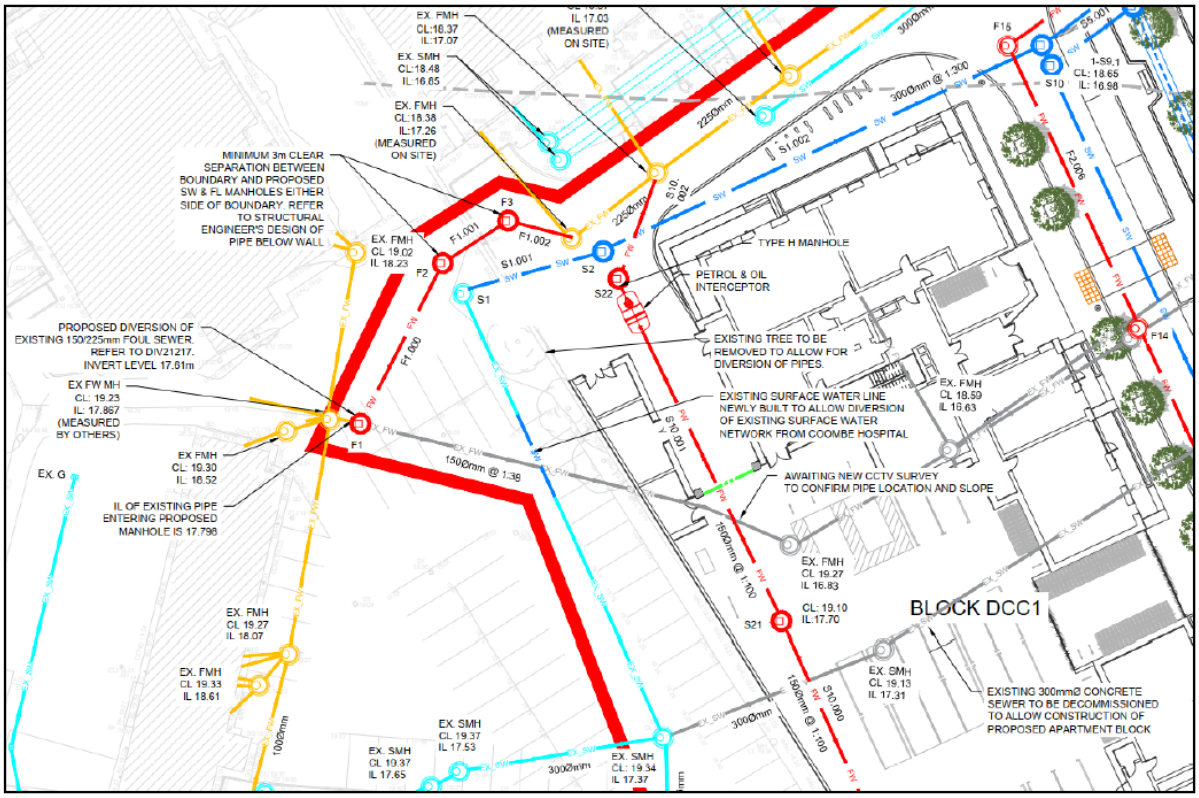

Figure 12-26: Proposed Wastewater and Surface Water Diversions (Source: AECOM Infrastructure Report 2022)

To allow the SW diversion to be completed, a foul diversion must be completed first. The existing foul water line will remain live until the full diversion has been constructed as far as the Margaret Kennedy Road. Control measures for potential emissions to SW, groundwater and soil are detailed in the Construction Environmental Management Plan (CEMP) (Enviroguide Consulting, 2022). Strict adherence to the surface water management strategies outlined in the CEMP for the Proposed Development and the implementation of the proposed mitigation measures for dust, fuels and chemicals, will result in a negative to neutral, not significant, temporary impact on the receiving surface water quality of the Poddle Stream.

12.2.5.4.2 Operational Phase

The SW management for the Proposed Development has been 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. As set out within the Infrastructure Report (AECOM, 2022), it is proposed to use a Sustainable Urban Drainage Systems (SUDS) approach to SW management throughout the site. The SUDS measures will include where appropriate: green roofs, permeable pavements, swales, porous asphalt and bio-retention / rain gardens. SW runoff from roofs and terraces will be directed through extensive and intensive green roofs and permeable paving before being directed to the proposed SW drainage network. SW from hardstanding paths and roadways at the site will be directed to rain gardens/bio-retention areas, porous asphalt, swales and land drains to allow for evapotranspiration to occur or will be filtered through the substrate before entering the

proposed SW drainage network. SW will be directed to a Class 1 petrol interceptor (or similar approved interceptor) located upstream of the proposed attenuation tank in the northern portion of the site. (SW runoff from the undercroft areas will be discharged via a Class 1 petrol interceptor to the foul drainage network, rather than the SW drainage network). Treated SW from the SW attenuation tank will be discharged to the to the existing 1.2m diameter SW main sewer located on Donore Avenue to the north-east of the site. SW from the site will ultimately be discharged at an outfall point at the Poddle Stream located approximately 0.65km north-east of the Proposed Development.

Given the design of the surface water management strategy for the Proposed Development and the implementation of SuDS features, it is considered that there be an overall neutral, imperceptible, long-term impact on the receiving surface water quality of the Poddle Stream when compared to the baseline conditions.

12.2.5.5 Water Supply and Demand

12.2.5.5.1 Construction Phase

Site offices and construction activities will create a demand for water supply to the site. A temporary connection is required to facilitate on-site works for all housing developments. Commencement of construction will result in a net increase in the water demand for the site of the Proposed Development. It is proposed to supply the site from watermains using a new 200mm connection to the existing 6-inch watermain located on Donore Avenue directly to the east of the Proposed Development site.

Irish Water (IW) issued a Confirmation of Feasibility (CoF) for the Proposed Development (COF Ref:CDS21000854 dated 8th June 2022; refer to AECOM, Infrastructure Report, 2022). Within the CoF, IW have confirmed that connection to the existing mains water supply network is feasible subject to upgrades of the existing infrastructure. Some local diversions may be required to water supplies to accommodate the construction works which may require temporary outages. Additionally, new connection works have the potential to cause water supply disruptions during the Construction Phase. The water supply infrastructure at the Proposed Development will be designed and constructed in accordance with current IW Code of Practice for Water Infrastructure, and disruptions to neighbouring supplies will be controlled by IW and DCC in accordance with standard protocols. Due to the nature of the works during the Construction Phase, the likely effect will be negative, not significant and temporary.

12.2.5.5.2 Operational Phase

During the Operational Phase of the Proposed Development there will be an increase in demand for water from the public water supply. The mains water supply is operated in accordance with relevant existing statutory consents. A centralised domestic cold-water storage and distribution system has been identified as the preferred option for the Proposed Development and all plant and riser space has been planned for the purpose of installing centralised storage and distribution systems (AECOM, M&E Report, 2022). The basis of the calculations for the water demand for the Proposed Development are set out in the Infrastructure Report (AECOM, 2022), and are calculated as per Section 3.7.2 of the Irish Water Code of Practice for Water Infrastructure and are summarised in Figure 12-22.

Use	Proposed (units or sqm.)	Associated Population	Average Water Demand (l/s)	Peak Demand (l/s)
Residential	543 units	1466	2.55	15.91
Creche	851 m^2	160	0.11	0.69
Retail units	348 m^2	20	0.01	0.109

Figure 12-27: Estimated Water Demand during the Operational Phase of the Proposed Development (Source: AECOM Infrastructure Report 2022)

IW have confirmed that, based on a desk top analysis of the capacity currently available in the network(s) as assessed by IW, the proposed demand can be facilitated. Excess usage is the consumption of water services above the threshold amount stipulated in the Water Services Act (2017). Water use above the annual household allowance (213m^3) is considered to be excessive use and IW customers may be liable for charges on the amount above this level.

In accordance with best practice, water conservation appliances will be incorporated as part of the Proposed Development to reduce the water demand, including devices such as water saving tap valves, eco-flush toilet system and A-rated water saving appliances. The likely effect of the increase in mains water demand will be neutral, not significant, and long-term on mains water supply.

12.2.5.6 Wastewater management

12.2.5.6.1 Construction Phase

A temporary connection is required to facilitate on-site works for all housing developments. Commencement of construction will therefore result in a net increase in the wastewater produced at the Site of the Proposed Development. It will be the Main Contractor's responsibility to apply to Irish Water (IW) for connections to the foul water drains to service the site toilets and canteen facilities during the Construction Phase.

The existing foul sewer within The Coombe Women and Infants University Hospital lands will be diverted into the 225 mm foul sewer of the development recently constructed by DCC on Margaret Kennedy Road. The existing foul water line will remain live until the full SW pipeline diversion has been constructed as far as the Margaret Kennedy Road. IW issued a Diversion Confirmation of Feasibility (DIV21217) on 31st March 2022. A Confirmation of Feasibility received from IW (COF Ref: CDS21000854 dated the 1st October 2021) confirms that the proposed wastewater connections are feasible but specify that discharge from the site will be required to limited at peak discharges to 2 Dry Weather Flow (DWF) by a throttle.

Private foul water drainage is to be in accordance with the IW Code of Practice for Wastewater Infrastructure (2020) which requires individual connections to each dwelling. Foul water sewer connections will be constructed strictly in accordance with IW requirements and all drains will be laid to comply with the requirements of the latest Building Regulations, and in accordance with the recommendations contained in the Technical Guidance Document H. The new connection works may cause disruptions to the foul water network during the Construction Phase. These disruptions will be controlled by IW and DCC in accordance with standard protocols. Due to the nature of the works during the Construction Phase, the likely effect will be negative to neutral, non-significant and temporary.

12.2.5.6.2 Operational Phase

New foul drainage will be constructed at the site to service the Proposed Development. The proposed foul drainage comprises foul water connections from the residential apartments, commercial spaces and undercroft car parking to the existing 1,020mm culvert located north of the site on Donore avenue (AECOM Drawing reference: STG-AEC-S1b-00-00-DRC-0000500). SW runoff from the undercroft areas beneath each of Blocks DCC1, DCC3 and DCC5 will also be discharged via a Class 1 interceptor (or similar approved) to the new foul drainage network onsite. The basis of the calculations for the wastewater discharge from the Proposed Development are set out in the Infrastructure Report (AECOM, 2022), and are calculated as per Section 3.7.2 of the Irish Water Code of Practice for Water Infrastructure and are summarised in Figure 12-23.

Use	Proposed (units or sqm.)	Associated Population	Foul Discharge (l/s)	Peak Flow (l/s)
Residential	543 units	1466	2.80	8.40
Creche	851 m^2	160	0.31	1.38
Retail units	348 m^2	20	0.04	0.18

Figure 12-28: Estimated Wastewater Discharge during the Operational Phase of the Proposed Development (Source: AECOM Infrastructure Report 2022).

Foul drainage from the Proposed Development site during the Operational Phase will ultimately discharge via the Irish Water network to Ringsend WWTP (Wastewater Discharge Licence ref.: D0034-01) (GSI, 2022). The increase in wastewater being discharged to the public sewer will have a neutral, non-significant, and long-term impact on the capacity of the public sewer and on Ringsend WWTP.

12.2.5.7 Waste Management

12.2.5.7.1 Construction Phase

The majority of waste arising during the Construction Phase will comprise soil and stone materials associated with the excavation works required for foundations and connections to utilities and services. There will be demolition waste associated with the demolition of boundary wall along Margaret Kennedy Road and playing pitch and associated fencing/lighting. A member of the construction team will be appointed as the Waste Manager to ensure commitment, operational efficiency and accountability during the Construction Phase of the Proposed Development site clearance and the construction of foundations.

The waste streams that will be generated by Construction and Demolition (C&D) activities are as follows:

- Demolition waste from the demolition activities
- Topsoil and subsoil
- Packaging and general waste from construction activities
- General site clearance waste including vegetation
- Municipal waste generated by workers

These wastes are as defined in the Construction and Demolition Waste Management Plan (CDWMP) (AECOM, 2022), which is submitted as a separate document with this planning

application. All waste generated during the Construction Phase will be segregated onsite to enable ease in re-use and recycling, wherever appropriate. Material will be segregated on-site for the appropriate waste stream and disposal destination. The Waste Manager or appointed delegate will ensure waste streams are adequately identified. The segregation and management of waste storage and stockpiling will be routinely inspected and audited by the Waste Officer. In general, the priority of the CDWMP will be to promote waste prevention, recycling, reuse and recovery of waste and diversion from landfill wherever possible. This will be also managed in accordance with the principles set out in the CEMP (Enviroguide Consulting, 2022).

After in-situ reuse and recycling options have been fully considered, all residual waste streams will be collected by appropriately authorised waste collection contractors and will be managed using suitably permitted/licensed waste disposal or materials recovery facilities.

The excavation of soil and subsoils will be required to an anticipated maximum depth of 1.2mbGL at the Proposed Development. It is currently estimated within the CDWMP that, in total, there will be 19,209m^3 of excavated material from the Proposed Development (AECOM, 2022). It is anticipated that the excavated soils will be reused where deemed appropriate for landscaping and fill purposes at the Proposed Development, thereby preventing the requirement for the exportation of soils from the site. Surplus soil and stone, which requires removal off-site, will be treated as a byproduct or removed from the site by an appropriately permitted waste collector. The removal of the soil and stone will occur on a phased basis thereby reducing any potential effects on the surrounding road network. All soil and stone to be treated of offsite will be transported by an appropriately permitted waste collector to an appropriately permitted/licensed waste treatment facility.

Due to the use of permitted/licensed waste collection/waste management facilities, it is not predicted that the production of waste will cause any likely significant effects on the environment.

12.2.5.7.2 Operational Phase

AECOM have prepared an Operational Waste Management & Recycling Strategy (OWMRS) (2022) for the Proposed Development. The OWMRS contains full details of the types and quantities of waste that may arise at the Proposed Development. The predicted waste types that will be generated at the residential dwellings in the Proposed Development include the following:

- Mixed Municipal Waste (MSW) / General Waste
- Dry Mixed Recyclables (DMR) - includes cardboard, plastic packaging, aluminium cans, tins, paper, and Tetra Pak cartons
- Organic (food) waste, and
- Glass – bottles and jars.

In addition to the typical waste materials that will be generated on a daily basis, there will be some additional waste types generated in small quantities that will need to be managed separately including:

- Bulky wastes – including furniture, carpets, mattresses
- Waste electrical and electronic equipment (WEEE)
- Batteries

- Textiles – clothes or soft furnishings
- Light bulbs or fluorescent tubes
- Chemicals – old medicines, paints, detergents, and
- Waste oil.

The creche, retail/café unit and the community area will generate similar waste types with some additional commercial office type wastes such as office paper and printer ink cartridges. Additional food waste streams will also arise from the creche and retail/café unit, while additional sanitary and health care related waste streams will arise from the creche.

The List of Waste (LoW) code (previously referred to as European Waste Code or EWC) for typical waste materials expected to be generated during the operation of the Proposed Development are provided in Table 12-17.

Table 12-22: Expected Waste Types and List of Waste Codes

Waste Description	List of Waste Code
Mixed Municipal Waste	20 03 01
Mixed Dry Recyclables	20 03 01
Biodegradable Kitchen Waste	20 01 08
Glass	20 01 02
Bulky wastes	20 03 07
Waste electrical and electronic equipment*	20 01 35* 21 01 36
Batteries and accumulators*	20 01 33* 20 01 34
Textiles	20 01 11
Fluorescent tubes and other mercury containing waste*	20 01 21
Chemicals (solvents, pesticides, paints & adhesives, detergents, etc.)*	20 01 13/19/27-28/29-30
Plastic	20 01 39
Metals	20 01 40
Paper and Cardboard	20 01 01

**Individual waste type may contain hazardous materials*

The waste storage capacity requirements for the Proposed Development been calculated in the OWMRS, based on the number of units and the number of bedrooms in each unit. The OWMRS notes that each residential block has been divided into core areas (D1a-D1b, D3a-D3d, D5a-D5b and D6a) and each core area will be provided with individual residential bin stores (totalling 9 bin stores) for mixed dry recyclables (MDR), residual wastes, glass waste and food waste at ground level. With waste collections occurring on a weekly basis, it is anticipated that 71 no.1,100L bins and 60 no. 240L bins (or equivalent) will be required in the

waste storage areas – 32 no. 1,100L bins for residual waste, 39 no. 1,100L bins for MDR, 39 no. 240L bin for food waste and 21 no. 240L bin for glass.

On this basis, the bin storage capacity comfortably allows for weekly collections and leaves adequate contingency to increase collection frequency should that be required during unusually high-volume periods, such as Christmas. All collections must take place in compliance with conditions of the waste contractor's Waste Collection Permit for the region and in line with the Local Authority by-laws and the Waste Management (Waste Collection Permit) Regulations 2007 as amended. All residents are obliged by law to avail of the waste management service and must comply with local By-Laws and Statutory Instruments in relation to the presentation of waste for collection. Waste collections for a three-bin system service will be available from the time of first occupancy (i.e., even if all dwellings are not occupied).

It will be the responsibility of the residents to bring their segregated waste to the bin compound and place into the appropriately labelled bins. Each bin will be clearly labelled to identify what wastes can and cannot be placed in the bin and labels will be pictorial. The route to the bin compound area and the area itself will be wheelchair accessible, adequately lit and appropriately ventilated.

Each block DCC1, DCC3, DCC5 and DCC6 will have designated bin presentation areas (4 bin presentation areas in total). The bins will be moved to and from the bin presentation areas by the building management team to facilitate the weekly collections, using a tug. Bins will only be stored temporarily in these locations prior to each collection. Space allocation for bin presentation areas assumes collections on a weekly basis, but on separate days: MDR and glass bins one day, with residual and food bins on another day. Bin presentation areas will be located in close proximity to service roads to allow easy access for Refuse Collection Vehicles (RCVs) and kerbs will be lowered appropriately to allow ease of movement between bin storage areas and the RCVs (AECOM, OWMRS, 2022).

Residents will be required to suitably store other waste materials that may be generated infrequently (such as bulky waste, textiles, printer toner/cartridges, WEEE, batteries and other household hazardous wastes) within their own dwellings and dispose of them appropriately at bring centres or civic amenity facilities. DCC Bring Centre is located approximately 800m south of the Proposed Development and multiple bring banks are available within a 1km radius of the site. All occupants will be supplied with information by the Management Company on the location of recycling facilities in the area.

The calculation for typical weekly waste arisings and subsequent storage requirements for commercial units is as follows:

Volume Per M^2 Of Sales Area [10 L] × Sales Area

Based on weekly waste collections, it is anticipated that 4 no. 1,100L bins, 4 no. 660L bins and5 no. 240L bins (or equivalent) will be required in the waste storage areas as detailed in Table 12-18. The frequency of bin collections can be increased as required, and individual bin requirements can be adjusted once the overall bin capacity is met at a minimum.

Table 12-23: Breakdown of Bin Numbers & Capacity for Weekly Collections (Commercial Units)

		Food Waste	Glass	Dry Mixed Recyclables		Municipal Waste	
Description	**M^2**	**No. of 240L Bins**	**No. of 240L Bins**	**No. of 1100L Bins**	**No. of 660L Bins**	**No. of 1100L Bins**	**No. of 660L Bins**
Creche	724	0	1	2	0	2	0
Retail	143	2	1	0	1	0	1
Residential Amenity	154	0	1	0	1	0	1

By implementing the actions outlined in the OWMRS, a high level of recycling, reuse and recovery will be achieved at the development in line with European targets. The source segregation of waste types as detailed in the OWMRS will also help to achieve the targets set out in the Eastern-Midlands Region Waste Management Plan 2015-2021. The Eastern-Midlands Region Waste Management Plan 2015 – 2021 is the framework for the prevention and management of wastes in a safe and sustainable manner. The current regional waste management plans will be replaced by the National Waste Management Plan for a Circular Economy (NWMPCE), which is currently in the consultation/ drafting stage, in line with the policy set out in the Waste Action Plan for a Circular Economy.

Additionally, the design of the waste storage area will meet the requirements as detailed in the Department of Housing, Local Government and Heritage's 2021 publication, Sustainable Urban Housing, Design Standards for New Apartments.

In the absence of mitigation, the potential impact from the Operational Phase on municipal waste disposal is likely to be long term, negative and moderate.

12.2.5.8 Potential Cumulative Impacts

Cumulative Impacts can be defined as "*impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project*". Effects which are caused by the interaction of effects, or by associated or off-site projects, are classed as indirect effects. Cumulative effects are often indirect, arising from the accumulation of different effects that are individually minor. Such effects are not caused or controlled by the project developer.

A review of other off-site developments and permitted developments was completed as part of this assessment. The following projects and plans were reviewed and considered for possible cumulative effects with the Proposed Development.

Table 12-19 details the existing, proposed and granted planning permissions on record in the area which have been considered for potential cumulative impacts with the Proposed Development. The Proposed Development will increase the impact on the existing Material Assets. Having regard to other permitted developments in the area, which are either under construction or where construction has not yet commenced, there is potential for greater impact arising from the demand of additional population living in the area.

Table 12-24: Adjacent Permitted Planning Applications

Planning Ref No.	Applicant Name	Summary of Development
3537/21	Coombe Lying-in Hospital	Planning permission for development at the Coombe Women and Infants University Hospital, Dolphin's Barn Street, Dublin 8, D08 XW7X on a 0.15 hectare site to the south-east of the hospital site, such site also including the existing Colposcopy building. The development for which planning permission is sought comprises of the development of a new dedicated Colposcopy/Women's Health Unit building of 3 no. storeys plus rooftop plant room which will be attached to the existing Colposcopy building to the west by way of glazed link. The development will include the partial demolition of the eastern meeting room and lobby area wing to the existing Colposcopy building to facilitate the connection to the new building. The proposed building comprises of a 988 sq.m gross floor area building. The building will comprise of: (i) at ground floor level; a waiting area, 2 wc's (1 accessible), 1 plant room, 1 meeting room, 3 gynaecology examination rooms (with associated changing rooms), 1 utility room, a waste room, an early pregnancy assessment unit with dedicated entrance, 2 assessment rooms, reflection room, 1 wc, and an office/reception; (ii) at first floor; a waiting area, a check in room, a supplies store, 2 wc's (1 accessible), 4 colposcopy examination rooms and with associated changing and consultation areas, a utility and a waste room; (iii) at second floor; a meeting room, 2 staff changing rooms (1 accessible with shower and wc), a wc, a staff canteen, a photocopier room and 4 staff office rooms. The proposed Colposcopy building will involve the loss of 10 existing parking spaces, at the south- eastern corner of the hospital site. 2 number accessible car parking spaces will be provided to the south of the proposed extension. Planning permission is also sought for site drainage, a glazed link to the existing Colposcopy building, site landscaping works, and all other associated and ancillary works. Access is via the main hospital campus which is accessed from Dolphin's Barn Street. Grant Permission 25 Apr 2022
SHD0031/20 ABP 308917-20	DBTR-SCR1 Fund, a Sub-Fund of the CWTC Multi Family ICAV,	Demolition of all buildings excluding the original fabric of the former Player Wills Factory, construction of 492 no. Build to Rent apartments, 240 no. Build to Rent shared accommodation along, creche and associated site works. Grant Permission 15 Apr 2021
ABP-307221-20 (BG1)	DBTR-SCR1 Fund aSub-Fund of the CWTC Multi Family ICAV	Demolition of all structures, construction of 416 no. residential units (4 no. houses, 412 no. apartments) and associated site works. Planning Permission Granted with Conditions 14/09/2020

Planning Ref No.	Applicant Name	Summary of Development
4049/19	The Coombe Women & Infant's University Hospital	The development will consist of a new four storey laboratory building (1340m^2) within the existing Coombe site with the provision of rooftop plant and 2 no. rear extensions to the existing adjacent laboratory building to include a new link, office and store (68m2) with all associated site works. This application site is in S.D.R.A. no.12, St. Teresa's Gardens and Environs Strategic Development and Regeneration Area. Grant Permission 11 Feb 2020
2475/18	D.C.C Housing Development	Proposal: Pursuant to the requirements of the above, notice is hereby given of the intention to amend the previously permitted development comprising 50 no. units (16 no. apartments, 24 no. 3 bedroom terraced houses and 10 no. 2 bedroom terraced units - Planning ref 2033/14) to allow for the construction of an additional 4 no. terraced residential units and associated works; amendments to the design of 12 no. previously permitted units; development of a temporary grass multisport pitch in addition to the previously permitted park development (Phase A); demolition of 2 no. existing flat blocks to facilitate the future provision of a landmark park (Phase B) with full size multisport pitch and associated works at St. Teresa's Gardens, Donore Avenue, Dublin 8 as follows: Additional residential units: 4 no. 3 bedroom terraced units - as an extension of the previously permitted 3 storey terrace. Total proposed residential development of 54 no. units (including the additional 4 no. units) comprising 16 no. apartments, 28 no. 3 bedroom terraced units and 10 no. 2 bedroom terraced units. Amendments to 12 no. previously permitted residential units: 6 no. 2 bedroom 3 storey terrace units (type E1 and F1) to be amended to 6 no. 2 bedroom 3 storey terraced units (B1 to B6). 4 no. 2 bedroom 2 storey terrace units (type D1) to be amended to 4 no. 2 bedroom two storey terraced units (D1 to D4). 2 no. 3 bedroom 3 storey units (type A) to be amended to 2 no. 3 bedroom 3 storey units (C1 and C2). Demolition of 2 no. four storey flat blocks comprising: 56 no. residential units (35 no. 1 bedroom units, 14 no. 2 bedroom units, 7 no. 3 bedroom units), a football club premises, boxing club premises/changing facility and a shop premises to facilitate the future development (Phase B) of an enlarged park and multisport playing pitch in accordance with the 2017 Development Framework for the SDRA 12 lands. Development of a temporary grass multisport pitch and associated works (in addition to the previously approved park - Phase A).

Planning Ref No.	Applicant Name	Summary of Development
ABP-314171-22 (BG2)	CWTC Multi Family ICAV acting solely in respect of its sub fund DBTR SCR1 Fund	Demolition of buildings, construction of 345 no. residential units (292 no. Build to Rent apartments, 49 no. Build to Sell apartments, 4 no. Build to Sell Houses) creche and associated site works. Case is due to be decided by 14/11/2022 www.bgscr1shd2.ie

12.2.5.8.1 Power Supply

12.2.5.8.1.1 Electricity Supply

There is a possibility that the Proposed Development, in combination with the adjacent permitted developments, as well as other nearby development sites, could impact the availability of electricity supply. Following a grant of planning permission, the ESB review the electrical demand requirements for all proposed developments and confirm if the public network has capacity to cater for same, with or without network upgrades, prior to connection to the public network and upgrade as necessary. The ESB will ensure that the supply is adequate. If network upgrades are required these would benefit the local community as a whole, as it would modernise the network in this area. Therefore, it is considered that the likely effect of the cumulative impact of the Proposed Development with existing and the adjacent permitted developments on electricity supply infrastructure will be neutral to positive and not significant in the long-term.

12.2.5.8.1.2 Gas Supply

The EIAR for the permitted development at the Player Wills site (Ref: ABP-308917-20) has been reviewed as part of this cumulative impact assessment. The development is proposing to use a limited amount of gas for the retail units, and as such the demand from the Player Wills development on the gas network is reported in the EIAR to be neutral and imperceptible in the long-term. Therefore, it is considered that the likely effect of the cumulative impact of the Proposed Development with existing and the adjacent permitted developments on gas supply infrastructure will neutral and not significant in the long-term.

12.2.5.8.2 Telecoms

Eir, Aurora and Virgin Media networks all operate at the site of the Proposed Development, and utility maps and information received from the companies indicate that there is adequate telecoms provision in for the Proposed Development. Hence, it is considered that the likely effect of the cumulative impact of the Proposed Development with existing and the adjacent permitted developments on the surrounding telecom's infrastructure will be neutral and not significant in the long-term.

12.2.5.8.3 Water Supply

Irish Water (IW) have provided Confirmation of Feasibility (Ref. CDS21000854) through the Pre-Connection Enquiry process, that the Proposed Development can be facilitated at this moment, subject to upgrades. IW have noted in the CoF that as the proposed connections are via adjacent developments (Bailey Gibson and Player Wills sites), all relevant core water

infrastructure within the area must be completed, of adequate capacity and integrity, connected to the IW networks and in operation prior to the connection of the Proposed Development. Hence, IW have reviewed the effect on the existing water supply network from both existing and the adjacent permitted developments and it is considered that the cumulative effects are likely to be neutral and not significant in the long term.

12.2.5.8.4 Surface water drainage

The requirement to provide SUDS systems to treat and attenuate SW discharge in new developments, and the provision of separate foul and surface water drainage systems, will ensure that the likely effect of the cumulative impact of the Proposed Development with existing and the adjacent permitted developments on the local surface water infrastructure is neutral to positive and imperceptible in the long-term.

12.2.5.8.5 Wastewater Management

Irish Water (IW) have also provided Confirmation of Feasibility (Ref. CDS21000854) through the Pre-Connection Enquiry process, that the Proposed Development can be connected to the wastewater network at this moment without infrastructure upgrade by Irish Water. Hence, as IW have reviewed the effect on the existing wastewater network from both existing and the adjacent permitted developments, and as the adjacent developments have already been assessed for likely significant effects and mitigation measures imposed in their EIAR and planning authorisations, it is considered that the cumulative effects are likely to be neutral and not significant in the short to long term.

Foul water from the Proposed Development will ultimately be discharged to the Ringsend Wastewater Treatment Plant (WwTP). Ringsend WwTP has been granted permission (Ref. PL.29N.YA0010 and Ref. ABP-301798-18) for full upgrade works to cater for a population equivalent of 2.4 million. Both applications were accompanied by an EIAR, an Appropriate Assessment (AA) screening report and a Natura Impact Statement (NIS) and the upgrade works are expected to be completed in 2025 before the Proposed Development will be completed. The NIS that accompanied planning application reference ABP-301798-18 concluded that “there is no potential for in-combination impacts of any other plan and project with the Ringsend WwTP component of the proposed upgrade project." Therefore, the cumulative impact of the Proposed Development, along with existing developments, the adjacent permitted developments and future developments has already been assessed in an EIAR, EIA and AA as part of the application process for the planning permissions concerning Ringsend WwTP’s upgrade works.

12.2.5.8.6 Waste Management

The high number of waste contractors and waste treatment facilities operating in the Dublin region, Circular Economy requirements along with the requirement for all existing, proposed and permitted developments in the area to manage waste in compliance with national and local legislation, policies and plans, will ensure that the likely effect of the cumulative impact of the Proposed Development with existing and the adjacent permitted developments on waste generation and waste management during both the Construction an Operational Phases will not be significant in the sort to long term.

12.2.5.8.7 Conclusion

Accordingly, surrounding permitted development, when considered cumulatively with the Proposed Development, will result in a permanent impact on the receiving networks and services, however, the impact is not considered to be likely to have significant adverse effects on the capacity of built infrastructure and utility services.

12.2.5.9 "Do Nothing" Impact

If the Proposed Residential Development is not advanced there will be no significant adverse impact on the Material Assets in the study area.

12.2.6 Avoidance, Remedial & Mitigation Measures

12.2.6.1 Construction Phase

The following mitigation measures are proposed for the Construction Phase of the Proposed Development with reference to Material Assets:

The Proposed Development must comply with the provisions of the Construction and Demolition Waste Management Plan, with respect to construction waste. Potential waste will be prevented , re-used recycled on site where practicable by refence to Article 27 and 28. Waste will be stored onsite in such a manner as to:

- Prevent environmental pollution.
- Minimise nuisance generation such as dust.
- Maximise waste segregation to minimise potential cross contamination of waste streams and facilitate subsequent re-use, recycling, and recovery.

In the event that hazardous soil, or historically deposited waste is encountered during the site bulk excavation phase, the contractor segregated it, will notify DCC and provide a Hazardous/Contaminated Soil Management Plan, to include estimated tonnages, description of location, any relevant mitigation, destination for disposal/treatment, in addition to information on the proposed authorised waste collector(s).

Additionally, a Construction Environmental Management Plan will be in effect for the full duration of works. The Health and Safety Authority's "*Code of Practice for Avoiding Danger from Underground Services*" (2010) will be followed during construction and excavation activities, and all underground and overhead utilities and public services will be identified and protected during the Construction Phase.

Provision of utilities will be carried out in accordance with the recommendations of the relevant authorities (ESB, GNI, IW, Eircom, DCC etc.). All temporary suspensions to public services will be controlled by the relevant undertaker, in accordance with standard protocols and all services will be reinstated as soon as possible post connection. Potable water networks and foul water sewers will be properly tested prior to connection.

12.2.6.2 Operational Phase

The Proposed Development must comply with the provisions of the Operational Waste Management & Recycling Strategy with respect to operational waste.

12.2.6.3 "Worst Case" Scenario

In a 'Worst Case' scenario during the Construction Phase of the Proposed Development (in relation to waste management), there is a potential risk that a previously unclassified hazardous waste stream could arise on the site during excavations. If the waste was not identified and segregated appropriately it could result in the contamination of a non-hazardous waste stream, such as soil and stones, resulting in a large volume of hazardous waste that would require specialist removal and treatment. Additionally, the contaminated soil and stones would no longer be fit for use for fill and landscaping and would need to be replaced with imported materials. This scenario would present a negative, significant and long-term impact on the receiving environment.

Taking account of the avoidance and mitigation measures proposed in this chapter and in the accompanying plans and strategies, such as the CEMP and CDWMP, and that all waste arising on site will be suitably managed by the Waste Manager; will be transferred offsite by appropriately permitted waste collectors and will be treated by appropriately authorised waste management facilities, this worst-case scenario is deemed to be an unlikely scenario.

12.2.7 Residual Impacts

Residual impacts are defined as "*effects that are predicted to remain after all assessments and mitigation measures*". They are the remaining 'environmental costs' of a project and are the final or intended effects of a development after mitigation measures have been applied to avoid or reduce adverse impacts. Potential residual impacts from the Proposed Development were considered as part of this environmental assessment. Having regard to the prevention and mitigation measures proposed within this and other chapters of the EIAR, no significant residual impacts are anticipated.

12.2.8 Monitoring

12.2.8.1 Construction Phase

The monitoring of C&D waste during the Construction Phase of the Proposed Development is recommended to ensure that impacts are not experienced beyond the site boundary. The Resource and Waste Manger will be responsible for monitoring and record keeping in respect of waste leaving the facility and ensuring that these records will be maintained on site.

12.2.8.2 Operational Phase

The building management company, residents, tenants and creche operators will be required to maintain the bins and storage areas in good condition as required by the DCC Waste Bye-Laws. The waste strategy presented in the OWMRS will provide sufficient storage capacity for the estimated quantity of segregated waste. The designated areas for waste storage will provide sufficient room for the required receptacles in accordance with the details of this strategy. The areas will be fitted with CCTV for monitoring.

12.2.9 Interactions

The Proposed Residential Development will provide additional housing in a densely populated urban area. Material Assets - Utilities and Waste interact with other environmental receptors as follows:

12.2.9.1 Population and Human Health

In the absence of mitigation, the improper removal, handling and storage of waste could negatively impact on the health of construction workers. Extended power or telecommunications outages, or disruption to water supply or sewerage systems for existing properties in the area could negatively impact on the surrounding human population and their overall health. Chapter 4 (Population and Human Health) of this EIAR has concluded that no long term, adverse effects are likely to impact on Population and Human Health as a result of the Proposed Development.

12.2.9.2 Biodiversity

Any discharges to the public foul sewer and abstractions from water supply from the Proposed Development will be under consent from Irish Water. An assessment of the potential impact of the Proposed Development on biodiversity has been set out in Chapter 5 of this EIAR.

12.2.9.3 Water (Hydrology & Hydrogeology)

All connections to the public water network (water supply or foul sewer), abstractions from water supply and discharges to the foul sewer during the Construction and Operational Phases will be under consent from Irish Water. An assessment of the potential impact of the Proposed Development on Water are addressed in Chapter 7 (Hydrology & Hydrogeology) of this EIAR. Chapter 7 has concluded that there are no likely significant adverse residual impacts on hydrology and hydrogeology anticipated regarding this Proposed Development.

12.2.9.4 Traffic

Waste collection activities at the Proposed Development have the potential to impact upon traffic movements in the local areas. An assessment of the potential impact of the Proposed Development on Traffic are addressed in Chapter 12.1 of this EIAR. Chapter 12.1 has concluded that there the Proposed Development will not have a significant impact on traffic.

12.2.10 Difficulties Encountered When Compiling

No difficulties were encountered in the preparation of this Chapter.

12.2.11 References

Eastern-Midlands Region (EMR) Waste Management Plan 2015-2021

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

EPA (2021) Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects

EPA (2002) Guidelines on the information to be contained in Environmental Impact Statements.

ESB Networks (2021) National Code of Practice for the Customer Interface Version 5

ESB Networks (2019) Construction Standards for MV Substation Buildings

European Union (Waste Directive) Regulations 2011-2021

Greater Dublin Strategic Drainage Study (2005) Regional Drainage Policies Technical Document – Volume 2, New Developments

Health and Safety Authority (2010) Code of Practice for Avoiding Danger from Underground Services

https://siteviewer.comreg.ie/#site/1318/53.3334867275/-6.2920326981/1/Site%201318 viewed online 26.07.2022

https://www.gov.ie/en/publication/5634d-national-broadband-plan-map/#interactive-map viewed online 26.07.2022

http://mywaste.ie viewed online 26.07.2022

https://epawebapp.epa.ie/terminalfour/waste/index.jsp viewed online 26.07.2022

http://www.nwcpo.ie/permitsearch.aspx viewed online 26.07.2022

Irish Water Code of Practice for Water Infrastructure Connections and Developer Services Design and Construction Requirements for Self-Lay Developments July 2020 (Revision 2)

Waste Framework Directive (Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste) as amended by Directive (EU) 2018/851.

Waste Management Acts 1996 to 2011

Water Services Acts 2007 to 2017

13 RISK MANAGEMENT

13.1 Introduction

13.1.1 Overview

This Chapter describes the Proposed Development with respect to how vulnerable it is to a major accident/natural disaster, and how likely it is cause to cause a major accident/natural disaster.. The purpose of the chapter is to ensure that the safety and precautionary measures necessary to protect the Proposed Development in the event of a major accident and / or natural disaster are identified and that appropriate mitigation measures are provided that would protect the environment in the event of such occurrences.

It is noted that the 2014 EIA Directive (2014/52/EU) updated the list of topics to be addressed in an EIAR and has included 'Risk Management' as a new chapter to be addressed. Article 3 of the new EIA Directive requires that the EIA shall identify, describe and assess in the appropriate manner, the direct and indirect significant effects on population and human health, biodiversity, land, soil, water, air and climate, material assets, cultural heritage, and landscape deriving from (amongst other things) the *"vulnerability of the project to risks of major accidents and/or disasters that are relevant to the project concerned"*.

Based on the requirements of the EIA Directive, this chapter seeks to identify:

- the types of major accidents / natural disasters that the project is vulnerable to;
- whether major accidents or natural disasters and the responses to these give rise to significant adverse environmental impacts;
- the likelihood that the project will cause major accidents or disasters
- measures needed to prevent or mitigate the likely adverse impact of such events on the environment.

The likelihood and potential significant adverse impacts on the environment (arising from the vulnerability of the Proposed Development to risks of major accidents and / or natural disasters) are identified and assessed. It considers whether the Proposed Development is likely to cause accidents and / or disasters and its vulnerability to them.

13.1.2 Competence

This chapter of the EIAR was prepared by Michael Gleeson, BSc, MSc, MIEMA, EHS Manager with CMSE acting in the role of Project Supervisor for the Design Process (PSDP) for the development.

Michael is an environmental and health and safety graduate of the University of Limerick, Cranfield University and most recently from Dublin Institute of Technology (DIT), where he graduated with a MSc in Environmental Health and Safety. He has in excess of 20 years expertise in risk assessment and the provision of Project Supervisor for the Design Process (PSDP) on a wide variety of projects (including Strategic Housing Development (SHD) projects uch as 1-4 East Road, Dublin 3) across the public and private sectors with an involvement from preplanning to project completion and Safety File handover.

13.1.3 Definitions

Key terms used in this Chapter are defined in the IEMA 2020 publication "Major Accidents and Disasters in EIA – A Primer" and outlined in Table13-1:

Table 13-1: Key terms used in this Chapter

Key Term	Definition
Disaster	May be a natural hazard (e.g. earthquake) or a man-made/external hazard (e.g. act of terrorism) with the potential to cause an event or situation that meets the definition of a major accident.
Major Accident	Events that threaten immediate or delayed serious environmental effects to human health, welfare and/or the environment and require the use of resources beyond those of the Applicant or its appointed representatives to manage. Whilst malicious intent is not accidental, the outcome (e.g. train derailment) may be the same and therefore many mitigation measures will apply to both deliberate and accidental events.
Man-made Hazards	For example (but not limited to): • structural collapse • building collapse • human error/management failure • design error • sabotage/arson • aircraft/rail/road/sea or river vessel disaster (crash/derailment/collision/overloading/hull failure) • terrorism • cyber-attack • industrial/ technological accident • explosion (chemical, nuclear or other) • pollution (oil, chemical or other) • fire • conflict • displaced population • crowd violence and disorder.
Natural Hazards	For example (but not limited to): • earthquake • flooding • dam collapse • volcanic eruption • avalanche • extreme temperature (heat wave, cold snap) • fire • ground subsidence • tropical storm • storm surge • landslide • animal/insect infestation • sandstorm • high winds/storm • wildfire • tsunami/tidal wave • drought • biological hazard – epidemic, pandemic.

Key Term	Definition
Risk	The likelihood of an impact occurring, combined with the effect or consequence(s) of the impact on a receptor if it does occur.
Significant environmental effect (in relation to major accidents and / or disasters assessment)	Could include the loss of life, permanent injury and temporary or permanent destruction of an environmental receptor which cannot be restored through minor clean-up and restoration.
Source-pathway-receptor linkage	For a risk to arise there must be hazard that consists of a 'source' (e.g. high rainfall); a 'receptor' (e.g. people, property, environment); and a pathway between the source and the receptor (e.g. flood routes).
Vulnerability	Describes the potential for harm as a result of an event, for example due to sensitivity or value of receptors. In the context of the EIA Directive, the term refers to the 'exposure and resilience' of the development to the risk of a major accident and/or disaster. Vulnerability is influenced by sensitivity, adaptive capacity and magnitude of impact.

13.2 Description of Proposed Development

The site is bound by Donore Avenue to the north-east, Margaret Kennedy Road to the north-west, The Coombe Women & Infants University Hospital to the west, the former Bailey Gibson factory buildings to the south-west, and the former Player Wills factory to the south-east. The Proposed Development will consist of the construction of a residential scheme of 543 no. apartments on an overall site of 3.26 hectares (GFA of c. 53,227 sqm) containing the following mix of apartments:

- 225 No. 1 bedroom apartments (36 no. 1-person & 189 no. 2-person)
- 274 No. 2 bedroom apartments (including 52 No. 2 bed 3 person apartments and 222 No. 2 bed 4 person apartments)
- 44 No. 3 bedroom 5-person apartments
- A retail/café unit (168 sq.m.), mobility hub (52 sq.m.) and 952 sq.m. of community, artist workspace, arts and cultural space, including a creche, set out in 4 No. blocks.

The breakdown of each block will contain the following apartments:

- Block DCC1 comprises 111 No. apartments in a block of 6-7 storeys;
- Block DCC 3 comprises 247 No. apartments in a block of 6-15 storeys;
- Block DCC5 comprises 132 No. apartments in a block of 2-7 storeys;
- Block DCC6 comprises 53 No. apartments in a block of 7 storeys;

The Proposed Development will also provide for public open space of 3,408 sqm, communal amenity space of 4,417 sqm and an outdoor play space associated with the creche. Provision of private open space in the form of balconies or terraces is provided to all individual apartments.

The Proposed Development will provide 906 no. residential bicycle parking spaces which are located within secure bicycle stores. 5% of these are over-sized spaces which are for large bicycles, cargo bicycles and other non-standard bicycles. In addition, 138 spaces for visitors are distributed throughout the site.

A total of 79 no. car parking spaces are provided at undercroft level. Six of these are mobility impaired spaces (2 in each of DCC1, DCC3 & DCC5). 50% of standard spaces will be EV fitted. Up to 30 of the spaces will be reserved for car sharing (resident use only). A further 15 no. on-street spaces are proposed consisting of:

- 1 no. accessible bay (between DCC5 & DCC6)
- 1 no. short stay bay (between DCC5 & DCC6)
- 1 no. crèche set-down / loading bay (between DCC5 & DCC6)
- 1 no. set-down / loading bay (northern side of DCC5)
- 1 no. set-down/loading bay (northern side of DCC 3)
- 10 no. short stay spaces (north-east of DCC1)

In addition, 4 no. motorcycle spaces are also to be provided.

Vehicular, pedestrian and cyclist access routes are provided from a new entrance to the north-west from Margaret Kennedy Road. Provision for further vehicular, pedestrian and cyclist access points have been made to facilitate connections to the planned residential schemes on the Bailey Gibson & Player Wills sites for which there are extant permissions (Ref. No.'s ABP-307221-20 & ABP-308917-20).

The development will also provide for all associated ancillary site development infrastructure including site clearance & demolition of boundary wall along Margaret Kennedy Road and playing pitch on eastern side of site and associated fencing/lighting, the construction of foundations, ESB substations, switch room, water tank rooms, storage room, meter room, sprinkler tank room, comms room, bin storage, bicycle stores, green roofs, hard and soft landscaping, play equipment, boundary walls, attenuation area and all associated works and infrastructure to facilitate the development including connection to foul and surface water drainage and water supply.

13.3 Study Methodology

13.3.1 General and Assumptions

The Proposed Development will be designed, constructed and operated in line with best international practices. This is important to note at the outset as major accidents resulting from the Proposed Development will, in this case, be very unlikely. The identification, control, and management of risk is also an integral part of the design and assessment process throughout all stages of a project lifecycle. For example, a Flood Risk Assessment was carried out to confirm that the site will not receive floodwaters (given the topography following the demolition of the St. Teresa's Gardens flats). Measures to control risks associated with Construction Phase activities are incorporated into the Construction Environmental Management Plan.

The scope and methodology presented is based on the 2014 EIA Directive, the EPA Guidelines on the information to be contained in Environmental Impact Assessment Reports (2022), and on other published risk assessment guidelines (such as *ISO31010:2009)*. A risk analysis-based approach methodology which covers the identification, likelihood and consequence of major accidents and / or natural disasters has been used for the assessment. This type of risk assessment approach is an accepted best practice methodology.

13.3.2 Legislative Requirements and Guidelines

The following sections set out the requirements as stated in the EIA Directive (2014/52/EU) and in the 2022 EPA Guidelines on the information to be contained in an Environmental Impact Assessment Report (EIAR).

Recital (15) of the EIA Directive states that:

In order to ensure a high level of protection of the environment, precautionary actions need to be taken for certain projects which, because of their vulnerability to major accidents, and/or natural disasters (such as flooding, sea level rise, or earthquakes) are likely to have significant adverse effects on the environment.

For such projects, it is important to consider their vulnerability (exposure and resilience) to major accidents and/or disasters, the risk of those accidents and/or disasters occurring and the implications for the likelihood of significant adverse effects on the environment. In order to avoid duplications, it should be possible to use any relevant information available and obtained through risk assessments carried out pursuant to Union legislation, such as Directive 2012/18/EU of the European Parliament and the Council and Council Directive 2009/71/Euratom, or through relevant assessments carried out pursuant to national legislation provided that the requirements of this Directive are met.

The intent of the directive is that a major accident and/or natural disaster assessment should be mainly applied to COMAH (Control of Major Accident Hazards involving Dangerous Substances) sites, nuclear installations and also sites that may be particularly vulnerable to flooding.

It should be noted that the Proposed Development in this instance is an urban regeneration project which when completed, will not give rise to ongoing significant risks in its operating environment. The risks during construction are assessed in section 13.4.

The 2022 EPA publication *"Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR)"* refer to major accidents and/or disasters in a number of sections as outlined below:

1. *Characteristics of the Project:*

*T*he guidelines state that the typical categories for describing the physical characteristics of a project include *"a description of the risk of accidents – having regard to substances or technologies used."*

2. *Assessment of Effects (Stage 6 of 7):*

The guidelines state that the EIAR should contain a description of the likely significant effects of the project on the environment result from inter alia:…."*the risks to human health, cultural heritage or the environment (for example due to accidents or disasters)".*

3. *Likelihood of Impacts*

The Guidelines 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 regulations e.g., a COMAH assessment."

It is noted that there are also a number of mechanisms for mitigating accidents on a construction project. These include the Construction and Environmental Management Plan (CEMP), which is being prepared by Enviroguide Consulting and deals with pollution risks during construction (See Chapters 6, 7 and 8 on Lands & Soil, Hydrology, Air Quality, Climate and Microclimate) and risk of accidents during construction, including traffic accidents. The risk of flooding is dealt with in Chapter 7 Hydrology. Separately, the risk of fire is managed through the Fire Safety Certification process, which is an integral part of the design of the Proposed Development.

13.3.3 Risk Assessment Methodology

13.3.3.1 *Introduction*

The following principles are applied when carrying out a risk assessment:

1. Risk Identification
2. Risk Analysis
3. Risk Evaluation
4. Documentation
5. Monitoring and Review
6. Application during Life Cycle Phase

Risk identification can include:

- Evidence based methods such review of historical data.
- A systematic approach where a team of experts follow a systematic process to identify risks by means of a structured set of prompts or questions
- Inductive reasoning techniques such as HAZOP

As noted earlier, the identification, control, and management of risk is an integral part of the design and assessment process throughout all stages of a project lifecycle. A risk register has been developed with input from all design team members and will be maintained throughout the Proposed Development.

Risk Analysis involve the determination of the consequences and their probabilities for the identified risk events, taking into account the effectiveness of any existing controls. Risk Analysis will comprise:

- Controls assessment; whereby the effectiveness of the existing controls are reviewed and evaluated (either quantitatively or qualitatively)
- Consequence Analysis: which can vary from a simple description of outcomes to detailed quantitative modelling or vulnerability analysis

- Likelihood Analysis and Probability estimation: whereby historical data can be used to extrapolate the probability of events occurring in the future or whereby probability forecasts using predictive techniques such as Fault Tree Analysis (FTA) or Event Tree Analysis (ETA) are used; or whereby expert opinion can be used in a systematic or structured way to estimate probability.

For this study, risks are set out according to the classification of risk, taken from the Guide to Risk Assessment in Major Emergency Management (Department of the Environment, Heritage & Local Government, 2010) as outlined in Table 13-2.

Table 13-2: Classification of Likelihood Extract (DoEHLG, 2010).

Ranking	Classification	Likelihood
1	Extremely Unlikely	May occur in exceptional circumstances; Once every 500 or more years
2	Very Unlikely	Is not expected to occur; and/or no recorded incidents or anecdotal evidence; and/or very few incidents in associated organisations, facilities or communicates; and / or little opportunity, reason or means to occur; May occur once every 100-500 years
3	Unlikely	May occur at some time; and / or few, infrequent, random recorded incidents or little anecdotal evidence; some incidents in associated or comparable organisations worldwide; some opportunity, reason or means to occur, may occur once per 10-100 years
4	Likely	Likely to or may occur; regular recorded incidents and strong anecdotal evidence and will probably occur once per 1-10 years
5	Very Likely	Very likely to occur; high level of recorded incidents and/or strong anecdotal evidence. Will probably occur more than once a year.

Risk Evaluation utilises and compares the risk analysis information to inform decision making on future action. When evaluating risk, a common approach is to divide the risks into three bands as follows:

- Upper band – risk is intolerable (whatever benefits the activity may bring) and risk treatment is essential whatever the cost
- Middle band – whereby costs and benefits are taken into account
- Lower band – risk is regarded as negligible

The Risk Matrix in Table 13-3 (extracted from the Department of Environment, Heritage and Local Government Guidance) will be used for this study.

Table 13-3: Risk Matrix Extract (DoEHLG 2010)

Likelihood Rating	**Very Likely**	**5**					
	Likely	**4**					
	Unlikely	**3**					
	Very Unlikely	**2**					
	Extremely Unlikely	**1**					
			Minor	**Limited**	**Serious**	**Very Serious**	**Catastrophic**
			1	**2**	**3**	**4**	**5**
			Consequence Rating				

When documenting the risk assessment process, it is noted that the documentation can include:

- Objectives and Scope;
- Risk criteria applied and their justification;
- Limitations, assumptions and justification of hypotheses;
- Assessment methodology
- Risk Identification results
- Data, assumptions and their sources and validity
- Risk analysis results and their evaluation
- Sensitivity and uncertainty analysis
- Critical assumptions and other factors that need to be monitored
- Discussion of results
- Conclusions and Recommendations
- References

The effectiveness of controls should be monitored and documented in order to provide data for use in risk analysis. Risk Assessment standards also recognize that many activities, projects or products have a life cycle and may include decommissioning and disposal.

13.4 Risk Identification, Likely Effects and Predicted Impacts

13.4.1 Risk Identification

The site is not in an area prone to natural disasters, nor significant geological influences. Risks were reviewed through the identification of plausible risks in consultation with relevant specialists across the EIAR chapters. Therefore, the risks set out in Table 13-4 are considered the most relevant potential risks.

Table 13-4: Identification of Risks

Category	Risk Factor Type	Likelihood
Natural Hazard		
Weather	Storms, snow	5
Hydrological	Risk from flooding	3
Geological	Made ground, inert waste	3
Construction Hazard		
Made ground debris inert	Stockpiles	3
Road	Traffic accident	3
Hazardous substance escape	Construction	3
Fire	Construction and operation	3
Pollution	Construction	3
Major Accident Hazard		
Explosion	Natural gas	1
Building Collapse	Structural failure	2
Industrial accident	Seveso sites in Dublin City and County – none in the immediate vicinity of the development	3

The risks are then tested in terms of consequences. It should be noted that when categorizing the Consequence Rating, the rating assigned assumes that all proposed mitigation measures and safety procedures have failed to prevent the major accident and/or disaster.

Dublin City Council have in place a 'Major Emergency Plan' which, if implemented as intended, will work to reduce the effect of any major accident or disaster. However, a worst case assumption is applied, i.e. the Major Emergency Plan isn't included as a mitigation measure.

13.4.2 Likely Significant Effects

13.4.2.1 *Do Nothing Scenario*

In the event that the Proposed Development does not proceed, the site would remain in its current undeveloped, brownfield state (a previous residential development was recently demolished to the north of the site).

In absence of an increased number of people residing, working or visiting the site, there would be no increase in the risk of major accidents occurring due to human interaction, should a disaster take place.

13.4.2.2 *Construction Phase*

There are utilities present on site including a medium pressure Gas Distribution Line as well as existing surface and foul services. Services will be diverted as necessary and appropriate controls (as outlined in the Health & Safety Authority (H.S.A). Code of Practice for Avoiding Danger from Underground Services) put in place by the contractor to prevent contact with underground services.

Hazardous materials used during construction will be appropriately stored so as not to give rise to a risk of pollution., So far as is reasonably practicable, hazardous materials will be designed out in accordance with the General Principles of Prevention as defined in the Safety Health and Welfare at Work Act 2005, as amended. Those residual materials will be subjected to risk assessment as required under the Safety Health and Welfare at Work (General Application) Regulations 2007 (as amended).

In the event of storms, snow and excessive rainfall, construction activity can be halted, mitigation measures for local flooding / wind damage will be put in operation and the site secured.

The construction activity will involve a number of potential risks as defined in the Safety Health and Welfare at Work (Construction) Regulations 2013, Schedule 1, and further described in the Preliminary Safety and Health Plan which will be issued as part of the tender documentation and the Construction and Environmental Management Plan.

A preliminary review of Schedule 1 Risks are as follows:

Table 13-5: Preliminary review of Schedule 1 Risks

Activity	Yes	No
Work that puts persons at a risk of:		
1.a. Falling from Height	**Y**	
1.b Burial under Earthfalls	**Y**	
1.c. Engulfment in swampland.		**N**
2. Risk from chemical or biological substances	**Y**	
3. Work with Ionising Radiation		**N**
4. Work near High Voltage Power Lines	**Y**	
5. Work exposing risk of drowning	**Y**	
6. Works on wells, underground earthworks and tunnels.		**N**
7. Works carried out by divers having a system of air supply.		**N**
8. Works carried out in a caisson with a compressed air atmosphere.		**N**
9. Works involving the use of explosives.		**N**
10. Work involving the assembly or dismantling of heavy prefabricated components.	**Y**	

Non schedule risks identified during the construction phase include the following:

- Lifting operations
- Traffic management,
- Fire / arson
- Noise, Dust Vibration Nuisance

13.4.2.3 ***Operation Phase***

The Proposed Development consists of four primarily residential blocks comprising in total 543 residential units, in four blocks of 2 to 15 storeys in height. The main risk identified during operation is the risk of fire and falls from height conducting high level maintenance operations.

With regard to fire risk, the proposed domestic use of the buildings fire is therefore considered an environment for normal fire risks. Activities such as domestic cooking and the use of appliances are commonplace in most residential developments and do not include any hazards which would be regarded as presenting an exceptional environmental fire hazard.

The fire risk mitigation, including evacuation strategy for the structures will comprise all fire safety measures necessary to comply with the requirements of Part III (Fire) of the Third Schedule to the Building Regulations 1997-2022. It is noted that these measures will be

validated under the Building Control Act 1990-2014 through the obtaining, in due course, of statutory Fire Safety Certificates under Part III of the Building Control Regulations 1997-2022 from Dublin Fire Brigade.

Working at height to the roof and exterior of the structures will be managed by the use of competent facilities management contractors. The cleaning of windows in the buildings will be undertaken by specialist contractor.

A Flood Risk Assessment was carried out to confirm that the site will not receive floodwaters (given the topography following the demolition of the St. Teresa's Gardens flats).

The risk of the SEVESO sites[10] has been assessed as part of this application. The Proposed Development is located outside of any zone of influence airing from the SEVESO sites. A "consultation distance" is very broadly defined under Regulation 2 of the COMAH [11] Regulations 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*". The consultation distance for some types of COMAH facility ranges from 300m for establishments where the risk is from flammable non-pressurised materials to 1 km for establishments where chemical processing involving flammable or toxic substances take place, to 2km for establishments with bulk storage of pressurized or toxic substances triggering an obligation on the planning authority to notify the H.S.A. There are no COMAH sites within the vicinity of the Proposed Development site.

13.4.3 Predicted Impacts - Risk of Major Accidents and/or Disasters

A Risk Register has been developed which contains the main risks identified with the construction and operation of the Proposed Development. These have been identified as follows:

[10] SEVESO sites are defined as Industrial site that, because of the presence of dangerous substances in sufficient quantities, are regulated under Council Directives 96/82/EC and 2003/105/EC

[11] The Chemicals Act (Control of Major Accident Hazards involving Dangerous Substances) Regulations 2015

Table 13-6: Risk Impacts

Risk No.	Risk Event	Possible Cause
1	Accidents during construction	- Traffic accident - Working at height / falls - Structural collapse - Risk of fire / arson - Groundwater pollution - Service strikes (e.g. gas) - Storm event - Damage to existing sewers / mains
2	Fire following occupation	- Inappropriate use of electrical devices /cooking etc.
3	Falls following occupation	- Falling in stairwells - Façade and Window cleaning
4	SEVESO Sites	- Major Accident Hazard
5	Flooding	- Storm event - Damage to existing sewers / mains

13.5 Risk Analysis

Following identification of risks, the next stage is to analyse how likely this is to occur and the consequences, should the risk arise. The outline risks identified above are expanded as in Table 13-7. This will provide a risk score, i.e., the consequences versus the likelihood of the event taking place.

Table 13-7: Risk Analysis

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score
1a	Accidents during construction	Movement of vehicles	Injury or loss of life	3	Construction accident statistics	3	Could result in loss of life	9
1b		Manual handling	Injury or loss of life	3	Construction accident statistics	3	Could result in loss of life	9
1c		Slips or falls	Injury or loss of life	3	Construction accident statistics	3	Could result in loss of life	9
1d		Ground water pollution	Impact on aquatic life, illness	1	Lack of direct pathways, controls of run-off during construction	3	Could result in environmental pollution	3
2	Fire following occupation	Electrical equipment / cooking	Injury or loss of life	1	Causes of fire statistics	3	Could result in loss of life	3
3	Falls	Loss of balance	Injury or loss of life	1	CSO statistics	3	Could result in loss of life	3
4	SEVESO Sites	Major Accident	Injury or loss of life	1	Planning Report	1	Could result in loss of life	1
5	Flood Risk Assessment	Major Accident	Impact on aquatic life, illness	1	AECOM Report	2	Could result in environmental pollution	2

13.6 Risk Evaluation

Taking Table 13-7, and applying it below, the red zone represents 'high risk' scenarios', the amber zone represents 'medium risk scenarios and the green zone represents 'low risk scenarios.'

Table 13-8: Risk Evaluation

Likelihood Rating							
	Very Likely	5					
	Likely	4					
	Unlikely	3			1a – 9, 1b – 9 1c – 9, 1d – 3, 5 – 2		
	Very Unlikely	2				3 - 3	
	Extremely Unlikely	1		4-2		2 - 3	
			Minor	Limited	Serious	Very Serious	Catastrophic
			1	2	3	4	5
			Consequence Rating				

13.7 Main risks

The main risks to safety and health to humans arise during the construction period. Consequences may be limited but severe for the individuals concerned. Geographical widespread environmental consequences are not anticipated. Equally the potential risk from the nearest SEVESO sites is unlikely. The closest Lower Tier Seveso site is located in Bluebell Industrial Estate, which is 5km away.

High impact risks which involve multiple injuries are likely during construction when the works interact with the existing infrastructure, such as connections to existing roads. In each instance site specific Traffic Management Plans and Risk Assessments and Method Statements (RAMS) must be prepared and agreed with the appropriate authority prior to works commencing.

13.8 Mitigation Measures

A competent contractor / Project Supervisor for the Design Process (PSDP) will be appointed to ensure that the necessary control measures are implemented to mitigate risks during construction. The Construction Management Plan as well as good housekeeping practices will help limit the risk of accidents during construction.

The project will be carried out in accordance with the Safety Health and Welfare at Work (Construction) Regulations 2013 and subsequent amendments. The design team will consider the mitigation risks for both the construction risks and 'in use' risks. Risk reviews will be carried out throughout design to ensure that the General Principles of Prevention are applied. Any residual risks will be documented in the Safety File issued on completion of project.

13.9 Conclusion

Through the preparation of detailed RAMS (Risk Assessment, Method Statement) and the implementation of suitable and sufficient mitigation measures, there are no identified incidents or examples of major accidents and or natural disasters that present a sufficient combination of risk and consequence that would lead to significant residual impacts or environmental effects.

13.10 Difficulties Encountered

No difficulties were encountered when compling this chapter.

13.11 References

AECOM, 2022 (AECOM, 2022b) The Donore Project Part 10 Application Flood Risk Assessment.

EIAR Chapters 1-12

Directive 2014/52/EU of the European Parliament and the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment

Chemicals Act (Control of Major Accident Hazards involving Dangerous Substances) Regulations 2015, implementing the Seveso III Directive (2012/18/EU)

DOT (2021) *National Risk Assessment* 2021/2022

> *Since its inception in 2014, it has provided a systematic overview of national-level risks and has drawn attention, at an early stage, to the importance of phenomena such as Brexit, housing shortages as well as pandemics.*

DOELG (2010) *A Framework For Major Emergency Management Guidance Document 1: A Guide To Risk Assessment In Major Emergency Management* 2010

The Department of Environment, Heritage and Local Government, as it was then, published this guidance noted on best practice in relation to risk assessment for major emergency management. It includes guidance on the stages of the risk assessment process and how it should be used to inform mitigation and detailed planning during major emergency situations.

EPA (2022) *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports*

The Guidelines have been drafted with the primary objective of improving the quality of EIARs with a view to facilitating compliance (with the Directive). They refer to major accidents and disasters in a number of sections.

EPA (2014) *Guidance on Assessing and Costing Environmental Liabilities*

These Guidelines provide guidance on the identification and quantification of risks, focusing on unplanned, but possible and plausible events that may occur during the construction and operational phases of licensed facilities and/or activities

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

Section 1.3.3 outlines the requirements and key consideration on accidents and disaster risks and notes two key considerations: The projects potential to cause accidents and/or disaster; and the vulnerability of the project to disasters or accidents. The requirement under 1.3.3 covers both natural (e.g. earthquakes) and man-made disasters (e.g. technological hazards) that should significantly impede the Project's activities and objectives and which might have adverse effects

IEMA (2020) Major Accidents and Disasters in EIA – A Primer

This publication provides an assessment methodology for major accidents and disasters based on current practice in the UK to date and provides definitions of key terminology

ISO (2018) Risk Management –Guidelines IEC/ISO31000:2018

ISO31010:2009 is a supporting standard for ISO31000 and provide guidance on the selection and application of systematic techniques for risk assessment. The standard outlined how risk assessment forms part of the framework and process of risk management in an organisation.

14 INTERACTIONS

14.1 Introduction

As a requirement of Planning Regulations and the Environmental Protection Agency's '*Guidelines on information to be contained in Environmental Impact Assessment Reports'* (2017), interrelationships between various environmental aspects must be considered when assessing the impact of the Proposed Development, as well as individual significant impacts. The significant impacts of the Proposed Development and the proposed mitigation measures have been detailed in the relevant chapters of this report. However, as with all developments that pose potential environmental impacts, there also exists potential for interactions/interrelationships between the impacts of different environmental aspects. The results may exacerbate or ameliorate the magnitude of impacts. This chapter of the EIAR addresses the interactions between the various environmental factors of the Proposed Development.

The following Section is directed by Article 3 section 1(e) of the Environmental Impact Assessment of Projects Directive 2011/92/EU as amended by Directive 2014/52/EU (the EIA Directive). The EPA Guidelines on the information to be contained in Environmental Impact Assessment Reports (2022) and Advice Notes for Preparing Environmental Impact Statements (Draft, September 2015) were also considered.

Article 3 of the EIA Directive states:

1. The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors:
    a) population and human health;
    b) biodiversity, with particular attention to species and habitats protected under the Habitats Directive 92/43/EEC and the Birds 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)

14.1.1 Quality Assurance and Competence

This Chapter was written by Arthur Greene, Graduate Environmental Consultant, Enviroguide Consulting. Arthur has a Master of Science (Hons) in Ecosystem Science and Policy from University College Dublin and Justus Liebig University and a Bachelor of Arts (Hons) in Geography from Trinity College Dublin. Arthur has experience preparing Environmental Impact Assessment (EIA) Screening Reports, Introduction Chapters, Archaeology Chapters and Archaeology & Cultural Heritage Chapters of EIARs including a focus on waste facilities and Large-scale Residential Developments.

Description of the Proposed Development

The Proposed Development is located at a on the former St. Teresa's Gardens, Donore Avenue, Dublin 8. The site is bound by Donore Avenue to the north-east, Margaret Kennedy Road to the north-west, the Coombe Hospital to the west, the former Bailey Gibson factory buildings to the south-west, and the former Player Wills factory to the south-east The Proposed

Development will consist of the construction of a residential scheme of 543 no. apartments on an overall site of 3.26 ha. with a net development area of 2.05 ha.

14.2 Study Methodology

The interactions between impacts on different environmental factors have been addressed throughout this EIAR. Close co-ordination and management with the EIAR team was carried out to ensure that all likely relevant interactions were addressed at the scoping stage of the EIAR, and interactions have been adequately assessed.

Following an assessment of the EIAR, a matrix was produced in line with EPA Guidelines and existing matrices to display where interactions between impacts on different factors have been addressed. This has been carried out by use of chapter headings included in the EIAR and details of any interaction during all phases of the Proposed Development.

14.3 Interactions

The following matrix has been produced to show where potential significant interactions between effects on different factors have been addressed, see Table 14-1.

As this EIAR has been prepared by a number of specialist consultants, an important aspect of the EIA process was to ensure that interactions between the various disciplines have been taken into consideration. The principal interactions requiring information exchange between the environmental specialists and the design team are summarised in Table 14-2 to Table 14-10.

Table 13-9: Interactions between Factors

Interaction	4. Population and Human Health	5. Biodiversity	6. Land and Soils	7. Hydrology	8. Air Quality & Climate	9. Noise & Vibration	10. Landscape & Visual Amenity	11. Archaeology, Architecture & Cultural Heritage	12. Material Assets – Waste & Utilities	12. Material Assets - Traffic
Population and Human Health										
Biodiversity										
Land and Soils										
Hydrology										
Air Quality and Climate										
Noise & Vibration										
Landscape & Visual Amenity										
Archaeology, Architectural and Cultural Heritage										
Material Assets – Waste & Utilities										
Material Assets - Traffic										

	No Interaction
	Interaction
	N/A

Table 13-10 Population and Human Health

Population and Human Health	
Summary	
Chapter 4 of this EIAR, *Population and Human Health,* details the direct and indirect effects of the Proposed Development on Population and Human Health; and sets out any required mitigation measures where appropriate. Construction Phase: • The Proposed Development has the potential to cause additional traffic, noise, air quality, hydrology and visual impacts during the Construction Phase. The Construction Phase for the Proposed Development will take place over a 7-year period, which will include site clearance and construction activities. Operational Phase: • The Proposed Development is expected to have socio-economic benefits and a positive impact on human health. However, potential negative impacts during the operational phase include traffic and the associated effects such as; increased noise and air pollution.	
Interactions	
Air Quality and Climate	Interactions with air quality during the construction and operational phase has the potential to cause dust nuisance issues impacting on human health. Fine particles from these sources can be damaging to the health of the surrounding population. Chapter 8 has concluded that there will be no significant air quality impacts. All ambient air quality legislative limits will be complied with and therefore the predicted impact is not significant with a neutral effect on human health.
Hydrology	Pollution events can impact the water quality and thus impact the human health of the surrounding population. Appropriate surface water and foul water control measures will be implemented as part of the Proposed Development. No public health issues associated with the water conditions at the Site have been identified for the Construction Phase or Operational Phase of the Proposed Development. There are no likely significant adverse impacts as a result of Hydrology and as such there will be no significant impacts on population and human health.
Noise and Vibration	Construction activities such as site clearance, building construction works, and trucks and vehicles entering and exiting the Site have the potential to interact with the surrounding population and human health and cause noise disturbance. The impact assessment of noise and vibration has concluded that based on the implementation of the proposed mitigation measures there will be no significant long term noise impacts. As such, there will be no significant impact on population and human health.
Landscape and Visual	The Proposed Development will alter the visual appearance of the Site which is predominantly a brownfield Site. It is not considered that the Proposed Development by virtue of its visual appearance and in the context of the proposed zoning of the Site of the Proposed Development and the urban nature of the surrounding landscape, will not cause any significant

	impacts and as such there will be no significant impact on population and human health.
Material Assets – Waste and Utilities	The Construction and Demolition Waste Management Plan (CDWMP) (AECOM, 2022) and CEMP (Enviroguide Consulting, 2022) details mitigation measures to ensure the safety of the workers. Extended power or telecommunications outages, or disruption to water supply or sewerage systems for existing properties in the area could negatively impact on the surrounding human population and their overall health. However, Chapter 12 of this EIAR has concluded there will be no significant impacts on the Material Assets (Waste and Utilities) as a result of the Proposed Development subsequently there will be no significant impact on population and human health.
Material Assets - Traffic	Construction activities will result in an increased number of HGV movements during the Construction Phase. The Proposed Development will also result in an increase in the population of the surrounding area and subsequently an increase in the number of vehicles. There is potential for significant impacts on population and human health in relation to the capacity and operation of the surrounding road network. Two junctions were shown to have percentage impacts exceeding the TII thresholds: the site access junction and the Donore Avenue/Margaret Kennedy Road/ Brown Street South junction. The overall impact of the Proposed Development on the transportation infrastructure in the local area will not be significant and subsequently there will be no significant impact on population and human health.
Conclusions	
There will be no significant effects on population and human health as a result of the potential interactions listed above.	

Table 13-11: Biodiversity

Biodiversity	
Summary	
Chapter 5 of this EIAR, *Biodiversity,* details the direct and indirect effects of the Proposed Development on the local flora and fauna; and sets out any required mitigation measures where appropriate. Construction Phase: • The Sites of National and International Importance are outside the potential zone of impact (zone within the site outline with potential for downstream impacts to the marine environment via the proposed foul and surface water drainage strategy) influence of the construction phase of the Proposed Development. However, there are potential significant impacts of the Proposed Development on aquatic ecology through the pollution of watercourses with suspended solids, due to runoff of soil from construction areas. There are also slight impacts predicted for flora and fauna within the vicinity. Operational Phase: • The operation of the facility will not involve any new point water source discharges and there will be no other material releases that would cause adverse impacts on surface waters. Hence, no impacts are expected.	
Interactions	
Material Assets - Water	Any discharges to the public foul sewer and abstractions from water supply from the Proposed Development will be under consent from Irish Water. An assessment of the potential impact of the Proposed Development on the Material Assets including built services, infrastructure, traffic, and waste management has been set out in Chapter 12 of this EIAR.
Land, Soil, Geology and Hydrogeology	An assessment of the potential impact of the Proposed Development on the existing land, soils and geological environment during the Construction and Operational Phases of the Proposed Development is set out in Chapter 6 Land, Soil and Geology.
Hydrology	An assessment of the potential impact of the Proposed Development on the Hydrology during the Construction and Operational Phases of the Proposed Development is set out in Chapter 7 Land, Soil and Geology.
Conclusions	
There are potential significant impacts of the Proposed Development on aquatic ecology through the pollution of watercourses during the Construction Phase of the Proposed Development as well as local flora and fauna. There are no expected impacts during the Operational Phase of the Proposed Development. Appropriate Mitigation and Monitoring methods have been established to ensure there will be no significant impact on Biodiversity as a result of interactions listed above during both the Construction and Operational Phases of the Proposed Development.	

Table 13-12: Land and Soils

Land and Soil	
Summary	
Chapter 6 of this EIAR, *Land and Soil*, details the direct and indirect effects of the Proposed Development on the local land, soils, and geology; and sets out any required mitigation measures where appropriate. Construction Phase: • Appropriate industry standard and health and safety legislative requirements will be implemented during the Construction Phase of the Proposed Development. The receiving hydrological environment and biodiversity will be protected through the required procedures. Operational Phase: • Design measures taken during the Construction Phase will limit any potential for any direct adverse impact on the receiving land, soil, geological environment during the operational phase of the Proposed Development.	
Interactions	
Population and Human Health	No public health issues associated with the land, soil, geology conditions at the Proposed Development have been identified for the Construction or Operational Phase. The Proposed Development is not considered to be within a High Radon Area and where required radon barriers will be installed in accordance with current building regulations. Appropriate industry standard and health and safety legislative requirements will be implemented during the Construction Phase that will be protective of site workers. The necessary measures will also be implemented to address any nuisance issues associated with dust dispersion during construction works including the offsite removal of surplus soil. The potential impacts associated with airborne dust is addressed in Chapter 8 (Air) and Chapter 4 (Population& Human Health) of this EIAR. The design of the Proposed Development includes the removal of contaminated soil that will pose any human health risk for future occupants and the Proposed Development will be construction in accordance with current building regulations and guidance (e.g. Dept of Housing, Local Government and Heritage (2020) Technical Guidance Document C – Site Preparation and Resistance to Moisture). Specific issues relating to Public Heath associated with the Proposed Development are set out in Chapter 4 of this EIAR.
Hydrology and Hydrogeology	An assessment of the potential impact of the Proposed Development on the hydrological and hydrogeological environment is included in Chapter 7 of this EIAR.
Material Assets: Waste and Utilities	An assessment of the potential impact of the Proposed Development on the material assets including built services, infrastructure and waste management is included in Chapter 12 of this EIAR.

Material Assets: Traffic	Soil excavated during construction works for the Proposed Development will be transported by road for disposal in approved locations as provided for in this EIAR. Movements of construction traffic will be managed in accordance with the Construction Traffic Management Plan. Specific issues relating to Traffic associated with the Proposed Development are set out in Chapter 12 of this EIAR.
Biodiversity	An assessment of the potential impacts of the Proposed Development on the Biodiversity of the site, with emphasis on habitats, flora and fauna which may be impacted a result of the Proposed Development are included in Chapter 5 of this EIAR. It also provides an assessment of the impacts of the Proposed Development on habitats and species, particularly those protected by national and international legislation or considered to be of particular conservation importance and proposes measures for the mitigation of these impacts.
Landscape and Visual	During the construction phase the topography of the proposed infill area will be increased and the land use within the western portion of the proposed AD facility will undergo a change from agricultural land use to industrial land use. An assessment of the potential impact of the Proposed Development on the receiving landscape is included in Chapter 10 of this EIAR.
Air Quality and Climate	The excavation and infilling of soils at the Site has the potential to generate nuisance impacts (i.e., dust). An assessment of the potential impact of the Proposed Development on air quality and climate is included in Chapter 8 of this EIAR.
Archaeology and Cultural Heritage	The excavation of soil and subsoils at the Proposed Development Site could have a direct impact on any archaeological remains identified onsite. An assessment of the potential impact of the Proposed Development on archaeology is included in Chapter 11 of this EIAR.
Conclusions	
The Construction Phase of the Proposed Development on Land and Soil has the potential to have adverse impacts on Air Quality, Biodiversity, Hydrology and Population and Human Health through dust and air pollution. However, appropriate Mitigation and Monitoring methods have been established in the respective Chapters. There are potential impacts on the views and visual amenity of the Landscape and Visual Amenity of the locality during the Operational Phase of the Proposed Development.	

Table 13-13: Hydrology and Hydrogeology

Hydrology and Hydrogeology	
Summary	
Chapter 7 of this EIAR, *Hydrology and Hydrogeology*, provides an assessment of the potential impacts of the Proposed Development on hydrology, water and hydrogeology and sets out any required mitigation measures where appropriate. Construction Phase: • Effective Mitigation and Monitoring measures have been established to ensure protection of Hydrology and Hydrogeology during the Construction Phase of the Proposed Development. These measures aim to mitigate pollution risks to Biodiversity, Water and Land, Soil, Geology and Hydrogeology. Operational Phase: • There are no adverse effects predicted during the Operational Phase of the Proposed Development.	
Interactions	
Population and Human Health	No public health issues associated with the water (hydrology and hydrogeology) conditions at the Proposed Development Site have been identified for the Construction Phase or Operational Phase of the Proposed Development. Appropriate industry standards and health and safety legislative requirements will be implemented during the construction phase that will be protective of site workers. It is noted that specific issues relating to Public Heath associated with the Proposed Development are set out in Chapter 4 of this EIAR.
Land, Soil, Geology and Hydrogeology	An assessment of the potential impact of the Proposed Development on the existing land, soils and geological environment during the Operational Phase of the Proposed Development is set out in Chapter 6 Land, Soil and Geology of this EIAR.
Biodiversity	The Proposed Development will potentially impact ecological receptors via surface water runoff to road gullies and sewers and groundwater migration. An assessment of the potential impacts of the Proposed Development on the Biodiversity of the Proposed Development Site, with emphasis on habitats, flora and fauna which may be impacted as a result of the Proposed Development is included in Chapter 5 of this EIAR. It also provides an assessment of the impacts of the Proposed Development on habitats and species, particularly those protected by national and international legislation or considered to be of particular conservation importance and proposes measures for the mitigation of these impacts.
Material Assets: Water	Any discharges to the public foul sewer and abstractions from water supply from the Proposed Development will be under consent from Irish Water. An assessment of the potential impact of the Proposed Development on the Material Assets including built services, infrastructure, traffic, and waste management has been set out in Chapter 12 of this EIAR.

Conclusions
Mitigation and Monitoring measures have been established for the protection of Water and Biodiversity in both the Construction and Operational Phases of the Proposed Development. Population and Human Health is protected by the appropriate industry standard and health and safety legislative requirements will be implemented during the construction phase that will be protective of site workers. There are no adverse interactions expected for Land, Soil, Geology and Hydrogeology as a result of the Proposed Development. The Interactions between Material Assets and Hydrology have been assessed and there are no perceived negative impacts. Irish Water will be consulted prior to any discharges to the public foul sewer and abstractions from water supply as a result of the Proposed Development.

Table 13-14: Air Quality and Climate

Air Quality and Climate	
Summary	
Chapter 8 of this EIAR, *Air Quality and Climate*, provides an assessment of the potential impacts of the Proposed Development on ambient air quality and climate, and sets out appropriate mitigation measures where necessary. The main air quality impacts that may arise during construction activities are: • Dust deposition; • Elevated particulate matter concentrations (PM10 and PM2.5) as a result of dust generating activities on site; and • An increase in concentrations of airborne particles, volatile organic compounds, nitrogen oxides, and sulphur oxides due to exhaust emissions from diesel powered vehicles and equipment on site (non-road mobile machinery) and vehicles accessing the site. The greatest potential effect on air quality during the Operational Phase of the Proposed Development is from traffic-related air emissions.	
Interactions	
Population and Human Health	Interactions between Air Quality and Population and Human Health have been considered as the Operational Phase has the potential to cause health issues as a result of impacts on air quality from dust nuisances and potential traffic derived pollutants. However, the mitigation measures employed at the Proposed Development will ensure that all impacts are compliant with ambient air quality standards and human health will not be affected. Furthermore, traffic-related pollutants have been assessed and determined as negligible, therefore air quality impacts from the Proposed Development are not expected to have a significant impact on population and human health.
Biodiversity	Interactions between Air Quality and Biodiversity have been considered as the Construction Phase has the potential to interact with flora and fauna in adjacent habitats and designated sites due to dust emissions arising from the construction works. However, the mitigation measures employed at the Proposed Development will ensure that the impacts to flora and fauna are not significant.
Material Assets: Traffic	There can be a significant interaction between air quality, climate and traffic. This is due to traffic-related pollutants that may arise. In the current assessment, traffic derived pollutants which may affect Air Quality and Climate have been deemed as negligible. Therefore, the impact of the interaction between air quality and climate is insignificant.
Conclusions	
Appropriate mitigation measures have been recommended and will be implemented at the Site to minimise the risk of dust emissions arising during the Construction Phase and provided such measures are adhered to, it is not considered that significant air quality impacts will occur. Operational traffic will use regional and local roads to access the facility with potential increases of traffic flow on some roads and subsequent associated emissions of VOCs, nitrogen oxides, sulphur dioxides and increased particulate matter concentrations. As per the Traffic and Transport Assessment (Section 12.1), an Air Quality Assessment is not required, and it is therefore	

considered unlikely for significant air quality impacts to occur as a result of increased traffic flow. These measures are put in place to negate any potential negative interactions between Air Quality & Climate and Population and Human Health, Biodiversity and Traffic as a result of the Proposed Development.

Table 13-15: Noise and Vibration

Noise and Vibration	
Summary	
Chapter 9 of this EIAR, *Noise and Vibration*, provides a description and assessment of the likely impact of the proposed activities from noise, and sets out appropriate mitigation measures where necessary. The Construction Phase of the Proposed Development can potentially give rise to temporary to short term noise and vibration impact and effects through the use of mobile and non-mobile heavy machinery and equipment. Additional traffic arising from the Proposed Development can give rise to increased traffic noise impacts at existing NSLs on the surrounding road network in the long term.	
Interactions	
Population and Human Health	The World Health Organisation (WHO) identifies that noise is a public health issue. It has negative impacts on human health and well-being and is a growing concern. In particular, the effects from long term exposure to anthropogenic sources including transportation sources (road, air and rail), wind turbines and leisure have been identified in the WHO Environmental Noise Guidelines for the European Region, 2018, as sources of concern as they potentially contribute to sleep loss and depravation. The effects of additional road traffic arising as a result of the impact of the proposed project on human health have been assessed in this chapter.
Biodiversity	Construction noise has the potential to temporarily impact on fauna. This has been specifically addressed in Chapter 5 dealing with biodiversity and is outside the scope of this chapter.
Material Assets	Construction vibration has the potential to impact on the buildings and laboratory sensitive equipment in the area. Limits specified in Chapter 9 and in accordance with manufacturers specifications (Coombe lab) will be complied with. The contractor will be required to contractually comply with these limits.
Conclusions	
The impact assessment of noise and vibration has concluded that a significant impact will be perceived at NSL4 due to construction traffic noise. However, with mitigation measures this impact will be minor and short-term. The operation of on-site machinery will be intermittent and last only for the duration of the Construction Phase. Operational Phase noise and vibration impacts have also been assessed in relation to traffic and plant equipment and no significant impacts will be experienced.	

Table 13-16: Landscape and Visual

Landscape and Visual	
Summary	
Chapter 10 of the EIAR, *Landscape and Visual Assessment*, provides a description and assessment of the likely impact of the Proposed Development on the landscape and visual amenities of the area. The visual effects of the increased building height will impact Population and Human Health during both the Construction and Operational Phases of the Proposed Development.	
Interactions	
Population and Human Health	Visual effects will mainly relate to the introduction of the taller elements of the Proposed Development. The main visual receptor groups are residents and vehicle travellers including ferry passengers, workers, visitors/ tourists. Residents will have the highest sensitivity to change than the road users. Vehicle travellers and workers will focus on traffic or their commercial tasks and not primarily on available views. As discussed in Section 10.5.2, it is considered that the intervening built form will screen the site and mitigate the majority but not all of the likely adverse visual effects.
Conclusions	
The primary interaction between Landscape and Visual and Population and Human Health is from the increased building height which will impact local people and travellers. This will impact Population and Human Health during both the Construction and Operational Phases of the Proposed Development. The Residual Townscape Effects and Residual Visual Effects range from “neutral” to “beneficial”.	

Table 13-17: Archaeology and Cultural Heritage

Archaeology and Cultural Heritage	
Summary	
Chapter 11 of the EIAR, *Archaeology and Cultural Heritage,* provides information on the known architectural, archaeological, and cultural heritage sites in the study area. Construction Phase: • Earthworks during the Construction Phase will potentially cause adverse effects on the Landscape and Visual characteristics of the site and may cause increased Noise and Vibration which must be monitored to avoid/mitigate potential damage to Archaeological Sites. Operational Phase: • Landscaping mitigation measures are set out in Chapter 10 to mitigate negative impacts on the Landscape and Visual characteristics of the Proposed Development.	
Interactions	
Landscape and Visual	Interactions between Landscape and Visual Effects and Cultural Heritage concern the physical presence of the Proposed Development including the impact of any mitigation measures such as landscaping and planting on the setting of heritage assets, and damage caused to archaeological deposits caused by associated planting or earthwork embankments. Consideration of visual intrusion impacts are addressed in Chapter 10 (Landscape and Visual Effects).
Noise and Vibration	Interactions between Noise and Vibration and Cultural Heritage concern the change to the setting of heritage assets through noise intrusion, and changes in traffic levels and construction noise. These interactions relate to the construction phase only. Consideration of noise and vibration impacts are addressed in Chapter 9 (Noise and Vibration).
Conclusions	
Negative impacts associated with Noise and Vibration are expected during the Construction Phase of the Proposed Development. However, monitoring and mitigation measures are set out in Chapter 9. Construction traffic and associated machinery noise during the proposed works will have a minor short-term effect on surrounding Archaeology and Cultural Heritage. Potential negative impacts of the Proposed Development are expected during both the Construction and Operational Phases of the Proposed Development as both Phases present a visual intrusion on the Landscape and Visual aspects of the surrounding area. The Proposed Development will have a slight significance of effect which is classified as “adverse”.	

Table 13-18: Material Assets - Traffic

Material Assets - Traffic	
Summary	
Chapter 12.1 of the EIAR, *Material Assets: Traffic*, provides an assessment of the potential impacts of the Proposed Development on Material Assets including traffic. Main interactions include: • Increased traffic flow • Increased noise pollution • Road closures	
Interactions	
Noise and Vibration	Road traffic noise during the construction phase of the proposed development site is considered to lead to negative noise effects on sensitive receptors in the study area. Through the implementation of appropriate noise control measures the residual effects will be moderate, local and short term for the majority of locations surrounding the proposed development site. during the operational phase of the proposed development site the traffic noise levels associated is expected to produce low levels of noise and vibration pollution to the area due to the 'low car zone' nature of the proposed development site. This will have a likely temporary neutral effect on the study area.
Landscape and Visual	Road closures, potential traffic management and signage will have an effect upon the local landscape and views towards the construction site. During Operational phases of the proposed development site the proposed development itself will take a space in the landscape and visual aspect of the area. This will have a likely temporary neutral effect on the study area.
Conclusions	
Negative impacts are expected for both Noise and Vibration, and Landscape and Visual during the Construction Phase of the Proposed Development due to increased traffic in the area. These impacts are expected to fluctuate in significance for the duration of the 35-month projected Construction Phase.	

Table 13-19: Material Assets - Waste and Utilities

Material Assets - Waste and Utilities	
Summary	
Chapter 12 of the EIAR, *Material Assets*, provides an assessment of the potential impacts of the Proposed Development on Material Assets including traffic, built services and infrastructure. Increased construction waste production for duration of Construction Phase of Proposed Development. Additionally, temporary negative impacts on biodiversity due to construction traffic are expected as a result of Proposed Development. Abstraction and discharge to/from local water network under consent of Irish Water during the Construction Phase of the Proposed Development.	
Interactions	
Population and Human Health	In the absence of mitigation, the improper removal, handling and storage of waste could negatively impact on the health of construction workers. Extended power or telecommunications outages, or disruption to water supply or sewerage systems for existing properties in the area could negatively impact on the surrounding human population and their overall health. Chapter 4 (Population and Human Health) of this EIAR has concluded that no long term, adverse effects are likely to impact on Population and Human Health as a result of the Proposed Development.
Biodiversity	Any discharges to the public foul sewer and abstractions from water supply from the Proposed Development will be under consent from Irish Water. An assessment of the potential impact of the Proposed Development on biodiversity has been set out in Chapter 5 of this EIAR.
Hydrology and Hydrogeology	All connections to the public water network (water supply or foul sewer), abstractions from water supply and discharges to the foul sewer during the Construction and Operational Phases will be under consent from Irish Water. An assessment of the potential impact of the Proposed Development on Water are addressed in Chapter 7 (Hydrology & Hydrogeology) of this EIAR. Chapter 7 has concluded that there are no likely significant adverse residual impacts on hydrology and hydrogeology anticipated regarding this Proposed Development.
Material Assets: Traffic	Waste collection activities at the Proposed Development have the potential to impact upon traffic movements in the local areas. An assessment of the potential impact of the Proposed Development on Traffic are addressed in Chapter 12.1 of this EIAR. Chapter 12.1 has concluded that there the Proposed Development will not have a significant impact on traffic.
Conclusions	
The Construction Phase of the Proposed Development has the potential to cause adverse effects to Biodiversity and Traffic through increased waste collection related traffic activity which is expected to be insignificant.	

The Construction Phase of the Proposed Development has the potential to cause adverse effects to Population and Human Health, and Hydrology and Hydrogeology through the improper removal, handling and storage of waste and the potential for foul water discharge.

The Operational Phase of the Proposed Development will see minor increases in demand for local power supply, Information and Communications Technology, hydrology, water supply and waste management. However, these increased demands are predicted to be minor to insignificant.

However, appropriate Mitigation and Monitoring methods have been established in the respective Chapters.

14.4 References

EIAR Chapters 4 to 12 inclusive.

15 MITIGATION AND MONITORING

15.1 Introduction

This EIAR has assessed the impacts and resulting effects likely to occur as a result of the Proposed Development on the various aspects of the receiving environment.

The Proposed Development will be operated in a manner that will ensure that the potential impacts on the receiving environment are avoided where possible. In cases where impacts or potential impacts have been identified, mitigation measures have been proposed to reduce the significance of particular impacts. These mitigation recommendations are contained within each chapter exploring specific environmental aspects.

This chapter of the EIAR collates and summarises the mitigation commitments made in Chapter 4 to Chapter 13.

15.2 Summary of Mitigation Measures

15.2.1 Population and Human Health

15.2.1.1 *Construction Phase*

15.2.1.1.1 Mitigation

During the Construction Phase of this Proposed Development, all HSE guidelines in place at the time of the Construction Phase will be adhered to in relation to social distancing, cough and sneeze etiquette, face masks and hand washing. Appropriate welfare facilities will be provided at the facility.

No specific mitigation measures are required during the Construction Phase of the Proposed Development in relation to population and human health, given the lack of direct effects resulting from the Proposed Development. However, where required, mitigation measures in relation to air quality, noise, traffic, waste etc. are identified in their respective chapters in this EIAR.

15.2.1.1.2 Monitoring

No specific monitoring measures are proposed or required in relation to Population and Human Health for the Construction Phase of the Proposed Development.

Monitoring activities will be implemented for the for the Construction Phase in accordance with the CEMP submitted as part of this planning application.

15.2.1.2 *Operational Phase*

15.2.1.2.1 Mitigation

All workers employed during the Operational Phase of the Proposed Development will comply with the relevant HSE guidelines and any Government protocols that may be in place at that point in time in relation to Covid-19.

No specific mitigation measures are required in relation to population and settlements, given the lack of direct effects resulting from the Proposed Development. However, where required, mitigation measures in relation to air emissions, noise, traffic etc. are identified in their respective chapters in this EIA Report.

15.2.1.2.2 Monitoring

No specific monitoring measures are required in relation to population and settlements, given the lack of direct effects resulting from the Proposed Development. However, where required, monitoring in relation to air emissions, water, noise and traffic are identified in their respective Chapters in this EIAR.

15.2.2 Biodiversity

15.2.2.1 *Construction Phase*

Standard construction and operational controls will be incorporated into the Proposed Development project to minimise the potential negative impacts on the ecology within the Zone of Influence (ZoI).

Designated Conservation sites within 15km

Mitigation measures are required to ensure that there are no contaminated discharges from the site including surface runoff leading to the existing surface water drainage network and the Poddle Stream and downstream designated sites.

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Contamination of watercourses. As the surface water drainage network leading to the Poddle Stream is located proximate to the subject site and substantial works are proposed, a project ecologist should be appointed prior to works or site clearance commencing on site. All mitigation design must be carried out in consultation with and to the satisfaction of the project ecologist, following the best practice guidelines for construction in the vicinity of watercourses.

All works on site should have sufficient mitigation measures to prevent silt from runoff during works. This should include measures outlined by the project ecologist including silt fences, phasing of the project and landscaping at early stage of the project to limit surface runoff.

15.2.2.1.1 Drainage on site.

h) Channels will be prepared on site, in the vicinity of future access roads. Within these channels silt fences/barriers will be placed and will consist of woven/terram style material of suitable density to remove the majority of silt from runoff. These will be maintained throughout the construction phase to ensure efficiency, prior to the installation of the permanent drainage network.
i) Silt fences will be placed along the edge of the riparian corridor (outside of future construction areas) to capture runoff from the site. These will also prevent machinery from entering the riparian corridor.
j) Mitigation measures including silt fences will be in place (in consultation with the project ecologist) to capture silt from runoff and prevent it from entering the drainage ditch during the culvert works.
k) Appropriate storage and settlement facilities will be provided on site. This could include the provision of silt and petrochemical interception for water pumped on site (if required).
l) Fuel, oils and Chemicals will be stored on an impervious base with a bund. Under LEED there will be a strategy put in place to prevent pollution of the watercourse. In most cases this will involve collecting the run-off and routing it to treatment by filtration, settlement or specialist techniques.
m) A project ecologist will be appointed to oversee works.
n) The project ecologist will inspect the interceptors on site post construction.

15.2.2.1.2 Birds

b) Relevant guidelines and legislation (Section 40 of the Wildlife Acts, 1976 to 2012) in relation to bird nesting will be carried out. Should this not be possible, a pre-works check by a qualified ecologist should be undertaken to ensure nesting birds are absent.

15.2.2.1.3 Bats

c) Lighting at all construction stages will be done sensitively on site with no direct lighting of site boundaries and lands to the south of the Proposed Development.
d) Lighting during operation will be controlled and spill in to the site to the south of the site.

15.2.2.2 *Operational Phase*

15.2.2.2.1 Drainage on site.

b) The project ecologist will inspect the interceptors on site post construction.

15.2.3 Land and Soils

15.2.3.1 *Construction Phase*

15.2.3.1.1 Mitigation

A Construction Environmental Management Plan (CEMP) which has been prepared by Enviroguide Consulting and the Construction and Demolition Waste Management Plan (AECOM, 2022b) will be implemented by the Contractor to ensure, site-specific procedures and mitigation measures to monitor and control environmental impacts throughout the Construction Phase of the Proposed Development and ensure that construction activities do not adversely impact the environment. The CEMP will take cognisance of the measures outlined in the EIAR and the CDWMP prepared by the Contractor and CEMP prepared by Enviroguide Consulting to be submitted under separate cover with the planning application for the Proposed Development.

Mitigation measures will be adopted as part of the construction works on the Proposed Development Site. The measures will address the main activities of potential impact which include:

- Control and Management of Water and Surface Runoff;
- Management and control of works nearby water courses;
- Management and construction materials from off-site sources;
- Fuel and Chemical handling, transport and storage; and
- Accidental release of contaminants – notify relevant statutory authorities.
- Management of any as yet unidentified, unanticipated, contaminated materials on site encountered during the Construction Phase

15.2.3.1.1.1 Export of Soil and Stone Material

The removal offsite of the existing stockpiled soils and surplus soil and stone from the Proposed Development will be reused as a by-product under Article 27 by-product notification or sent for recovery at a suitable authorised facility. It will be the contractor's responsibility to engage a specialist waste service contractor (s) who will possess the requisite authorisations, for the collection and movement of by-product / waste materials offsite. Material will be brought to an authorised facility which currently holds an appropriate waste facility permit or licence for the specified waste types. Waste Permitting, Licences & Documentation under the Waste Management (Collection Permit) Regulations 2007, as amended, a collection permit to transport waste, must be held by each waste collection contractor.

The reuse of excavated soil and stone for the Proposed Development (i.e., topsoil for landscaping) will be subject to assessment of the suitability for use in accordance with engineering and environmental specifications for the Proposed Development.

15.2.3.1.1.2 Import of Aggregates

Contract and procurement procedures will ensure that all imported aggregates required for the Proposed Development will be sourced from reputable suppliers operating in a sustainable

manner and in accordance with industry conformity/compliance standards and statutory obligations. The importation of aggregates will be subject to management and control procedures which will include testing for contaminants, invasive species and other anthropogenic inclusions and assessment of the suitability for use in accordance with engineering and environmental specifications for the Proposed Development. Therefore, any unsuitable material will be identified prior to unloading / placement onsite.

15.2.3.1.1.3 Management of Stockpiles (soil and other materials/ waste)

For any excavated material identified for removal offsite, while assessment and approval of acceptance at a destination re-use, recovery site or waste facility is pending, excavated soil for recovery/disposal will be stockpiled as follows:

- A suitable temporary storage area will be identified and designated;
- All stockpiles will be assigned a stockpile number;
- Material identified for reuse on site, off site and waste materials will be individually segregated; and all segregation, storage & stockpiling locations will be clearly delineated on the Site drawings;
- Soil stockpiles will be sealed to prevent run-off from the stockpiled material generation and/or the generation of dust;
- Any waste that will be temporarily stored / stockpiled will be stored on impermeable surface high-grade polythene sheeting, hardstand areas or skips to prevent cross-contamination of the soil below or cross contamination with soil;
- Overburden material will be protected from exposure to wind by storing the material in sheltered regions of the Site;
- Regular watering will take place to ensure the moisture content is high enough to increase the stability of the soil and thus suppress dust; and
- Stockpiles will not be located near Site boundaries or sensitive receptors and a set-back of 10m will be maintained from any boundary with offsite receptors.

When a stockpile has been sampled for classification purposes, it will be considered to be complete, and no more soil will be added to that stockpile prior to removal off site. An excavation/stockpile register will be maintained on-site

Any waste generated from construction activities, including concrete, asphalt and soil stockpiles, will be stored on-site in such a manner as to:

- Prevent environmental pollution (bunded and/or covered storage, minimise noise generation and implement dust/odour control measures, as may be required);
- Maximise waste segregation to minimise potential cross contamination of waste streams and facilitate subsequent re-use, recycling and recovery; and
- Prevent hazards to site workers and the general public during construction phase (largely noise, vibration and dust).

15.2.3.1.1.4 Concrete Works

Where possible precast concrete will be used where required during construction. However, where cast-in-place concrete is required (i.e. foundations, footpaths), all work will be carried

out to avoid any contamination of the receiving soil and geological environment through the use of appropriate design and methods implemented by the Contractor and in accordance with industry standards.

All ready-mixed concrete will be delivered to the Proposed Development Site by truck. Concrete mixer trucks will not be permitted to wash out on-site with the exception of cleaning the chute into a container which will then be emptied into a skip for appropriate compliant removal offsite.

15.2.3.1.1.5 Handling of Chemicals and Fuels

- Refuelling of plant during the Construction Phase will only be carried out at designated refuelling station to be determined by the contractor. Each station will be fully equipped for spill response and a specially trained and dedicated Environmental and Emergency Spill Response team will be appointed before the commencement of works onsite;
- Only emergency breakdown maintenance will be carried out onsite. Drip trays and spill kits will be available on site to ensure that any spills from vehicles are contained and removed offsite;
- Any diesel, fuel or hydraulic oils stored on site will be stored in bunded storage tanks- the bunded area will have a volume of at least 110% of the volume of the stored materials as per best practice guidelines (Enterprise Ireland, BPGCS005) and Environmental Protection Agency guidelines 'Storage and Transfer of Materials for Scheduled Activities' and amending supporting documents (EPA, 2004); and
- Emergency procedures will be developed by the appointed contractor, and spillage kits will be available on-site including in vehicles operating on-site. Construction staff will be familiar with emergency procedures for in the event of accidental fuel spillages. Remedial action will be immediately implemented to address any potential impacts in accordance with industry standards and legislative requirements. In the event of a leak or spill from equipment in the instance of a mechanical breakdown during operation, any contaminated soil will be removed from the Site and compliantly disposed off-site. Residual soil will be tested to validate that all potentially contaminated material has been removed. This procedure will be undertaken in accordance with industry best practice procedures and standards. These measures will ensure that there is minimal risk to soils and geology associated with the Construction Phase of the Proposed Development.

15.2.3.1.2 Monitoring

There are no monitoring requirements specifically in relation to land, soil and geology.

15.2.3.2 ***Operational Phase***

15.2.3.2.1 Mitigation

There is no requirement for mitigation measures for the Operational Phase taking account of the design measures for the Proposed Development.

The Proposed Development Site is not considered to be within a High Radon Area and where required radon barriers will be installed in accordance with current building regulations.

15.2.3.2.2 Monitoring

There are no monitoring requirements specifically in relation to land, soil and geology.

15.2.4 Hydrology

15.2.4.1 *Construction Phase*

15.2.4.1.1 Mitigation

A Construction Environmental Management Plan (CEMP), has been prepared by Enviroguide Consulting and a Construction and Demolition Waste Management Plan (CDWMP), prepared by AECOM (AECOM, 2022c) will be implemented by the appropriate contractor to ensure, site-specific procedures and mitigation measures to monitor and control environmental impacts throughout the Construction Phase of the Proposed Development and ensure that construction activities do not adversely impact the environment. The CEMP and CDWMP will be submitted under separate cover with the planning application for the Proposed Development.

Mitigation measures will be adopted as part of the construction works on the Proposed Development Site. The measures will address the main activities of potential impact which include:

- Control and Management of Water and Surface Runoff;
- Management and control of materials from off-site sources;
- Appropriate fuel and Chemical handling, transport and storage; and
- Management of accidental release of contaminants at the Site.

The construction works will be managed in accordance with all statutory obligations and regulations and with standard international best practice; good construction management practices will minimise the risk of pollution from construction activities at the site including but not limited to:

- CIRIA, (2001), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors;
- Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (C650), 2005;
- BPGCS005, Oil Storage Guidelines;
- EPA (2004) IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities;
- CIRIA 697, The SuDS Manual, 2007;
- UK Pollution Prevention Guidelines (PPG) UK Environment Agency, 2004; and
- Construction Industry Research and Information Association CIRIA C649: Control of water pollution from linear construction projects: Technical guidance (Murnane et al. 2006).

15.2.4.1.1.1 Control and Management of Water

There will be no direct discharges from construction activities to groundwater or surface water during the Construction Phase other than clean rainfall on ground. The Contractor will to ensure that no contaminated water/ liquids leave the Proposed Development Site (as surface water and run-off or otherwise) and enter the existing drainage at the Site or local drainage gullies on the adjoining roads including Margaret Kennedy Road and Donore Avenue.

There may be a requirement for localised dewatering or sump pumping on a temporary basis during excavation and management of water from these excavations will include control of surface water runoff and pumping of water from excavations.

Where necessary the water will be treated onsite to remove sediment or other potentially contaminating compounds. The treated water will be tankered offsite or discharged to foul sewer only under licence from Irish Water as appropriate.

A regular review of weather forecasts of heavy rainfall will be conducted, and a contingency plan will be prepared for before and after such events to minimise any potential nuisances. As the risk of the break-out of silt laden run-off is higher during these weather conditions, no work will be carried out during such periods where possible.

15.2.4.1.1.2 Control and Management of Soil

Based on the findings of the Site investigations at the Site (GII, 2021) (Appendix H) localised pockets of contaminated soil are expected to be encountered at the Site. The proposed floor levels and depth required for drainage infrastructure for the Proposed Development indicate that these localised contaminated soils will be removed during excavation works at the Site.

As with any brownfield site there may be as yet unidentified contaminated soils or other contaminated materials and infrastructure. Any potentially contaminated materials including those encountered during construction works will be managed in accordance with relevant guidelines including EPA 'Guidance on the Management of Contaminated Land and Groundwater at EPA Licensed Sites' (EPA, 2013) and guidance and standards current at the time of construction works. Therefore, there will be no residual sources of contamination that will remain onsite that could pose a risk to water quality. Potentially contaminated soil to be excavated and removed and disposed of off-site in accordance with the Waste Management (Amendment) Act, 2001, and associated regulations and guidance.

Any surplus soil not suitable for re-use as a by-product and other waste materials arising from the Construction Phase will be removed offsite by an authorised contractor and sent to the appropriately authorised (licensed/permitted) receiving waste facilities.

Stockpiled soil and stone materials pending removal offsite or reuse onsite will be located in in designated areas only and there will be no storage of materials within 10m of any boundary, drains and watercourses.

While waste classification and acceptance at a waste facility is pending, excavated soil for recovery/disposal will be stockpiled as follows:

- A suitable temporary storage area will be identified and designated;
- All stockpiles will be assigned a stockpile number;
- Soil waste categories will be individually segregated; and all segregation, storage & stockpiling locations will be clearly delineated on the Site drawings;
- Any waste to be temporarily stockpiled will be stockpiled only on hard-standing or high-grade polythene sheeting to prevent cross-contamination of the soil below; and
- Soil stockpiles will be sealed to prevent run-off of rainwater and leaching of potential contaminants from the stockpiled material generation and/or the generation of dust.

15.2.4.1.1.3 Importation of Soil and Aggregates

Contract and procurement procedures will ensure that all aggregates and fill material required are sourced from reputable suppliers operating in a sustainable manner and in accordance with industry conformity and compliance standards and statutory obligations.

The importation of aggregates will be subject to management and control procedures which will include testing and assessment of the suitability for use in accordance with engineering and environmental specifications for the Proposed Development including the suitability of material that may be imported in accordance with a By-Product Notification under Article 27 of the European Communities (Waste Directive) Regulations 2011. Therefore, any unsuitable material will be identified, avoided and not imported to the Site.

15.2.4.1.1.4 Concrete Works

The use of cementitious grout used during the construction of the undercroft structures and other infrastructure will be required and any potential impact to water quality will be avoided through the use of appropriate design and methods that will be implemented by the Contractor and in accordance with industry standards.

All ready-mixed concrete will be delivered to the Proposed Development Site by truck. Concrete mixer trucks will not be permitted to wash out onsite with the exception of cleaning the chute into a container which will then be emptied into a skip for appropriate compliant removal offsite.

15.2.4.1.1.5 Piling Methodology

The proposed piling methodology will minimise the potential for the introduction of any temporary conduit between any potential sources of contamination at the ground surface and underlying groundwater. The piling method will include procedures to ensure any potential impact to water quality is prevented including preventing surface runoff or other piling/drilling fluids from entering the pile bores and surrounding formation. Where there is a requirement to use lubricants, drilling fluids or additives the contractor will use water-based, biodegradable, and non-hazardous compounds under controlled conditions.

15.2.4.1.1.6 Handling of Fuels and Hazardous Materials

Fuel, oils and chemicals used during construction are classified as hazardous. Storage of fuel and hazardous materials will be undertaken with a view to protecting any essential services (electricity, water etc.) and the receiving land, soil and geology environment. Bulk quantities of fuel will not be stored at the Site.

There will be appropriate storage areas for any fuel, oils and chemicals. Storage will be within a clearly marked bund on an impervious base remote from any surface water features such as oil. Temporary oil interceptors will be installed for period of the construction phase. Fuel will only be stored in the quantities required for emergency use and re-fuelling. All drums to be quality approved and manufactured to a recognised standard. If drums are to be moved around the Site, they will be secured and moved on spill pallets. Drums will be loaded and unloaded by competent and trained personnel using appropriate equipment.

Bunds will have regard to Environmental Protection Agency guidelines ‘Storage and Transfer of Materials for Scheduled Activities’ (EPA, 2004) and Enterprise Ireland. Best Practice Guide BPGCS005. Oil Storage Guidelines. All tank and drum storage areas will, as a minimum, be bunded to a volume not less than the greater of the following:

- 110% of the capacity of the largest tank or drum within the bunded area; or
- 25% of the total volume of substance that could be stored within the bunded area.

Only emergency maintenance will be carried out on site.

Emergency response procedures will be put in place, in the unlikely event of spillages of fuels or lubricants.

Spill kits including oil absorbent material will be provided so that any spillage of fuels, lubricants or hydraulic oils will be immediately contained.

In the event of a leak or spill from equipment in the instance of a mechanical breakdown during operation, any contaminated soil will be removed from the Site and compliantly disposed of off-site. Residual soil will be tested to validate that all potentially contaminated material has been removed. This procedure will be undertaken in accordance with current industry best practice procedures and EPA guidelines.

Site staff will be familiar with emergency procedures in the event of accidental fuel spillages and all staff on-site will be fully trained on the use of equipment to be used on-site.

Refuelling of plant and vehicles during the Construction Phase will only be permitted at designated refuelling station locations onsite and will be from a road tanker brought to site as required. Each station will be fully contained and equipped for spill response and a specially trained and dedicated Environmental and Emergency Spill Response team will be appointed by the contractor before the commencement of works onsite.

15.2.4.1.1.7 Welfare Facilities

Welfare facilities have the potential, if not managed appropriately, to release organic and other contaminants to ground or surface water courses. All waste from welfare facilities will be managed in accordance with the relevant statutory obligations through either a temporary connection to mains foul sewer (subject to receipt of the relevant consent from Irish Water) which will be constructed in accordance with Irish Water guidelines or by tankering of waste offsite by an appropriately authorised contractor in compliance with all legislative requirements.

15.2.4.1.1.8 Wheel-Wash and Treatment Facilities

The use of wheel-wash and water treatment facilities and water treatment facilities will be used as required on Site. The correct use and management of these will be undertaken by the appointed contractor to ensure that there is no harm or impact to the receiving water environment.

To prevent tracking of dust and debris on haul routes offsite the following will be undertaken:

- Implement a wheel washing system where required;
- Use of dedicated internal haul routes and set down areas that will be covered with hardcore or similar; and
- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site.

To prevent fugitive runoff from the Site the following will be implemented:

- Silt traps, silt fences will need to be provided by the contractor where necessary to prevent silts and soils being washed away by heavy rains during the course of the construction stage;
- Where localised shallow water is encountered in excavations during the construction phase, surface water runoff and water pumped from the excavation works will be discharged via a silt trap / settlement pond to the existing foul drainage network;
- Onsite water treatment system will be used if required to remove suspended solids and hydrocarbons; and
- All sludges and other waste from wheel-wash and water treatment infrastructure will be removed from the Site by the approved contractor in accordance with all legislative requirements.

15.2.4.1.1.9 Decommissioning of Boreholes

Site investigation and monitoring boreholes (wells) at the Site (Refer Section 7.4.1) that are no longer required for monitoring during the Construction Phase or Operational Phase will be decommissioned prior to construction works commencing in accordance with current best-practice at the time of decommissioning and at a minimum the specifications outlined in EPA Advice Noted 14 (EPA, 2013).Monitoring boreholes (wells) retained will be protected to ensure that the well is not damaged during construction works. This will remove any potential direct conduit for contaminants to enter the groundwater directly and potentially migrate offsite.

15.2.4.1.2 Monitoring

During the construction phase the following monitoring measures will be considered:

- The Contractor will carry out inspections and monitoring of general site conditions during excavations, piling and other groundworks to ensure that measures protective of water quality outlined in the EIAR, CEMP and CDWMP are fully implemented and effective;
- Groundwater monitoring will be undertaken by a competent person appointed by the Contractor prior to construction commencing and for the duration of the Construction Phase to verify that there is no impact on the groundwater beneath the Site and downgradient receptors; and
- Daily monitoring and inspections during refuelling, concrete works to ensure no impacts and compliance with ameliorative, remedial and reductive measures.
- Materials management and waste audits will be carried out at regular intervals by the appointed contractor.

There are no other specific monitoring or sampling requirements in relation to hydrology and hydrogeology during the Construction Phase of the Proposed Development.

15.2.4.2 *Operational Phase*

15.2.4.2.1 Mitigation

Ongoing regular operational monitoring and maintenance of drainage and the SuDS measures in accordance with CIRIA SuDS Manual C753 will be incorporated into the overall management strategy for the Proposed Development.

With regard to the proposed discharge of treated operational surface water from the Proposed Development to the Poddle Stream, the potential for surface water generated at the Site of

the Proposed Development to cause significant effects to downstream sensitivities during the Operational Phase would be considered negligible due in part to the SuDS measures and interceptor incorporated in the Project Design. Project specific SuDS measures are described below.

There is no other requirement for mitigation measures for the Operational Phase of the Proposed Development

15.2.4.2.2 Monitoring

There are no monitoring requirements specifically in relation to hydrology and hydrogeology during the Construction Phase of the Proposed Development.

15.2.5 Air Quality and Climate

15.2.5.1 *Construction Phase*

15.2.5.1.1 Mitigation

It is not expected that adverse air quality impacts are likely to occur at sensitive receptors as a result of the Proposed Development. However, the following appropriate mitigation measures along with the measures as outlined within the CEMP, will be employed as necessary to further prevent such impacts occurring:

- Vehicle and wheel washing facilities will be provided at site exit where practicable. If necessary, vehicles are to be washed down before exiting the site.
- Netting is to be provided to enclose scaffolding to mitigate escape of air borne dust from the existing buildings.
- Shroud piling machinery as shown below when operating near to boundaries.
- Engines and exhaust systems will be maintained so that exhaust emissions do not breach stationary emission limits set for the vehicle / equipment type and mode of operation.
- Dust emission over the site boundary will be minimised using static sprinklers or other watering methods as necessary.
- No burning of materials to be permitted on site.
- Water sprays for dust suppression will be affixed to mechanical excavators/munchers involved in demolition works.
- Demolition waste will be removed from site as quickly as possible to minimise risk of dust generation and any fine material will be covered with a tarpaulin or similar material and tied down.
- Water sprays and cannons will be used where possible during cutting, with protective measures applied to retained finishes local to the cutting.
- Prior to commencement, the Main Contractor will identify the construction operations which are likely to generate dust and to draw up action plans to minimise emissions.
- In areas of poor natural ventilation, dust capture/extraction methods will be employed by the Main Contractor.
- The Main Contractor will allocate suitably qualified and experienced personnel to be responsible for ensuring the generation of dust is minimised and effectively controlled.
- The Main Contractor will be required to appoint a senior member of its site management team to act as the liaison with third parties in respect of complaints regarding dust and or site activities.
- Monitoring of dust deposition will be undertaken at nominated boundary locations to ensure that dust levels comply with the TA Lift limit value of 350mg/(m²/day) based on a 30-day average using Bergerhoff gauges (Limits to be agreed with local authority).

15.2.5.1.2 Monitoring

The monitoring of construction dust during the Construction Phase of the Proposed Development will be carried out to ensure that impacts are not experienced beyond the site boundary. Monitoring of dust will be carried out by using the Bergerhoff Method. This involves placing Bergerhoff Dust Deposit Gauges at strategic locations along the site boundaries for a period of 30 +/- 2 days. The selection of sampling point locations should be carried out in

consideration of the requirements of *VDI 2119* with respect to the location of the samplers relative to buildings and other obstructions, height above ground, and sample collection and analysis procedures. After the exposure period is complete, the Gauges should be removed from the site; the dust deposits in each Gauge will then be determined gravimetrically and expressed as a dust deposition rate in mg/m^2/day in accordance with the relevant standard.

There is no requirement to monitor wind impact during construction phase for pedestrian comfort and distress as the designated amenity areas will not be in use during this phase of the project and pedestrians are not accessing construction sites.

15.2.5.2 *Operational Phase*

15.2.5.2.1 Mitigation

It has been determined that the Operational Phase air quality impact is negligible and therefore no site-specific mitigation measures are proposed.

As negative climatic impacts associated with the Construction and Operational Phases of the Proposed Development are negligible, no mitigation measures are proposed. Best practice measures will be implemented to minimise exhaust emissions from construction and operational vehicles and machinery by avoidance of engines running unnecessarily, as idle engines will not be permitted for excessive periods. Furthermore, all proposals for development will seek to achieve the greatest standards of sustainable construction and design and will have regard to sustainable building design criteria.

15.2.5.2.2 Monitoring

Due to the negligible impact on air quality and climate from the Operational Phase of the Proposed Development, no specific monitoring is recommended.

15.2.6 Microclimate

15.2.6.1 *Construction Phase*

15.2.6.1.1 Mitigation

The wind conditions at the Site would gradually adjust to those of the completed development during the construction phase. During the construction phase no mitigation measures are necessary for the purpose of maintaining a comfortable wind micro-climate for the site. During the construction phase the wind micro-climate are infeed transitioning between the conditions obtained for the baseline scenario to the conditions obtained for the proposed development scenario. As seen in the previous analysis, in both scenarios no area was unsafe in terms of wind acceleration or downdraft/funnelling effects therefore the construction of the development will not create any unwanted wind impacts in terms of micro-climate in the area of interest.

15.2.6.1.2 Monitoring

There is no requirement to monitor wind impact during construction phase for pedestrian comfort and distress as the designated amenity areas will not be in use during this phase of the project and pedestrians are not accessing construction sites.

15.2.6.2 *Operational Phase*

15.2.6.2.1 Mitigation

The landscaping proposed for the development has been considered within the wind analysis carried out and its effect has been beneficial in reducing the wind speed around the development and creating calmer wind condition in areas such the parks and landscaped areas where pedestrian can be comfortable for long-term sitting. Landscaping is simulated as porous zones within the CFD model.

15.2.6.2.2 Monitoring

The development has been designed to conform to acceptable Lawson Criteria for Comfort and Distress in accordance with the Wind Beaufort Scale and considering the historical wind conditions of the site, there is no further element to monitor for this scope as far as the landscaping is maintained in place as designed.

15.2.7 Noise and Vibrations

15.2.7.1 *Construction Phase*

15.2.7.1.1 Mitigation

The following noise and vibration management measures will apply to the Proposed Development to ensure the daytime threshold values specified in this chapter are complied with:

- A Site Representative will be appointed for matters related to noise and vibration.
- Any complaints received will be thoroughly investigated.
- A written complaints log will be maintained by the Site Representative. This will, at a minimum, record complainant's details (where agreed) the date and time of the complaint, details of the complaint including where the effect was observed, corrective and preventative actions taken and any close-out communications. This will ensure that the concerns of local residents who may be affected by site activities are considered during the management of activities at the site.
- Noise monitoring with capability for real-time review both on-site and remotely will be conducted at nearby NSLs listed earlier in this chapter.
- In the event of meeting or exceedance of the threshold values at NSLs, works will be ceased and measures implemented immediately to ensure that the limits are complied with.
- The Site Representative will also liaise with the Site Representatives on other active construction sites in the immediate vicinity. In particular, liaison will be required when noisy activities are planned to ensure that cumulative noise levels do not meet or exceed the threshold values through measures such as timing of works. As noise monitoring will have capability for remote viewing, all Site Representatives can have access to monitoring data.
- According to BS5228-1, bored piles can be constructed by means of a rotary piling rig or by impact boring. The associated noise characteristics are normally steady unless it is necessary to insert steel casings for part of the depth which could result in intermittent high peaks which can be more disturbing and result in higher noise levels. Continuous flight auger (CFA) piling, as proposed, is a means of bored piling that does not need a temporary casing thus eliminating intermittent high peaks. CFA piling is considered one of the quietest methods of piling available. Bored piling methods are often considered as a reduced noise alternative to driven piles. Driven piles also have more potential for vibratory impact. Therefore, the use of CFA piling is a mitigating factor incorporated into the design. CFA in particular is recommended on sensitive sites. Due to the urban nature and the presence of potentially sensitive equipment in the Coombe Women and Infants University Hospital labs, CFA piling is the most suitable choice of bored piling type.
- Temporary acoustic screening will be placed along the boundaries with NSL2 at Margaret Kennedy Road and additional hoarding at NSL4 above the existing wall to further mitigate HGV movement noise on the access route. As a general rule of thumb, it is recommended that temporary screening break the "line of sight" from the sources to the lower windows of the nearest NSLs where possible.
- Low noise plant and/or the use of enclosures will be chosen to minimise construction noise impact.

- The operation of certain pieces of equipment, where substitution, enclosure etc. cannot be carried out will be managed through monitoring and timing of use to ensure that noise levels remain below the threshold values/criteria specified.
- During the construction phase all equipment will be required to comply with noise limits set out in EC Directive 2000/14/EC and the 2005/88/EC amendment on the approximation of the laws of the Member States relating to the noise emission in the environment by equipment for use outdoors. The directive covers equipment such as compressors, welding generators, excavators, dozers, loaders and dump trucks.

As a precautionary measure and as part of good practice, vibration monitoring will be carried out where works are in close proximity to VSLs1, 2 and 3 and at NSLs 2 and 4 during piling and other activities such as compacting of roads using rollers. As a precautionary measure, test monitoring will be completed at NSL2 in relation to HGV pass-bys to ensure that there is no vibration impact due to construction traffic. With regards to piling, test monitoring will be conducted with the equipment on at low levels before increasing incrementally to operational levels, if deemed necessary. Works will be ceased, and mitigation measures implemented where monitoring detects vibration levels associated with the works above the manufacturer's guidelines for the lab equipment in-situ.

The outline CEMP submitted with this application will include the noise and vibration management measures listed above.

15.2.7.1.2 Monitoring

The contractor will be required by contractual obligation to ensure construction activities operate within the noise threshold values and vibration limits set out within this assessment. The contractor will be required to undertake real-time noise monitoring at locations representative of the closest NSLs to ensure that construction noise is maintained below the relevant threshold values. Vibration test monitoring will be required at VSLs especially during piling to ensure that limits stated in the chapter, and limits as required in the Coombe Women and Infants University Hospital laboratories in accordance with manufacturers specifications are not exceeded. In this regard, pre monitoring will be completed to establish existing vibration levels in the laboratories.

15.2.7.2 *Operational Phase*

15.2.7.2.1 Mitigation

Any plant equipment proposed for installation in the future to serve commercial units will be assessed in accordance with the procedures set out in BS4142:2014+A1:2019 to ensure there is no significant effect on the nearest NSRs (future residents).

At a minimum, these units must comply with the external day and night-time criteria specified in The World Health Organisation Community Guidelines for Noise, 1999:

- Night-time - L_{Aeq} 45 dB, 1 meter from the façade of a dwelling.
- Daytime – L_{Aeq} 55 dB, to protect the majority of people from being seriously annoyed during the daytime.

Plant will be specified to ensure that there are no tonal or impulsive elements.

With regards to future residential amenity, the external plant associated with the existing laboratory will be removed as agreed with the Coombe Women and Infants University Hospital.

15.2.7.2.2 Monitoring

Not applicable.

15.2.8 Landscape and Visual

15.2.8.1 *Construction Phase*

15.2.8.1.1 Mitigation

Not mitigation measures proposed during the Construction Phase.

15.2.8.1.2 Monitoring

No monitoring requirements are required in relation to landscape and visual during the construction or operational phase of the project.

15.2.8.2 *Operational Phase*

15.2.8.2.1 Mitigation

Considering the location and height of the Proposed Development, which is an infill site enclosed by adjacent dwellings and health facilities, the principal mitigation for the site is inherent in the architectural design, façade materials and details.

The proposed landscape design cannot mitigate the building height but it will provide a park at ground level with interconnecting spaces which will weave together the various adjoining developments and link together the various open spaces and residences. The drawings illustrating the proposed landscape design and the associated detailed design report are contained within the planning application documents. A synopsis is provided below.

The inspiration for the landscape design concept of the weft thread is drawn from the area's rich weaving history and Huguenot legacy. The proposals include vibrant interconnecting environmental, social and physical fibres which intertwine within the Donore Project Park and subsequently permeate throughout the rest of the site. These landscape proposals represent the source of the weft thread which brings 'colour to the weave' and in this instance enhancement and completeness to the DCC SDRA 12 Framework Plan. As such the Donore Project Park becomes the 'Key which unlocks the Framework Plan'.

The Donore Project Park consists of a series of high quality, functional, amenable, well overlooked, permeable active and passive open spaces and informal play spaces which are interconnected with a network of pedestrian and cycle routes. It is the Primary Pedestrian Space at the centre of the SDRA 12 Framework Plan and it links the various open spaces and residences together. Passive surveillance is provided from DCC1, DCC3 & DCC5 as well as Players Park. Donore Park is a place for resting, active and passive uses and informal play. It is the link between the physical, social and environmental influences of the residences and Player Wills Park to the south and the GAA pitch to the north. The Donore Project Park provides visual integration as it connects the different projects which make up the Framework Plan. This is achieved through full integration of the design concepts of the adjacent proposals and appropriate selection of the hard and soft landscaping palette.

15.2.8.2.2 Monitoring

No monitoring measures will be required at operational phase.

15.2.9 Archaeology and Cultural Heritage

15.2.9.1 *Construction Phase*

15.2.9.1.1 Mitigation

Impacts to known and unknown heritage assets within the Proposed Development site will be mitigated by appropriate archaeological mitigation works carried out at the pre-construction phase. This proposed mitigation is outlined below and illustrated in Figure 11-9.

The potential archaeological features uncovered in AA1 and AA2 should be resolved through archaeological excavation.

The previous archaeological trenching regime (2021) was specifically situated to target the area where the former line of the watercourse (DU018-04304) and laundry stream were located whilst also investigating the general archaeological potential of the Proposed Development site. This exercise was limited due to access restrictions, with the result that areas of the Proposed Development site remained untested and could contain unrecorded archaeological features. Similarly, the eastern extents of the Proposed Development site leading to Donore Avenue remain untested.

Given these conditions, it is proposed that these areas (above) are subject to archaeological testing at pre-construction phase (Figure 15-1 and Appendix 11E which can be found in Appendix K of this EIAR.). This testing would most likely take the form of test trenching. Any archaeological features uncovered should be resolved through archaeological excavation.

All archaeological works will be agreed by the Archaeological Consultant and the National Monuments Service (NMS) and will be carried out in compliance with the National Monuments Acts 1930 – 2014 and Policy and Guidelines on Archaeological Excavation (Department of Arts, Heritage Gaeltacht and the Islands, 1999).

A suitably qualified and licensed Archaeological Contractor will be appointed to carry out the archaeological fieldwork. Relevant licenses will be acquired from the DoCHG/NMS and the National Museum of Ireland (NMI) for all archaeological works, which will be carried out in accordance with an Overarching Method Statement for Archaeological Works prepared by the Archaeological Consultant and agreed with the NMS. It is anticipated that all archaeological works will be completed pre-construction.

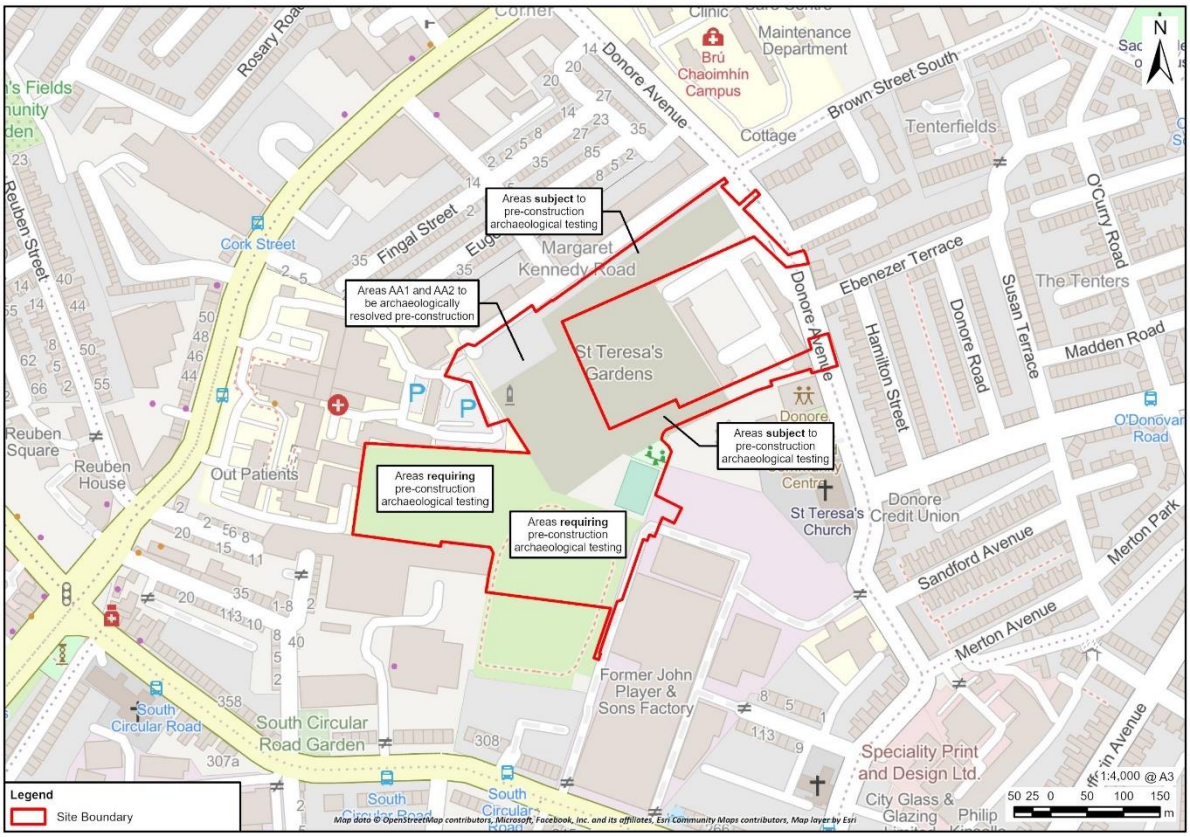

Figure 15-1 Proposed archaeological mitigation.

15.2.9.1.2 Monitoring

It is anticipated that all archaeological testing and excavation will be carried out at pre-construction stage in areas identified where the Proposed Development has the potential to impact upon archaeological remains (Refer to Section 11.6.1).

If unexpected archaeological remains or artefacts are discovered during construction work, work in that area will cease and the area will be protected. An unexpected finds procedure will be included in the Overarching Method Statement for Archaeological Works. The Archaeological Consultant and the National Monument Service will be notified, and the unexpected finds procedure will be implemented, whereby the archaeological remains will be investigated by the licensed Archaeological Contractor and resolved to ensure minimal delay to the construction programme.

15.2.9.2 *Operational Phase*

15.2.9.2.1 Mitigation

Appropriate measures will have been implemented at construction phase to avoid or reduce adverse impacts. No further mitigation should be required at the Operational phase.

15.2.9.2.2 Monitoring

No measures will be required at operational phase.

15.2.10 Materials Assets - Traffic

15.2.10.1 *Construction Phase*

15.2.10.1.1 Mitigation

A Framework for a Construction Traffic Management Plan (CTMP) is to be provided as part of the LDA Planning Application and separate to the EIAR. A formal CTMP would then require to be developed in consultation with Dublin City Council, The Land Development Agency (Applicant)and other stakeholders should consent be granted. The CTMP would set out the following mitigation measures;

- The necessary agreements and timing restrictions for construction traffic, for example Monday- Friday working only, prohibition during school drop off and pick up times and prohibition during loading times at commercial premises.
- Details of a proposed Condition Survey on Access routes
- Proposals for maintenance of the agreed routes for the duration of the construction phase;
- Proposals for monitoring and agreeing maintenance costs;
- The mechanism for managing and monitoring the CTMP manage all aspects of the plan;
- Route signage;
- Maintaining access to commercial/business premises. For example temporary accommodation works and additional information signage;
- Details of the advanced notification to the general public warning of any construction transport movements, specifically abnormal loads;
- Preparation of a Green Travel Plan for staff;
- Details of information road signage warning road users of construction traffic movements;
- Arrangements for regular road maintenance and cleaning, e.g. road sweeping in the vicinity of the Proposed Development site access point as necessary, wheel cleaning/dirt control arrangements;
- Contractor speed limits; and
- Community and emergency services liaison details.
- The use of Park and Share facilities for construction staff;
- The promotion of electric vehicles for Park and Stride and general car/van access;
- Any potential mitigation to consider cumulative construction traffic can be addressed via the final CTMP.

15.2.10.1.2 Monitoring

The construction phase will be monitored by the appointed site manager and regular progress reports will be prepared. The manager will ensure the mitigation measures outlined will be implemented and adhered to.

15.2.10.2 *Operational Phase*

15.2.10.2.1 Mitigation

A Mobility Management Plan (MMP) submitted under a separate cover which is intended to reduce the need for car travel. The measures included in the MMP are as follows:

- Appointment of Mobility Manager;
- Welcome Travel Pack with details of local transport network, maps of local amenities, detail of on-site facilities, incentivises for sustainable travel (taster tickets) and initial subsidised use of Car Club;
- Marketing and Travel information and Personalised Travel Planning to be provided by Mobility Manager;
- Walking and Cycling Challenges and promotion events;
- 30 on-site GoCars assumed exclusive use of residents.

15.2.10.2.2 Monitoring

A mobility manager will be appointed from within the management company to ensure the implementation of the Mobility Management Plan. They will also be responsible for the undertaking of post occupation travel surveys and act as a point of contact for residents for all mobility and access related issues.

15.2.11 Materials Assets – Waste and Utilities

15.2.11.1 *Construction Phase*

15.2.11.1.1 Mitigation

The following mitigation measures are proposed for the Construction Phase of the Proposed Development with reference to Material Assets:

The Proposed Development must comply with the provisions of the Construction and Demolition Waste Management Plan, with respect to construction waste. Potential waste will be prevented, re-used recycled on site where practicable by refence to Article 27 and 28. Waste will be stored onsite in such a manner as to:

- Prevent environmental pollution.
- Minimise nuisance generation such as dust.
- Maximise waste segregation to minimise potential cross contamination of waste streams and facilitate subsequent re-use, recycling, and recovery.

In the event that hazardous soil, or historically deposited waste is encountered during the site bulk excavation phase, the contractor segregated it, will notify DCC and provide a Hazardous/Contaminated Soil Management Plan, to include estimated tonnages, description of location, any relevant mitigation, destination for disposal/treatment, in addition to information on the proposed authorised waste collector(s).

Additionally, a Construction Environmental Management Plan will be in effect for the full duration of works. The Health and Safety Authority's "*Code of Practice for Avoiding Danger from Underground Services*" (2010) will be followed during construction and excavation activities, and all underground and overhead utilities and public services will be identified and protected during the Construction Phase.

Provision of utilities will be carried out in accordance with the recommendations of the relevant authorities (ESB, GNI, IW, Eircom, DCC etc.). All temporary suspensions to public services will be controlled by the relevant undertaker, in accordance with standard protocols and all services will be reinstated as soon as possible post connection. Potable water networks and foul water sewers will be properly tested prior to connection.

15.2.11.1.2 Monitoring

The monitoring of C&D waste during the Construction Phase of the Proposed Development is recommended to ensure that impacts are not experienced beyond the site boundary. The Resource and Waste Manger will be responsible for monitoring and record keeping in respect of waste leaving the facility and that these records will be maintained on site.

15.2.11.2 *Operational Phase*

15.2.11.2.1 Mitigation

The Proposed Development must comply with the provisions of the Operational Waste Management & Recycling Strategy with respect to operational waste.

15.2.11.2.2 Monitoring

The building management company, residents, tenants and creche operators will be required to maintain the bins and storage areas in good condition as required by the DCC Waste Bye-Laws. The waste strategy presented in the OWMRS will provide sufficient storage capacity for the estimated quantity of segregated waste. The designated areas for waste storage will provide sufficient room for the required receptacles in accordance with the details of this strategy. The areas will be fitted with CCTV for monitoring.