

ENVIRONMENTAL IMPACT ASSESSMENT REPORT: VOLUME II

RECEIVED: 22/10/2025



Mixed-use Development

The Former Chadwick's Site, South of Greenhills Road,
Walkinstown, Dublin 12.

SUBMITTED ON BEHALF OF:
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1.0 INTRODUCTION

1.1 Background

The Applicant, Steeplefield Limited has acquired the subject lands (Former Chadwick's Site, South of Greenhills Road, North West of Brennan's Factory, North East of Key Waste, Greenhills Industrial Estate, Walkinstown, Dublin 12) with the intention of securing the optimum land use on these underutilised lands on Greenhills Road. The lands form part of an area identified for 'regeneration' in the South Dublin County Development Plan 2022-2028 and is expected to be the subject of extensive urban renewal in the coming years.

A 5-12 storey mixed-use development, comprising 588 no. residential apartments, 6 no. commercial/retail units and a childcare facility, has been identified as the preferred development option for the subject site, having regard to the employment opportunities existing in the surrounding area, and the sites proximity to public transport services including a quality bus corridor along Greenhills Road.

The design of the subject proposal has evolved during the planning process in response to the feedback received at S247 pre-planning and Stage 2 consultations with South Dublin County Council; the policies and objectives of the South Dublin County Development Plan 2022-2028; and the input of the Environmental Impact Assessment team.

1.2 Purpose of this Report

Hughes Planning and Development Consultants have been commissioned by Steeplefield Limited (referred to as the Applicants throughout), to prepare an Environmental Impact Assessment Report for a strategic housing development application for the proposed development of a mixed use residential and commercial scheme on lands located at the Former Chadwick's Site, South of Greenhills Road, North West of Brennan's Factory, North East of Key Waste, Greenhills Industrial Estate, Walkinstown, Dublin 12.

A full description of the proposed development lands together with a description of the proposed development is provided in Chapter 2.0 of this document. In summary, the proposed development comprises the construction of 588 no. residential units (291 no. one beds, 238 no. two beds and 59 no. three beds) in 4 no. blocks (A-D), 1 no. childcare facility at the ground floor of Block B, 6 no. commercial units at ground floor level of Blocks A, B and D, and 1 no. commercial units at first floor level of Block A, construction of 4 no. vehicular/pedestrian entrances; a primary entrance from the north (access from Greenhills Road) and 3 no. secondary entrances from the south for emergency access and services, 297 no. car parking spaces at surface and undercroft levels with 17 no. commercial/unloading/drop off car parking spaces (a total of 297 no. parking spaces) and 4 no. dedicated motorbike spaces, 1,269 bicycle spaces with 307 visitor bicycle spaces, outdoor amenity space, internal communal amenity facilities including a co-working space, communal meeting room/ work space, foyer, toilets at ground floor of Block A, gym, changing rooms, toilets, resident's lounge, studio, laundry room, communal meeting room/ work space, multi-function space with kitchen at ground floor of Block B, and games room with kitchenette, media room, co-working space, resident's lounge, communal meeting room/ work space, reception area, management office with ancillary staff room and toilets, toilets, parcel room at ground floor of Block C.

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

This Environmental Impact Assessment Report has been prepared in accordance with the Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (published in August 2018) and the 2017 Draft EIA Guidelines, published by the EPA in August 2017, as well as previously issued Irish and European EIA Guidelines and Guidance Documents.

We would also note that in preparing the subject Large-scale Residential Development application and EIAR, the applicant and design/EIAR team have undertaken extensive pre-planning consultation with South Dublin County Council, including the Planning Authority's City Edge team. The feedback received

from South Dublin County Council significantly influenced the design and layout of the proposed development, in addition to informing the EIAR. The feedback received during these consultations and the subsequent amendments made to the scheme in response are detailed in Section 2.4.4 of the EIAR as well as in Section 3.0 of the Statement of Consistency & Planning Report, prepared by Hughes Planning and Development Consultants, which accompanies this application. The evolution the proposed development underwent during this consultation process has resulted in a high quality, high density, low carbon, highly accessible modern urban residential neighbourhood specifically connected to high-capacity high quality public transport infrastructure.

1.3 EIA Legislation

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

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

1.4 Definition of EIA and EIAR

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

‘a process consisting of:

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

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

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

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

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

- a) A description of the project comprising information on the site, design, size and any other relevant features of the project;*
- b) A description of the likely significant effects of the project on the environment;*
- c) A description of the features of the project and/or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment;*

- d) *A description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment;*
- e) *A non-technical summary of the information referred to in points (a) to (d); and*
- f) *Any additional information specified in Annex IV of the Directive/Schedule 6 to the 2001 Regulations, as amended, relevant to the specific characteristics of a particular project or type of project and to the environmental features likely to be affected.*

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

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

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

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

Annex I of the EIA Directive 85/337/EC requires as mandatory the preparation of an EIA for all development projects listed therein. Schedule 5 (Part 1) of the Planning & Development Regulations 2001 (as amended) transposes Annex 1 of the EIA Directive directly into Irish land use planning legislation. The Directive prescribes mandatory thresholds in respect to Annex I projects.

Annex II of the EIA Directive provides EU Member States discretion in determining the need for an EIA on a case-by-case basis for certain classes of project having regard to the overriding consideration that projects likely to have significant effects on the environment should be subject to EIA. Schedule 5 (Part 2) of the Planning and Development Regulations 2001 (as amended) the regulations, sets the following mandatory thresholds for EIA preparation for each of the Annex II projects under Class 10:

- a) *Industrial estate development projects, where the area would exceed 15 hectares.*
- b) (i) **Construction of more than 500 dwelling units.**
 - (ii) *Construction of a car-park providing more than 400 spaces, other than a car-park provided as part of, and incidental to the primary purpose of, a development.*
 - (iii) *Construction of a shopping centre with a gross floor space exceeding 10,000 square metres.*
 - (iv) *Urban development which would involve an area greater than 2 hectares in the case of a business district, 10 hectares in the case of other parts of a built-up area and 20 hectares elsewhere.*

(In this paragraph, "business district" means a district within a city or town in which the predominant land use is retail or commercial use.)

The subject development is not of a type or size that would require mandatory EIA under Annex I. However, given the number of units proposed at 588 no. units on a site area of 2.8 ha, the subject proposal would constitute an "infrastructure project" with respect to Class 10 Annex II and accordingly an EIA is required under Class 10(b)(i).

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

'Scoping' is a process of deciding what information should be contained in an EIAR and what methods should be used to gather and assess that information. It is defined in the EC guidance (Guidance on EIA Scoping, EC, 2001) as:

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

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

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

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

1. Introduction
2. Project Description and Alternatives Examined;
3. Planning and Development Context;
4. Population and Health;
5. Biodiversity;
6. Land, Soils, and Geology;
7. Water and Hydrology;
8. Noise and Vibration;
9. Air Quality;
10. Climate;
11. Microclimate;
12. Material Assets – Waste;
13. Material Assets – Transport;
14. Material Assets – Utilities;
15. Archaeological, Architectural and Cultural Heritage;
16. Landscape and Visual Amenity;
17. Interactions between Environmental Factors;
18. Principle Mitigation and Monitoring Measures; and
19. Non-Technical Summary.

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

1.7 Competency and EIAR Project Team

It is a requirement that the EIAR must be prepared by competent experts. The EIA Directive states the following in relation to the persons responsible for preparing the environmental impact assessment reports:

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

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

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

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

Organisation	Lead Consultant	Topics/Inputs
Hughes Planning and Development Consultants 85 Merrion Square, Dublin 2, D02 FX60 T: 01 539 0711 E: hughesplanning@hpdc.ie , anne.mcelligott@hpdc.ie , or christopher.browne@hpdc.ie	Mr Kevin Hughes – Director, Hughes Planning and Development Consultants – BA in Sociology and MA in Regional and Urban Planning Ms. Anne McElligott – Director, Hughes Planning and Development Consultants – BA in Geography and Legal Science and MA in Planning and Sustainable Development Mr. Christopher Browne – Associate – BA in Geography and History and Masters in Urban Design and Planning	- Introduction and Methodology; - Project Description and Alternatives Examined; - Planning and Development Context - Population and Health - Principle Mitigation and Monitoring Measures; and - Non-Technical Summary.
Moore Group on behalf of AWN, 3 Gort na Rí Athenry, Co. Galway T: 091 875749 E: info@mooregroup.ie	Mr. Ger O'Donohoe (B.Sc. Applied Aquatic Sciences (ATU Galway, 1993) & M.Sc. Environmental Sciences (TCD, 1999) - Ecologist	- Biodiversity
AWN Consulting Limited The Tecpro Building Clonsaugh Business & Technology Park Dublin 17 T: 01 847 4220 E: luke.maguire@awnconsulting.com	Mr. Luke Maguire Environmental Consultant and Geoscientist (BSc) Ms. Teri Hayes (BSc MSc PGeol EurGeol) – Senior Hydrogeologist	- Land and Soils
AWN Consulting Limited The Tecpro Building Clonsaugh Business & Technology Park Dublin 17 T: 01 847 4220 E: luke.maguire@awnconsulting.com	Mr. Luke Maguire Environmental Consultant and Geoscientist (BSc) Ms. Teri Hayes (BSc MSc PGeol EurGeol) – Senior Hydrogeologist	- Water, Hydrology and Hydrogeology;

Organisation	Lead Consultant	Topics/Inputs
AWN Consulting Limited The Tecpro Building Clonshaugh Business & Technology Park Dublin 17 T: 01 847 4220 E: leo.williams@awnconsulting.com	Mr. Leo Williams BAI MAI PgDip AMIOA, Acoustic Consultant Mr. Dominic Wright AMIOA	- Noise & Vibration
AWN Consulting Limited The Tecpro Building Clonshaugh Business & Technology Park Dublin 17 T: 01 847 4220 E: ciara.nolan@awnconsulting.com	Ms. Ciara Nolan, BSocSci (Hons) BSc in Energy Systems Engineering from University College Dublin and MSc in Applied Environmental Science at UC– Principal Environmental Consultant	- Air Quality
AWN Consulting Limited The Tecpro Building Clonshaugh Business & Technology Park Dublin 17 T: 01 847 4220 E: ciara.nolan@awnconsulting.com	Ms. Ciara Nolan, BSocSci (Hons) BSc in Energy Systems Engineering from University College Dublin and MSc in Applied Environmental Science at UC– Principal Environmental Consultant	- Climate
AWN Consulting Limited The Tecpro Building Clonshaugh Business & Technology Park Dublin 17 T: 01 847 4220 E: fergal.callaghan@awnconsulting.com	Dr. Fergal Callaghan – Environmental Consultant	- Wind and Microclimate;
NRB Consulting Engineers 40 Mespill Road, Dublin 4 T: 01 2921941 E: brian.mcmahon@nrb.ie	Mr. Brian McMahon – Chartered Engineer and Director of NRB Consulting Engineers Ltd	- Material Assets Transport
AWN Consulting Limited The Tecpro Building Clonshaugh Business & Technology Park Dublin 17 T: 01 847 4220 E: David.doran@awnconsulting.com	Mr. David Doran – MSc in Environmental and Energy Management – Senior Environmental Consultant	- Material Assets Utilities
AWN Consulting Limited The Tecpro Building Clonshaugh Business & Technology Park Dublin 17 T: 01 847 4220 E: David.doran@awnconsulting.com	Mr. David Doran – MSc in Environmental and Energy Management – Senior Environmental Consultant	- Material Assets Waste

Organisation	Lead Consultant	Topics/Inputs
Byrne Mullins & Associates 7 Croc Na Greine Square, Kildare T: 045 480688 E: martinbyrne1063@gmail.com	Mr. Martin Byrne, – BA (UCC) in Archaeology and History and an MA (UCC) in Archaeology, together with a Diploma in EIA Management (UCD) - Archaeologist	- Archaeology, Architectural and Cultural Heritage
Parkhood Landscape Architect 6-9 Trinity Street, Dublin 2 T: 01 6950005 E: andrewbunbury@parkhood.com	Mr. Andrew Bunbury- BA DipLA CMLI. Director at Park Hood, who is a fully qualified Landscape Architect and Chartered Member of the Landscape Institute	- Landscape and Visual Impact

Table 1.1 EIAR Specialist Consultants

1.8 Structure of Environmental Impact Assessment Report

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

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

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

Chapter	Chapter Title	Chapter Description
1	Introduction and Methodology	Sets out the purpose, methodology and scope of the document.
2	Project Description and Alternatives Examined	Sets out the description of the site, design and scale of development, considers all relevant phases from construction through to existence and operation together with a description and evaluation of the reasonable alternatives studied by the developer including alternative locations, designs and processes considered; and a justification for the option chosen taking into account the effects of the project on the environment.
3	Planning and Development Context	Describes the site context, the planning history of the subject site and the surrounding site and the local, regional and national policies that the proposed development will be assessed against.
4	Population and Health	Describes the demographic and socio-economic profile of the receiving environment and potential impact of the proposed development on population, i.e. human beings, and human health.
5	Biodiversity	Describes the existing ecology on site and in the surrounding catchment and assesses the potential impact of the proposed development and mitigation measures incorporated into the design of the scheme.
6	Land and Soils	Provides an overview of the baseline position, the potential impact of the proposed development on the site's soil and geology and impacts in relation to land take and recommends mitigation measures.

Chapter	Chapter Title	Chapter Description
7	Water (Hydrology and Hydrogeology)	Provides an overview of the baseline position, the potential impact of the proposed development on water quality and quantity and recommends mitigation measures.
8	Noise and Vibration	Provides an overview of the baseline noise environment, the potential impact of the proposed development and recommends mitigation measures.
9	Air Quality	Provides an overview of the baseline air quality and climatic environment, the potential impact of the proposed development and recommends mitigation measures.
10	Climate	Provides an overview of the baseline climatic environment, the potential impact of the proposed development and the vulnerability of the project to climate change.
11	Wind & Micro Climate	This chapter assesses the baseline conditions currently existing on site and in its immediate surrounds and likely impacts on the microclimate of the completed buildings and open spaces.
12	Material Assets Transport	Describes the traffic and transport infrastructural requirements of the proposed development and the likely impact of the proposed development on material assets.
13	Material Assets Utilities	Describes the services and infrastructural requirements of the proposed development and the likely impact of the proposed development on material assets.
14	Archaeological, Architectural and Cultural Heritage	Provides an assessment of the site and considers the potential impact of the proposed development on the local archaeology, architectural and cultural heritage; and recommends mitigation measures.
15	Landscape and Visual Impact	Provides an overview of the baseline position, the potential impact of the proposed development on the landscape appearance and character and visual environment and recommends mitigation measures.
16	Interactions between Environmental Factors	Describes the potential interactions and interrelationships between the various environmental factors discussed in the above chapters.
17	Principle Mitigation and Monitoring Measures	Sets out the key mitigation and monitoring measures included in the EIAR document for ease of reference.

Table 1.2 EIAR Chapter Outline.

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

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

- The requirements of applicable EU Directives and implementing Irish Regulations regarding Environmental Impact Assessment;
- Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017)
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports – DRAFT (Environmental Protection Agency, August 2017).
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning and Local Government, 2018).

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

1.9 Cumulative Projects

A review of the planning register on South Dublin County Council's website has indicated that there are no large development projects abutting the subject lands that have been recently granted permission for development. There are several existing planning permissions on record in the area ranging from small-scale extensions and alterations to existing residential properties to some larger-scale developments. A review of the South Dublin County Council and An Bord Pleanála's planning registers found the following planning applications relating to large infill sites within the surrounding area and within the nearby Cookstown Industrial Estate, which are also zoned for regeneration.

LRD24A/0003

Permission granted by South Dublin County Council for development at Former CHM Premises, Ballymount Road Lower, Walkinstown, Dublin 12, D12 CK60 on 2nd July 2024 for amendments to permitted Strategic Housing Development (SHD) (Ref. ABP-309658-21)). The proposed amendments include the following: Change of use at Ground Floor Level of Block B from the permitted Café to proposed retail unit (c.363.5sq.m). The incorporation of an off-license area within the proposed retail unit (c.24.4sq.m). Siting of proposed signage/advertising associated with the proposed Retail unit. Internal reconfiguration of permitted creche area with the gross floor area reducing from c. 261sq. m to c. 235sq.m. Internal reconfiguration and reduction of permitted tenant amenity facilities (communal areas) from c. 472.1sq. m to c. 426.6sq. m. Amendments to permitted residential apartments on Level 5 of Block C, consisting of replacing 2 no. 3 bed (5 person) units with 2no. 2 bed (4 person) units and an additional 2 bed (3 person) unit. Overall, the residential provision will increase from permitted 163 no. units to 164 no. units (1no. Studio, 57no. 1 bed, 99no. 2 bed and 7 no. 3 bed). Changes to Level 6 of Block B, to include external retail plant at roof level within the permitted envelope of the development, to include ventilation louvres to the North & East façade and a louvred roof access door for maintenance purposes only. Provision of an additional external Bicycle Parking Stand with 14 no. parking spaces located to the East of the building to cater for retail and creche usage. All other associated site development works, services provision, access, parking, landscaping and boundary treatment works to be carried out as otherwise granted under the parent permission Reg. Ref. ABP-309658-21 (and associated conditions).

It would be prudent to note that the above LRD was subject to a third-party appeal to An Bord Pleanála under ABP Ref. 320249-24. An Bord Pleanála later granted permission with revised conditions on 23rd October 2024.

ABP Ref. ABP-309658-21

Permission granted by An Bord Pleanála for development at CHM Premises, Ballymount Road Lower, Walkinstown, Dublin 12, on 23rd June 2021 for demolition of an existing warehouse/factory building and ancillary outbuildings/structures and the construction of a residential development of 171 apartments with supporting tenant amenity facilities (gym, lounges and meeting room), café, creche, landscaping, public realm improvements, and all ancillary site development works. The proposed development will consist of 2 x studio apartments, 59 x 1-bedroom apartments, 103 x 2-bedroom apartments and 7 x 3-bedroom apartments contained in two apartment blocks ranging in height from 1 to 8 storeys. The proposed development provides for outdoor amenity areas, landscaping, under-podium car parking, bicycle racks, bin stores, ancillary plant, and roof mounted solar panels.

ABP Ref. ABP-304686-19

Permission was granted by An Bord Pleanála on lands immediately on 18th September 2019 for a Strategic Housing Development at Lands immediately east of the Assumption National School, Long Mile Road,

Walkinstown, Dublin 12. In summary, the development involved construction of 153 no. residential units (comprising of 15 no. Duplex/Maisonettes and 138 no. apartments) and associated site works. Of particular note, the development will have 129 no. car parking spaces, 5 no. motorbike parking spaces 198 no. secure bike parking spaces, the majority of which will be at undercroft level, with 2 no. disabled car parking spaces and 4 no. car parking spaces at grade to the front of the development along with some visitor cycle parking spaces.

DCC Reg. Ref. 3940/17

Permission was granted by Dublin City Council at Carraiglea Industrial Estate, Naas Road, Dublin 12 for amendments to a previously permitted development of 306 units, which comprises of a development of 5 to 7 storeys in height. The description of development was as follows: amendments to previously permitted residential development, Reg. Ref. 4244/15 and Reg. Ref. 2438/17. The proposed amendments comprise of: (i) the provision of an additional floor on permitted Block AC (Reg. Ref. 2438/17) increasing the height of the block from 6 no. storeys with a 7 no. storey pop up corner element to 7 no. storeys on the north-west elevation (ii) the provision of 2 no. additional floors on Block D and L, increasing the height of the Blocks from 5 no. storeys to 7 no. storeys. (iii) the reconfiguration of permitted basement increasing the car parking provision from 316 no. to 346 no. car parking spaces and 545 no. to 552 no. cycle parking spaces, (iv) Revised hard and soft landscaping masterplan, (v) provision of new balconies to serve each of the proposed 32 no. units; together with all necessary site development work to facilitate the proposed development. The proposed amendments will provide for 12 no. additional units in Block D (8 no. 2 bed, 4 no. 3 bed units), 12 no. additional units in Block L (10 no. 2 bed, 2 no. 3 bed units) and 8 no. additional units in Block AC (1 no. 1 bed, 6 no. 2 bed, 1 no. 3 bed units), increasing the total provision within the development from 306 to 338 no. units comprising of (55 no. 1 bed, 222 no. 2 bed, 61 no. 3 bed units).

ABP Ref. ABP- 304383-19

Permission was granted by An Bord Pleanála on lands at the former Concorde Industrial Estate, Naas road, Walkinstown, Dublin 12 on 15th August 2019 for a for a mixed-use development comprising of a Build to Rent Residential Development and commercial units including the construction of 492 residential units (104 no. studios, 136 no. 1 bed units and 252 no. 2 bed units), ranging in height from 4 no. storeys (12 m) to 8 no. storeys (24.1 m) over basement level.

DCC Ref. 4684/19

Permission was granted by Dublin City Council on 14th February 2020 for the development will consist of demolition of existing single storey house and replace with 3 no. terraced houses with 2 no. rooflights to the front. The first two houses are 2 storeys with attic conversions and 3 no. bedrooms. The end of terrace house is 2 storeys with 2 no. bedrooms. The existing driveway opening will be widened from 2.76 metres to 3.96 metres with 3 no. parking bays, electric car charging point and timber frame bicycle shed with solar panels on roof. New perimeter walls, permeable paving and associated site works.

SDCC Ref. SD17A/0391

Permission was granted by South Dublin County Council on 30th May 2018 at 22 Greenhills Road, Walkinstown, Dublin 12 for the demolition of the existing house, motor sales office and sheds, the change of use from existing car sales outlet with residential to a mixed retail and residential use and the construction of development as follows: Block A - five 3 storey, 3 bed terrace houses and Block B - 1 three storey mixed use building comprising of 2 retail units, two 2 bed apartments and two 1 bed apartments. The development also includes all

associated site development and infrastructural works, surface car parking and landscaping, all on a site area of 0.16ha.

However, these recent approvals do not immediately abut the subject site as set out in **Figure 1.1**. Given the spatial separation between the subject proposal and the approved Strategic Housing Developments in the wider area, it is assessed that they are not considered sufficiently proximate to generate significant cumulative effects.

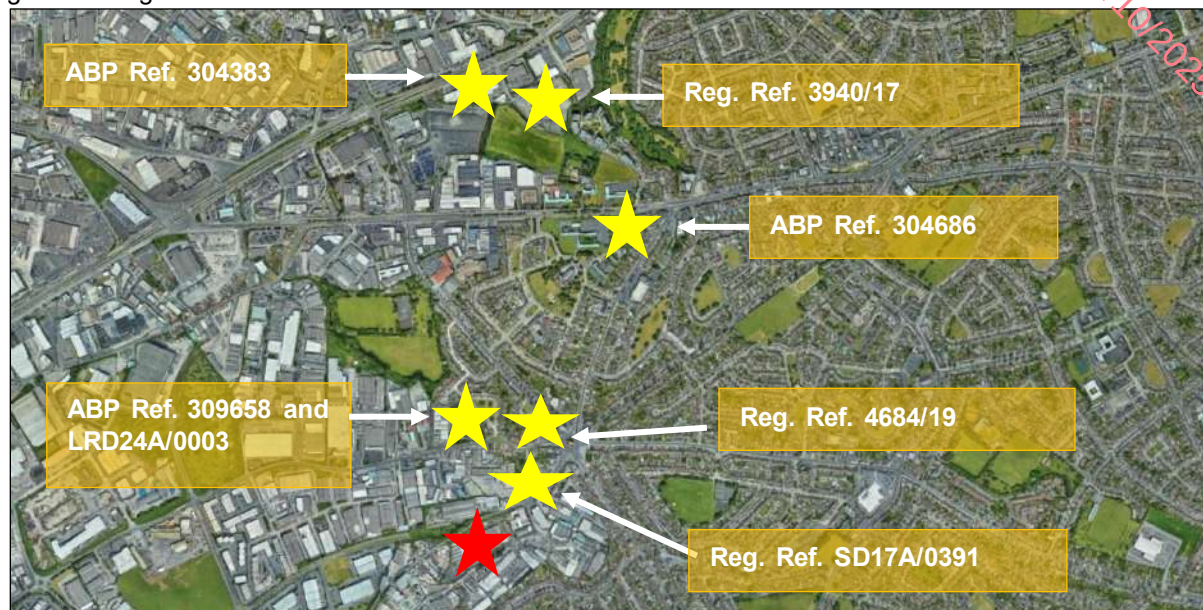


Figure 1.1 Locations of SHD/LRD applications (yellow stars) in relation to the subject site (red star) in Dublin 12.

1.10 Consultation

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

Further to the above, the Notice of Pre-Application Consultation Opinion, issued by South Dublin County Council (under LRDOP004/24), detailed specific information required for inclusion with any subsequent application for permission, pursuant to article 285(5)(b) of the Planning and Development Regulations 2001 (as amended). The Statement of Response to Pre-application Consultation Opinion, prepared by Hughes Planning and Development Consultants, which accompanies this application outlines how this aspect of the Council's Notice of Pre-Application Consultation Opinion has been satisfied.

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

Subsequent consultation with the public on the application and accompanying EIAR will be facilitated following the lodgement of the application to South Dublin County Council. Pursuant to the requirements of the Planning and Development Act, 2000 (as amended), site notices have been erected on site and a newspaper notice has been published in the Irish Daily Star. Both the site and newspaper notices

erected/published advise members of the public that a Large-scale Residential Development application accompanied by an EIAR has been lodged with South Dublin County Council and provides details on how that can make an observation on the same should they see fit. Details of the website address feature on the site notices erected on site and the newspaper notice published as well as on South Dublin County Council's website.

1.11 Statement of Difficulties Encountered

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

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

1.12 References

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

2.0 PROJECT DESCRIPTION AND ALTERNATIVES EXPLAINED

2.1 Introduction

This section of the EIAR has been prepared by Hughes Planning and Development Consultants, in conjunction with C+W O'Brien Architects. More specifically, this chapter of the EIAR was prepared jointly by Mr. Kevin Hughes, Director, Ms. Anne McElligott, Associate Director, and Mr. Christopher Browne, Executive Planner, with Hughes Planning and Development Consultants.

Mr. Kevin Hughes of Hughes Planning and Development Consultants, graduated from University College Dublin (UCD) with a Masters in Regional and Urban Planning (MRUP) in 2002, having previously completed a Bachelor of Arts Degree in Sociology from National University of Ireland in 1999. Kevin has over 22 years professional experience in the field of planning and development consultancy, which has included providing consultancy services in respect of several major urban regeneration projects including EIA. Kevin is currently the Director of Hughes Planning and Development Consultants.

Ms. Anne McElligott of Hughes Planning and Development Consultants, graduated from University College Cork (UCC) with a Masters in planning and Sustainable Development (MPLAN) in 2011, having previously completed a Bachelor of Arts Degree in Geography and Irish from University College Cork in 2011. Anne has 13 years professional experience in the field of planning and development consultancy, which has included providing consultancy services in respect of several major urban regeneration projects including EIA. Anne is currently Director in the Practice of Hughes Planning and Development Consultants.

Mr. Christopher Browne of Hughes Planning and Development Consultants, graduated from University College Dublin (UCD) with a Masters in Urban Design and Planning in 2018, having previously completed a Bachelor of Arts Degree in Geography and History from Dublin City University in 2012. Christopher has 7 years professional experience in the field of planning and development consultancy, which has included providing consultancy services in respect of several major urban regeneration projects including EIA. Christopher is currently an Associate in the Practice of Hughes Planning and Development Consultants.

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

2.2 Site Location and Context

The application site, comprises a total area of 2.79 hectares, involves the Former Chadwick's site which is located south of Greenhills Road, Walkinstown, Dublin 12. The subject site forms part of the Greenhill Industrial Estate. There are existing low-rise disused warehouse units featuring on the subject site which are proposed for demolition as part of the subject proposal. The site is currently accessed off a road within the Greenhill Industrial Estate, with 3 no. vehicular accesses featuring along the site's southern boundary. A very strong feature of the site includes a level difference that exists between the Greenhills Road interface and the subject site's southern boundary.

The site is located within an area comprising industrial land use immediately surrounding the site on all sides. The industrial land immediately surrounding the site to the southeast and west is known as the Greenhills Industrial Estate. The industrial land immediately north of the subject site forms part of the Ballymount Industrial Estate. The Greenhills Industrial Estate is expected to be the subject of extensive urban renewal in the coming years, with existing industrial buildings being replaced with higher density development. As illustrated in **Figure 2.1** below, a Quality Bus Corridor is also proposed to run along Greenhills Road, north of the site. The Greenhills Road Quality Bus Corridor forms part of the QBC Network linking Tallaght town centre to the city centre and it will also join the South Clondalkin QBC at the Walkinstown Road/Long Mile Road junction.

Walkinstown is the closet village to the subject site and offers a range of amenities and services including super markets, restaurants, pubs, chemist's shop, hairdresser among other services. The Ashleaf shopping centre is located c. 1.2km from the subject site.



Figure 2.1 Aerial photo of the immediate locational context of the subject site (site outlined in red).



Figure 2.2 Aerial photo of the wider locational context of the subject site (site outlined in red).



Figure 2.3 Streetview of the subject site as viewed from Greenhills Road looking south-west.



Figure 2.4 Streetview of the subject site as viewed from Greenhills Road looking south-east.



Figure 2.5 Streetview of the subject site as viewed from the estate road abutting the site's southern boundary looking north-west.

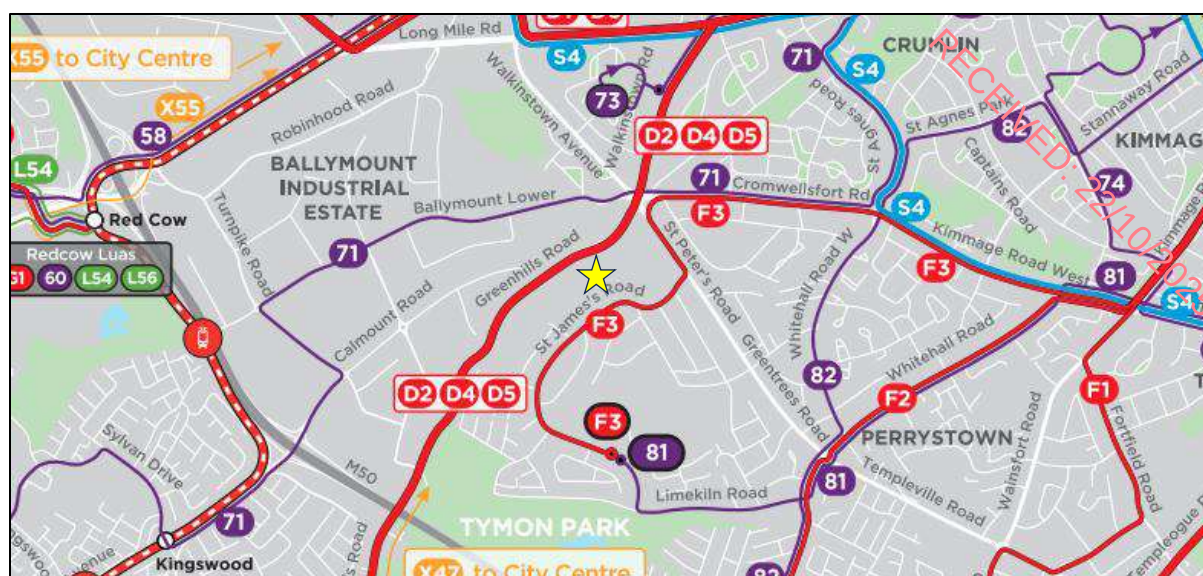


Figure 2.6 Extract from the revised BusConnects network plan in relation to the subject site (yellow star).

We note that the proposed site is located adjacent to the recently approved D-Spine of the BusConnects plan. The D-Spine will provide for a midweek frequency of 16 busses per hour which equates to a bus every 4 minutes. This spine will provide a primary radial and cross-city service to Clarehall and Balgriffin. We further note the presence of the F-Spine located c. 300m south of the site, which will see a 15-minute frequency bus service which will travel across Dublin city centre and terminate in Finglas.

More broadly, Tallaght's Town Centre is situated south of the subject site. Tallaght's Town Centre is characterised by high rise, high-density mixed-use development, with building heights ranging between two and twelve storeys. The mix of uses are predominantly residential over ground floor retail/commercial use. Crumlin, Terenure and Kimmage are also in close proximity to the site. Crumlin Children's Hospital is situated approximately a 28-minute walk to the northwest of the subject site. Tallaght Institute of Technology is situated to the south of the subject site.

A strong feature of the site is its proximity to the Greenhills / Mulcahy Keane Estate bus stop, 2 minutes' walk away from the application site, offering a good public transport service with direct links to Jobstown, Clare Hall, Dublin City and the Dublin Docklands, Citywest Campus and Tallaght. It should also be noted that the LUAS red line stop is situated just a 20-minute walk away from the site.

2.3 Nature and Extent of Proposed Development

In summary, the Applicant is applying to An Bord Pleanála, under the Strategic Housing Development process, for the following (as per the public notices):

- (i) *The demolition of the former Chadwicks Builders Merchant development comprising 1 no. two storey office building and 9 no. storage/warehouse buildings ranging in height from 3m – 9.9m as follows: Building A (8,764 sq.m.), Building B (1,293 sq.m.), Building C (two-storey office building) (527 sq.m.), Building D (47 sq.m.), Building E (29 sq.m.), Building F (207 sq.m.), Building G (101 sq.m.), Building H (80 sq.m.), Building I (28 sq.m.), and Building J (44 sq.m.), in total comprising 11,120 sq.m.;*
- (ii) *the construction of a mixed-use residential and commercial development comprising 588 no. residential apartment units (291 no. one-beds, 238 no. two-beds and 59 no. three-beds), 1 no. 570.91 sq.m. (443 sq.m. indoor space) childcare facility and 6 no. commercial/retail units in 4 no. blocks (A-D) ranging in height from 5 to 12 storeys as follows:*
 - a. *Block A comprises 170 no. apartments (103 no. 1 bed-units, 59 no. 2 bed-units and 8 no. 3-bed units) measuring 8 storeys in height.*
 - b. *Block B comprises 197 no. apartments (89 no. 1 bed-units, 92 no. 2 bed-units and 16 no. 3 bed-units) measuring 10 storeys in height.*

- c. Block C comprises 81 no. apartments (44 no. 1-bed units, 16 no. 2-bed units and 21 no. 3-bed units) measuring 12 storeys in height.
- d. Block D comprises 140 no. apartments (55 no. 1 bed-units, 71 no. 2 bed-units and 14 no. 3 bed-units) measuring 8 storeys in height.

All apartments will be provided with private balconies/terraces;

- (iii) provision of indoor communal residential amenity (614.14 sq.m.) at ground and first floors of Block A, B & C,;
- (iv) the construction of 1 no. childcare facility comprising 443 sq.m. with dedicated outdoor play area (128 sq.m.) located at ground floor of Block B;
- (v) the construction of 6 no. commercial units at ground floor level of Blocks A, B and D, and 1 no. commercial unit at first floor level of Block A as follows: Block A has 1 no. unit at ground floor comprising 455.8 sq.m. and 1 no. unit at first floor level comprising 160.79 sq.m., Block B has 1 no. unit at ground floor comprising 190.96 sq.m. and Block D has 4 no. units at ground floor comprising 361.6 sq.m., 232.3 sq.m., 238 sq.m. and 174.9 sq.m.;
- (vi) the construction of 4 no. vehicular entrances; a primary entrance via vehicular ramp from the north (access from Greenhills Road) and 3 no. secondary entrances from the south for access, emergency access and services (access from the existing road to the south of the site) with additional pedestrian accesses proposed along Greenhills Road;
- (vii) provision of 270 no. car parking spaces comprising 240 no. standard spaces (including 6 no. car club spaces) and 13 no. mobility spaces located at surface level and within undercroft car parks within Blocks A, B, C and D, 17 no. commercial/ unloading/ drop-off parking spaces at ground level;
- (viii) provision of 1,269 no. bicycle parking spaces comprising 952 no. residents' bicycle spaces, 10 no. cargo/accessible bicycle spaces in 14 no. bicycle storerooms in surface and undercroft parking areas and 307 no. visitors' bicycle spaces located externally at ground floor level throughout the development;
- (ix) provision of outdoor communal amenity space (3,130.3 sq.m) comprising landscaped courtyards that include play areas, seating areas, grass areas, planting and scented gardens located on podiums at first floor level; provision of communal amenity roof gardens in Block A & B with seating area and planting (746.1 sq.m.) and inclusion of centrally located public open space (6,650 sq.m.) adjacent to Blocks A, B, C and D comprising grassed areas, planting, seating areas, play areas, water feature, flexible use space and incidental open space/public realm;
- (x) provision of toucan crossing and all associated road markings and signage from the subject site to a new footpath on northern side of Greenhills Road;
- (xi) development also includes landscaping and infrastructural works, foul and surface water drainage, bin storage, ESB substations, plant rooms, pv panels, boundary treatments, internal roads, cycle paths and footpaths and all associated site works to facilitate the development.

This application is accompanied by an Environmental Impact Assessment Report (EIAR).

The layout of the proposed development has been informed by the topography of the subject site, its proximity to public transport on Greenhills Road and Walkinstown, the feedback received from South Dublin County Council, the City Edge Team, and An Bord Pleanála at pre-planning stage, the policies and objectives set out for the subject site and surrounding area in the South Dublin County Development Plan 2022-2028, as well as the inputs from the EIAR consultants.

The proposed development comprises the demolition of a number of existing low-rise disused industrial units on site and the construction of a mixed-use residential Largescale Residential Development on the site. More specifically, the development will comprise of 4 no. 5-12 storey blocks accommodating 588 no. apartments, a 443sqm childcare facility, 1,814.46sqm of commercial space and internal communal amenity space to serve residents of the development.

The 588 no. apartments proposed comprise the following mix: 291 no. 1-bed apartments, 1 no. 2-bed (3P) apartments, 237 no. 2-bed (4P) apartments, and 59 no. 3-bed apartments. Residents of the

development will also have access to 3,876sqm of external communal amenity space. In addition to this, the development provides for 614sq.m of internal communal amenity space.

The primary vehicular access will be provided off Greenhills Road to the northeast, and secondary access for emergency vehicles and services will be provided off the road to the south of the subject site via newly created vehicular entrances. These entrances will also provide access to undercroft car parking areas accommodating 270 no. car parking spaces, 13 no. mobility car parking spaces, and 15 no. commercial/unloading/resident parking spaces. Bicycle parking for 962 no. bicycles (including 10 no. cargo bicycle spaces) will be provided in secure parking facilities located within the undercroft parking areas for residents with 307 no. bicycle parking spaces provided for visitors at ground level resulting in a total of 1,269 no. bicycle parking spaces.

The proposed scheme has a housing density of 210 dwellings per Ha, a plot ratio of 2.22 and a site coverage of 50% including undercroft parking areas. The proposed development has been designed having regard to the topography of the subject site, a watermain which features in the north-eastern corner of the site, the possible future extension of Calmount Road and the redevelopment of the surrounding industrial estate.



Figure 2.7 Site layout plan of proposed mixed-use development.



Figure 2.8 Landscape masterplan for the proposed development

2.3.1 Demolition

The proposal includes the demolition of the existing industrial units/buildings featuring on site (totalling 11,120sq.m).



Figure 2.9 Existing Buildings on site proposed to be demolished

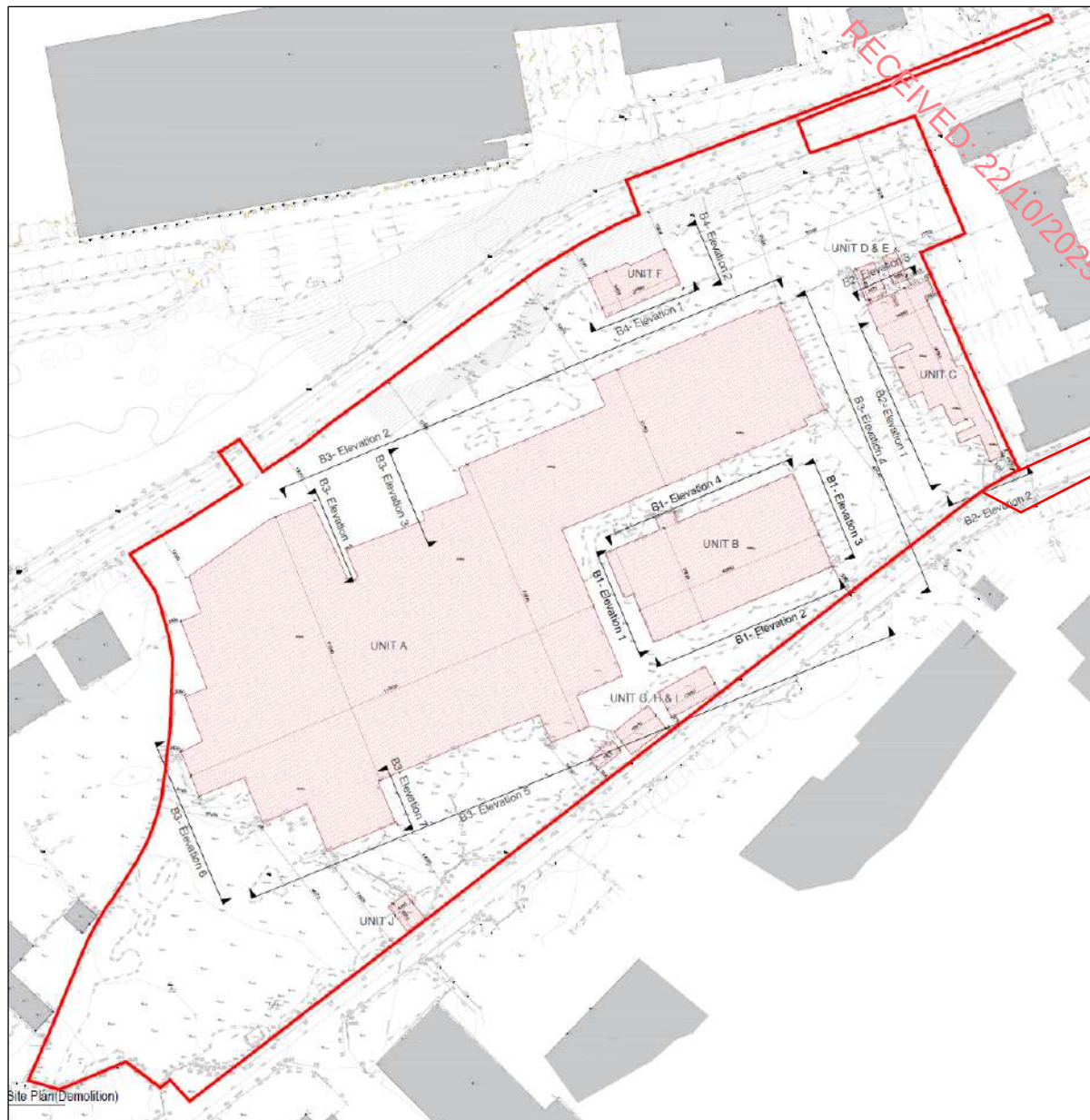


Figure 2.10 Proposed site demolition plan.

2.3.2 Proposed Mixed-use Development

The proposed development seeks to provide for a high-quality mixed-use development which will provide for a high residential amenity for its future population. As such, the proposed development comprises the demolition of several existing low-rise disused industrial units on site and the construction of a mixed-use residential scheme. The development will be comprised of 588 no. residential units consisting of 291 no. 1-bedroom, 238 no. 2-bedroom, and 59 no. 3-bedroom apartments contained in 4 no. blocks (A-D) ranging from 5-12 storeys in height. Also proposed as part of this development are 6 no. commercial/retail units and 1 no. childcare facility.

More specifically, the proposed 4 no. blocks can be described as follows:

2.3.2.1 Block A

Block A, which is located on the western portion of the site and comprises a part 5, part 8 storey block with a gross floor area of 3822.5sq.m. Block A will be afforded a quantum of 103 no. 1-bedroom, 59 no. 2-bedroom, and 8 no. 3-bedroom apartments from ground floor to 7th floor. Hereafter, the ground floor level will also incorporate a 455.78sq.m commercial unit, along with 70 no. car parking spaces and 247 no. bicycle parking spaces. At first floor level, a podium courtyard will be located above the car park which will provide communal amenity space. A 160.79sq.m commercial unit is also located at first floor level of Block A.

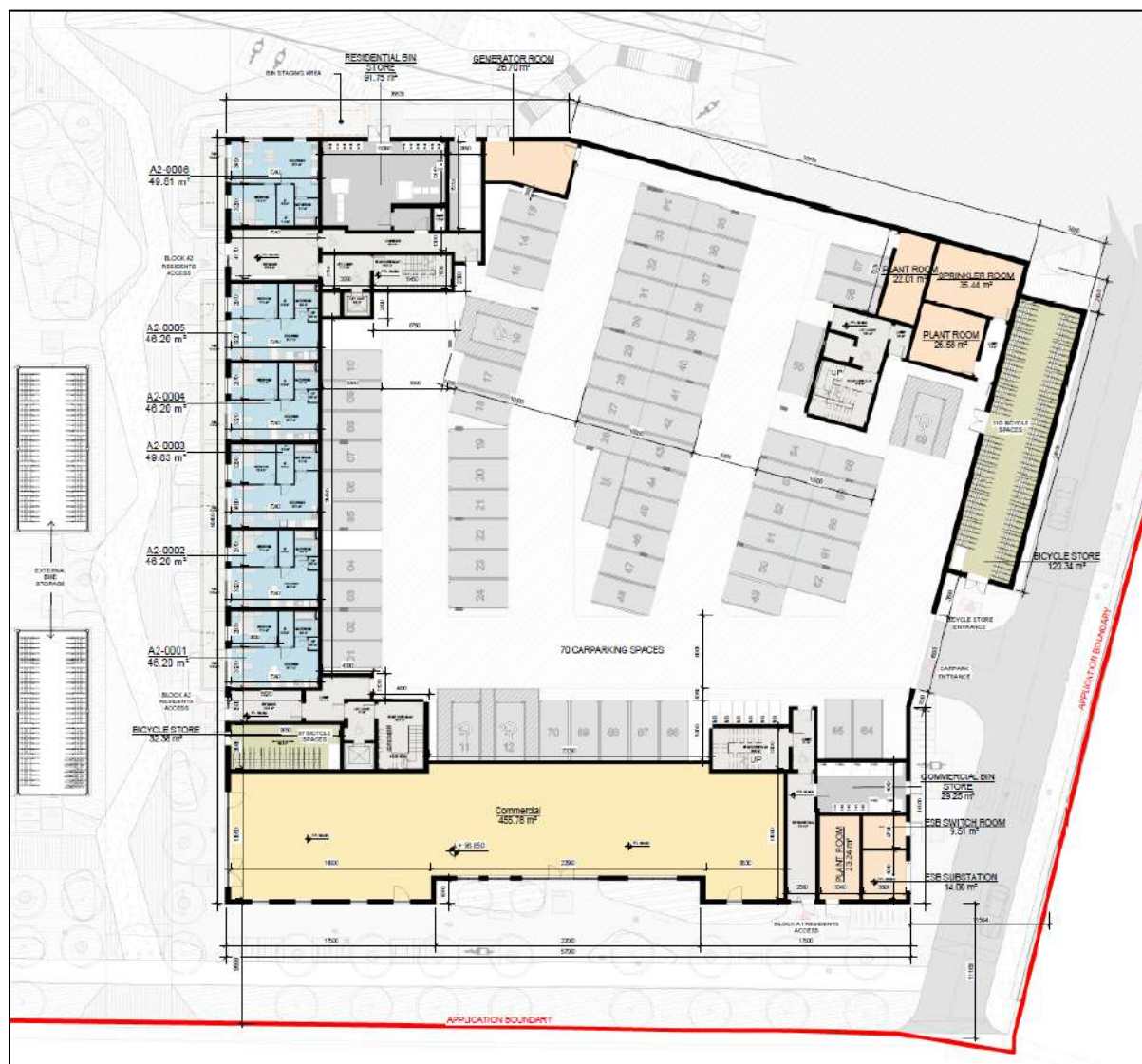


Figure 2.11 Proposed Ground Floor Plan Block A.



Figure 2.12 Proposed First Floor Plan Block A.



Figure 2.13 Proposed South Elevation Block A.



Figure 2.14 Proposed North Elevation Block A.

2.3.2.2 Block B

Block B consists of the mid-section of the site and comprises of a part 7, part 10 storey mixed-use block with a gross floor area of 3647sq.m. The quantum of apartments within the block amount to 89 no. 1-bedroom, 92 no. 2-bedroom, and 16 no. 3-bedroom apartments. The northern corner of this block will contain a 191sq.m commercial unit, a 443sq.m childcare facility, with a 128.26sq.m outdoor creche area, 59 no. car parking spaces and 72 no. bicycle parking spaces. Outdoor amenity space will be provided at first-floor level by way of a communal podium courtyard.



Figure 2.15 Proposed Ground Floor Plan Block B.



Architectural elevation drawing of a multi-story building facade. The drawing shows a red section on the left, a grey section in the middle, and a dark grey section on the right. It includes floor levels from 00-B2 to 10-B2 on the left and 00-B1 to 05-B1 on the right. Key features include 'LIFT OVERBURN' areas, 'COMMUNAL AMBULANCE SPACE' at the base, and various elevation markers like '± 83.000' and '± 81.000'. Dimensions and grid lines are also indicated.

Figure 2.17 Proposed South Elevation Block B.



Figure 2.18 Proposed North Elevation Block B.

2.3.2.3 Block C

Blocks C and D occupy the western aspect of the site. While the blocks are connected Block C stands at the northern elevation of Block D and is a part 10, part 12 block which contains 44no. 1-bedroom, 16 no. 2-bedroom, and 21 no. 3 bedroom apartments, 279 no. bicycle parking spaces and associated communal area.



Figure 2.19 Proposed Ground Floor Plan Block C/D.



Figure 2.20 Proposed First Floor Plan Block C/D.

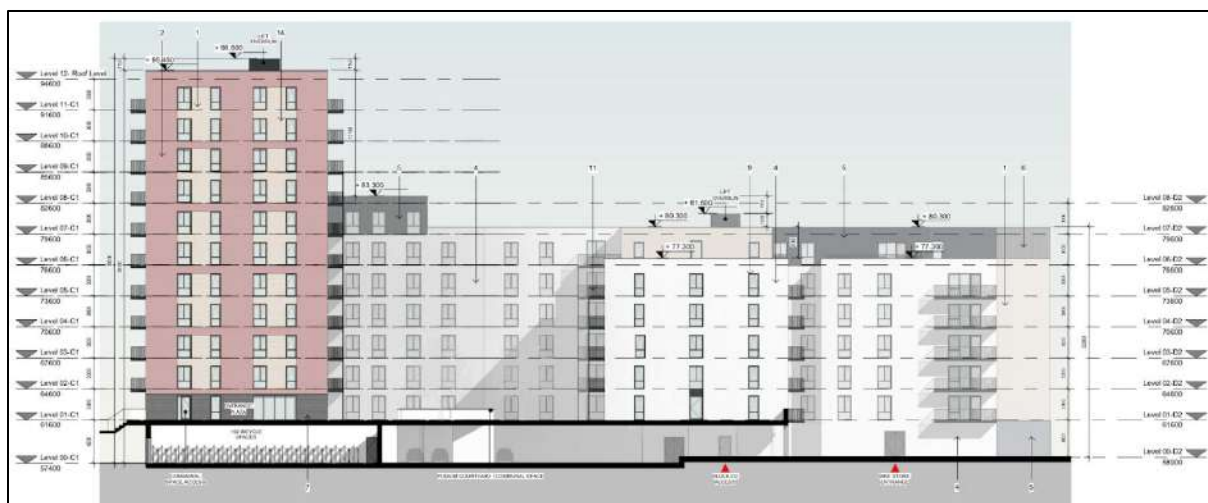


Figure 2.21 Proposed North Elevation Block C/D.



Figure 2.22 Proposed South Elevation Block C/D.

2.3.2.4 Block D

Block D consists of an 8-storey mixed use block which adjoins block C's southern elevation. The quantum of units afforded to block D is 55 no. 1-bedroom, 71 no. 2-bedroom, and 14 no. 3-bedroom apartments, further provisions are in place for 3 no. commercial/retail units amounting to 1006sq.m, and 111 bicycle parking spaces. Both blocks are serviced by 138 car parking spaces at ground floor level, with outdoor amenity space provided at first floor level by way of a communal podium courtyard.



Figure 2.23 Proposed Ground Floor Plan Block C/D.



Figure 2.24 Proposed First Floor Plan Block C/D.

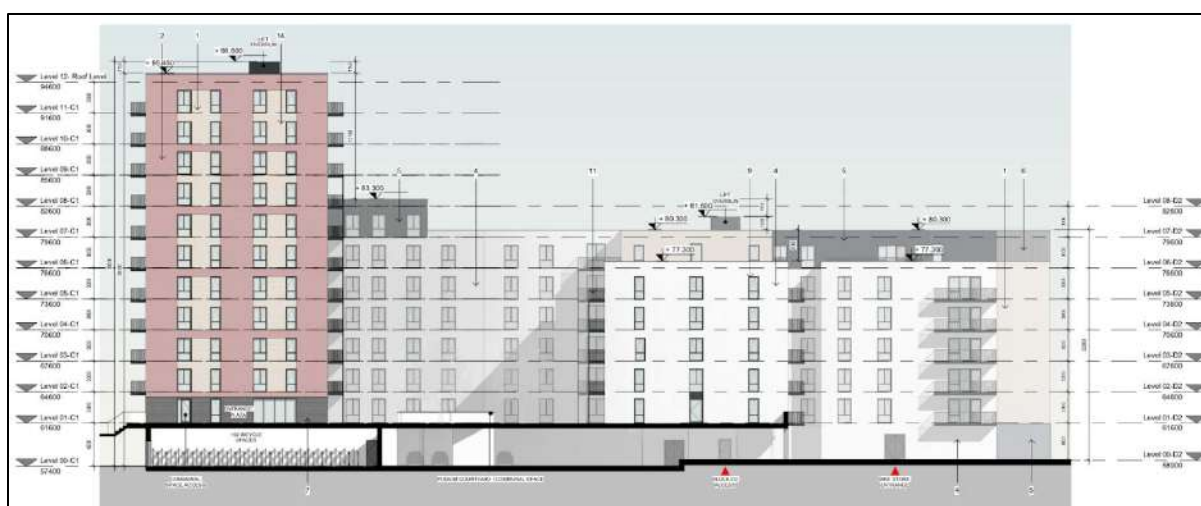


Figure 2.25 Proposed North Elevation Block C/D.



Figure 2.26 Proposed South Elevation Block C/D.

The proposed development provides for 614.14sq.m of internal communal amenity spaces. In addition, 1,814.46sq.m. of external amenity space is proposed. The proposal provides a total of 2,428.60sq.m. of internal and external amenity spaces.

The proposed open spaces comprise public open space and public realm. The main courtyard on the ground floor will provide opportunities for seating, recreation and areas of soft landscaping. The public open space will provide natural play provisions integrated into the design. The total public open space (Public Courtyard) is approx. 13.87% of the development site area. The communal open space areas are provided on the ground and 1st floors. These areas provide residents with areas for informal play, gathering, and community gardens.

The site layout proposes to maximise the permeability and connectivity to and through the site prioritizing the quality of open space within the development. The buildings have been set back along the southern boundary to allow for enhanced public realm along this frontage which includes; commercial/amenity/creche frontages to provide active street frontage and passive surveillance, pedestrian footpaths/plaza rest spaces, dedicated cycle lane and also car parking lay-bys to serve the development.

Car parking and bicycle parking will be provided at street level and in 2 no. undercroft parking areas underneath Block A, and an undercroft parking area located underneath Blocks C and D which are accessible from Greenhills Road. Primary access will be provided via Greenhills Road with secondary accesses off the road to the south of the development for emergency services. Some parking will be provided at ground level. Both undercroft parking areas will have landscaped communal areas located on top. The development will contain 270 no. car parking spaces, 13 no. mobility car parking spaces, and 15 no. commercial/unloading spaces. Bicycle parking for 962 no. bicycles (including 10 no. cargo bicycle spaces) will be provided in secure parking facilities located within the undercroft parking areas for residents with 307 no. bicycle parking spaces provided for visitors at ground level resulting in a total of 1,269 no. bicycle parking spaces.

Please also refer to the Design Statement and architectural drawing set, prepared by C+W O'Brien Architects, for further details regarding the above. The subject application has been prepared having regard to the feedback received from South Dublin County Council during pre-planning consultations.



Figure 2.27 CGI of the proposed development.



Figure 2.28 CGI of the proposed development



Figure 2.29 CGI of the proposed development



Figure 2.30 CGI of the proposed development



Figure 2.31 CGI of the proposed development



Figure 2.32 CGI of the proposed development

Please also refer to the Design Statement and architectural drawing set, prepared by C+W O'Brien Architects, and the Landscape Strategy & Design Report and landscape drawing set, prepared by Parkhood Landscape Architects, for further information regarding the above.

2.3.3 Services and Proposed Infrastructure Works

2.3.3.1 Foul Sewer

The foul drainage system for the site has been designed having regard to the topography of the site. It is proposed to divide the foul sewer into two catchments.

To service the development, a 225/300mm diameter foul water pipe will be provided, commencing from the south-west corner of the site, extending to the last foul water manhole of site 'FW01'. The foul water will then flow towards the existing foul water manhole 'EX.FW01' located south-east of the site, on the access road parallel to the southern site boundary, discharging all the foul water Generated from the proposed development.

Please refer to Chapter 7 of this EIAR and Section 3.0 of the Engineering Services Report and associated engineering drawings, prepared by Lohan and Donnelly Consulting Engineers, for further information. It is worth noting that the design team have undertaken extensive consultation with Irish Water in relation to the proposed development.

2.3.3.2 Surface Water Drainage

It is proposed to provide a 225, 300 & 450mm diameter surface water pipes to service the development. Surface water collected from within the site boundary will flow into the last manhole on site "SW02", from there the surface water will flow into an intermediate manhole "SW01" in-between the last manhole on site and the existing surface water sewer. Finally, the surface water will discharge into the existing 225mm surface water sewer located on the access road parallel to Chadwicks Plumb Centre, south of the proposed development via a saddle connection.

A series of SUDS measures will be implemented to assist with surface water drainage. Surface water throughout the site will be collected by a green roof system, tree pits, rain gardens, and permeable paving/asphalt before discharging into the attenuation facility allocated to each block. Please refer to Chapter 7 of this EIAR and Section 4.0 of the Infrastructure Design Report and associated engineering drawings, prepared by Lohan and Donnelly Consulting Engineers, for further information.

2.3.3.3 Water Supply

The existing water main is to be demolished as it is not compliant with Irish Water's code of practice, and it does not have sufficient capacity to serve the new proposal. Furthermore, another existing water main is present in the northern part of the development. This water main is 1200mm in Diameter and traverses the site, entering from middle-north and exiting in the north-east corner of the development. It is intended to retain the existing water main using the method outlined within Irish Water's instructions set out in Section 5.2 of the Infrastructure Design Report prepared by Lohan & Donnelly Consulting Engineers, rather than diverting & removing it from the premises. To achieve this a 7.5m, unobstructed wayleave either side of the pipe will be provided, to ensure that the existing water main is accessible for any potential future maintenance.

To service the development, it is proposed to provide a 200mm MDPE (medium density polyethylene) type PE-80 water main. The water main will be connected to the plant rooms where the water distribution system is located, distributing the water to the residing residents of the apartment complexes. To comply with guidance specification for fire hydrants, offline & on-line fire hydrants will be provided along the water main to provide full coverage of the proposed development in the event of a fire. The water main will exit the proposed development in the north-east corner and connect to the newly laid 200mm diameter water main as per the conditions set out in Irish Water's confirmation of feasibility letter. Prior to exiting the site, a boundary box and telemetry kiosk will be installed to measure the water usage for the development.

Please refer to Chapter 7 of this EIAR and Section 9.0 of the Infrastructure Design Report and associated engineering drawings, prepared by Lohan and Donnelly Consulting Engineers, for further information.

2.3.3.4 Road Upgrades

The primary vehicular access will be provided off Greenhills Road to the northeast, and secondary access for emergency vehicles and services will be provided off the road to the south of the subject site via newly created vehicular entrances. These entrances will also provide access to undercroft car parking areas accommodating 270 no. car parking spaces, 13 no. mobility car parking spaces, and 15 no. commercial/unloading spaces. Bicycle parking for 962 no. bicycles (including 10 no. cargo bicycle spaces) will be provided in secure parking facilities located within the undercroft parking areas for residents with 307 no. bicycle parking spaces provided for visitors at ground level resulting in a total of 1,269 no. bicycle parking spaces.

The proposed development also includes streetscape upgrades along Greenhills Road and the road to south, with footpaths, cycle lanes and landscaping also proposed internally within the application site. Please refer to Chapter 13 of this EIAR and the Transportation Assessment Report, prepared by Lohan and Donnelly Consulting Engineers, for further information.

2.4 Alternatives Examined

The EIA Directive (2014/52/EU) requires that Environmental Impact Assessment Reports include 'a description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.' The European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 describe alternatives as follows:

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

Reasonable alternatives may include project design proposals, location, size and scale, which are relevant to the proposed development and its specific characteristics. The Regulations require that an indication of the main reasons for selecting the preferred option, including a comparison of the environmental effects to be presented in the EIAR. This chapter provides an outline of the main alternatives examined during the design phase. It sets out the main reasons for choosing the development as proposed, taking into account and providing a comparison on the environmental effects. For the purposes of the Regulations, alternatives may be described at three levels:

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

2.4.1 Alternative Locations

Given the zoning of the subject site in the South Dublin County Development Plan 2022-2028 and having regard to the project's objectives, no reasonable alternative locations were identified. The rationale for the subject project is to provide a residential development with ancillary facilities and a mixed-use component in a sustainable modern urban neighbourhood landscaped setting on Regeneration Zoned lands in a strategic location. The applicant and the design team are not aware of any adjoining sites within the Greenhills Industrial Estate that are available and ready to be developed that are appropriately zoned for re-development. It is within this statutory planning policy context that all alternatives have been considered.

It is also noted that from an environmental perspective, the lands subject to this assessment are appropriate for redevelopment and can accommodate the proposed development of 588 no. residential units, 1 no. creche and 6 no. commercial units noting that from the perspective of population and human health, there is a shortage of supply of housing and demand in this area; that there is good transport links compared to other sites; there is no river nearby or other ecological/environmental sensitivity onsite as set out in the Appropriate Assessment, that the proposal represents an improvement to the neighbourhood noting the high quality amenities proposed as part of the scheme and the visual

enhancement of the proposal in the context of the existing warehouse buildings and that there will be no adverse visual impacts on adjoining development.

2.4.2 Alternative Uses

In addition to residential use, there are other land uses which are permitted in principle on these lands. The permitted in principle uses outlined for the 'REGEN' zoning include the following:

*Advertisements and Advertising Structures, **Childcare Facilities**, Community Centre, education, Enterprise Centre, Health Centre, Home Based Economic Activities, Hotel/Hostel, Housing for Older People, Industry-Light, Live-Work Units, Motor Sales Outlet, Office-Based Industry, Office less than 100sq.m, Offices 100sq.m –1,000sq.m, Offices over 1,000sq.m, Open Space, Petrol Station, Public Services, Recreational Facility, **Residential**, Restaurant/Café, Residential Institution, Science and Technology Based Enterprise, **Shop-Local**, Sports Club/Facility, Stadium, Traveller Accommodation.*

From a zoning perspective, the construction of a mixed-use development, featuring apartments, commercial space and a creche on the subject site is consistent with the land use zoning applying to the site.

It is not considered that an alternative comprising one of the alternative uses would result in the best use of these lands, particularly having regard to the general acknowledged need for housing and particularly the creation of a sustainable urban community neighbourhood, given the proximity of the subject site to the immediately adjacent high quality public transport infrastructure. Currently, the environs of the subject site are largely industrial/commercial in nature. However, the Greenhills Industrial Estate is expected to be the subject of extensive urban renewal in the coming years, with existing industrial buildings being replaced with higher density development in accordance with the City Edge Project.

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

2.4.3 Description of Alternative Processes

Given the zoning of the subject site, and the nature of the proposed development, no reasonable alternative processes were identified. The proposed development will implement best practice processes including sustainable construction methods as well as durable and high-quality materials within the proposed development.

2.4.4 Alternative Designs/Layouts and Consultations on the Design Development

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

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

The following paragraphs analyses alternative development options considered for the site, starting with the initial layout tabled at the 1st pre-planning meeting had with South Dublin County Council on 9th March 2021, and then describing design options and changes which were incorporated into the scheme as the proposals progressed through extensive pre-application discussions with South Dublin County Council, the City Edge Team, and An Bord Pleanála and in response to input from the appointed EIAR team. The principal considerations and amendments to the design of the scheme, having regard to and comparing the key environmental issues, are set out and discussed.

2.4.4.1 Option 1 - Design/Layout discussed at the pre-planning consultations with South Dublin County Council in May 2019

The first design option explored by C+W O'Brien Architects in early 2021 (illustrated in **Figure 2.33** & **Figure 2.34** below and overleaf), which was subsequently tabled at a pre-planning meeting with South Dublin County Council on 9th March 2021, can be described as follows:

The development will comprise of 4 no. 5-12 storey blocks accommodating 645 no. of 'Build-to-Rent' apartments, a 230sqm creche, 925qm of commercial space, a café/restaurant and internal communal amenity space to serve residents of the development. The 645 no. of 'Build-to-Rent' apartments proposed will feature the following mix: - 359 no. x 1-bed apartments; and 286 no. x 2-bed (4P) apartments. Residents of the development will also have access to 5,475sqm of external communal amenity space as well as a linear public park that traverses the site.

Vehicular access is provided off Greenhills Road via a newly created vehicular entrance in the north-eastern corner of the site which will provide access to podium level car parking areas accommodating c. 247 no. standard car parking spaces, 18 no. limited mobility car parking spaces and 10 no. go-car spaces. 2 no. secondary vehicular accesses, providing access for emergency and servicing vehicles, feature along the site's southern boundary. Provision has also been made for the possible future extension of Calmount Road to the north of the site. Generous bicycle parking provisions will also be provided for residents of the scheme.

The proposed scheme has a housing density of 235 dwellings per Ha, a plot ratio of 1.91 and a site coverage of 26% (taken at first floor level). The proposed development has been designed having regard to the topography of the subject site, a water mains which features in the north-eastern corner of the site, the possible future extension of Calmount Road and the redevelopment of the surrounding industrial estate.

The layout comprised taller buildings than currently proposed, an increased number of apartments and a different block configuration. The central open space areas serving the various blocks required greater consideration with one large area of open space indicated as preferred by South Dublin County Council. The road layout and permeability proposed for the development required greater consideration.



Figure 2.33 Indicative site layout of the proposed development tabled at first S247 meeting with South Dublin County Council in March 2021.



Figure 2.34 3D drawing illustrating the massing of the proposed blocks across the site tabled at first S247 meeting with South Dublin County Council in March 2021.

2.4.4.2 Option 2 - Design/Layout discussed at the pre-planning consultations with An Bord Pleanála on 29th April 2021

The second design option explored by C+W O'Brien Architects following the S247 pre-planning meeting with South Dublin County Council, which was subsequently tabled at the pre-planning consultation with An Bord Pleanála 29th April 2021, included the following key changes from the Option 1 design previously discussed:

- The maximum height was increased from 12 to 19 storeys;
- The number of units increased to 702 no; and
- 259.71sqm of commercial space was provided.

The development tabled at this meeting comprised the demolition of existing industrial units/buildings (totalling 11,120sq.m) and construction of a mixed-use development, featuring 702 no. apartments (367 no. 1-bed apartments and 335 no. 2-bed (4P) apartments), in 4 no. blocks varying in height from five to nineteen storeys (totalling 55,673.88sq.m). The proposed scheme had a housing density of 251.4 dwellings per Ha, a plot ratio of 1.99 and a site coverage of 25% (first floor level).

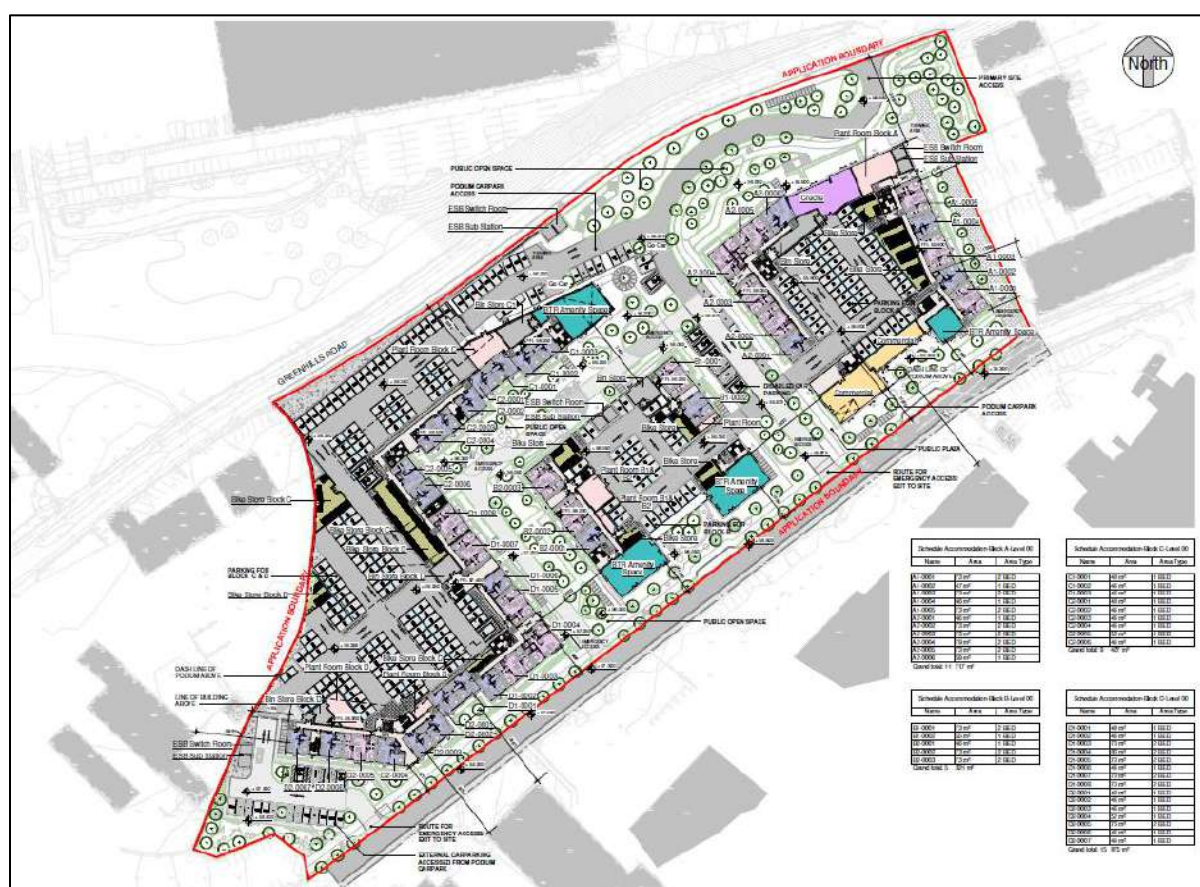




Figure 2.36 North Contextual Elevation as submitted for Stage 2 SHD Consultation Meeting

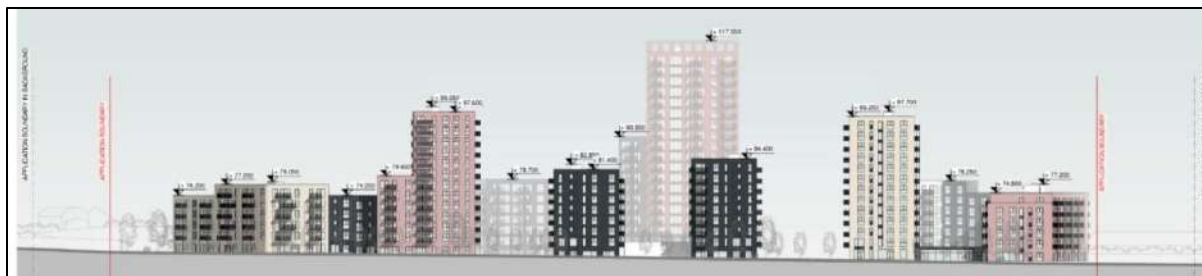


Figure 2.37 South Contextual Elevation as submitted for Stage 2 SHD Consultation Meeting

2.4.4.3 Option 3 - Design/Layout discussed at the pre-planning consultations with City Edge Team on 29th October 2021

Following the opinion issued by An Bord Pleanála, the Design Team engaged with the City Edge Team in October 2021. A revised scheme based on the feedback received from An Bord Pleanála was presented to the team with the following key changes from the Option 2 design previously discussed:

- The maximum height was decreased from 19 to 17 storeys;
- The number of units decreased; and
- The layout was amended to improve the permeability through the site.



Figure 2.38 Revised site plan of the proposed blocks on the site tabled at first meeting with City Edge Team in October 2021

2.4.4.4 Option 4 - Final Large-Scale Residential Development Scheme Submitted to Fingal County Council

As noted above, following the receipt of detailed feedback from An Bord Pleanála with regards to the SHD scheme and from South Dublin County Council, during the course of pre-application consultations for the LRD process, and following receipt of the Development Opinion which advised on further consideration relating to aspects of the proposed development, the applicant and design team have made amendments to the design of the development proposal which are incorporated in the subject application. These include amendments regarding layout, design, open space, transport and water services issues.

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

2.5 “Do Nothing” Alternative

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

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

2.6 Comparison of Design Alternatives

The design options discussed above are set out in Table 2.1 below.

	Option 1	Option 2	Option 3	Option 4 - Proposed Layout as Submitted	Option 5 - Do Nothing
	645 (359 no. x 1-bed apartments; and 286 no. x 2-bed (4P) apartments) 1 no. creche	702 (367 no. x 1-bed apartments and 335 no. x 2-bed (4P) apartments) 1 no. creche	Sketch Proposal presented - detailed unit numbers not provided but reduced from previous option noting reduction in height, scale and mass	588 no. residential units (291 no. one-beds, 238 no. two-beds and 59 no. three-beds) 1 no. childcare facility 6 no/ commercial units	10 vacant warehouse buildings
Unit Nos.	925 sq.m. commercial	259 sq.m. commercial			
Height	5-12 storeys	12-19 storeys	5-17 storeys	5-12 storeys	1-2 storeys
Configuration	4 no. blocks	4 no. blocks	4 no. blocks	4 no. blocks	10 low rise buildings
Density	235	251.4	N/A	210.5	N/A
Daylight	Sub- optimal	Sub- optimal	Optimal	Optimal	N/A
Permeability	Low	Low	Medium	High	Low
Comments	The layout had taller buildings than currently proposed, an increased no. of apartments and a different block configuration. The central open space areas serving the various blocks required greater consideration with one large area of open space indicated as preferred by South Dublin County Council.	The layout had taller buildings, an increase in the no. of apartments, reduced commercial space and reduced communal space. Additional pedestrian/cycle accessed from Greenhills Road were requested at pre-application to increase permeability and mobility. Central open space required.	A stronger edge to Greenhills Road outside of where a setback is needed in response to the wayleave was discussed. Residential units to the Ground Floor of Block D have been removed to introduce employment spaces to the southern road, creating areas of engagement and industry.	The layout was revised to address previous refusal reasons in the SHD decision which address permeability, car dominance, and apartment design. The revised landscape plans, prepared by Park Hood Landscape Architects, provide for a courtyard to serve each block. This will create a clear distinction between public and communal space and ensure the space is reserved for residents of the proposed development. The design has included pedestrian linkages through the site located along the eastern boundary and a central linkage through the site.	The existing buildings will remain on site, unused.
Environmental Impact	Sub- optimal daylight Low permeability Low quality open space	Impacts on Human Health due to reduced commercial space. Sub- optimal unit mix and dual aspect ratio Reduced permeability	Re-orientation of Block D to address southern road and increase in employment through increased commercial improvement to human health.	Optimal daylight achieved internally and to open space whilst achieving a high-quality design. Appropriate Mix of uses permeability and quality of open spaces proposed. Mitigation measures are proposed to mitigate any adverse impacts	Low impact but represents the sub-optimal use of zoned brownfield lands.

Table 2.1 Comparison of Options Assessed.

2.7 Conclusion

Having examined various reasonable alternative designs and having engaged in extensive and detailed consultations with South Dublin County Council, the City Edge Team, and An Bord Pleanála in the course of the design evolution of the current scheme, it is considered that the proposed design as set out in the subject LRD application is a preferable option both in terms of the sustainable development of the subject site and the creation of a sustainable community neighbourhood insofar as it achieves a residential and commercial development, including 588 no. residential units, 6 no. commercial units and 1 no. childcare facility achieving a net residential density of 210 units per hectare. The current design achieves a range of apartment types, sizes, and designs whilst also providing adequate open space and achieving a strong urban edge and passive surveillance.

3.0 PLANNING AND DEVELOPMENT CONTEXT

3.1 Introduction

This section of the EIAR has been prepared by Hughes Planning and Development Consultants. More specifically, this chapter of the EIAR was prepared jointly by Mr. Kevin Hughes, Director, Ms. Anne McElligott, Director, and Mr. Christopher Browne, Associate, with Hughes Planning and Development Consultants.

Mr. Kevin Hughes of Hughes Planning and Development Consultants, graduated from University College Dublin (UCD) with a Masters in Regional and Urban Planning (MRUP) in 2002, having previously completed a Bachelor of Arts Degree in Sociology from National University of Ireland in 1999. Kevin has over 22 years professional experience in the field of planning and development consultancy, which has included providing consultancy services in respect of several major urban regeneration projects including EIA. Kevin is currently the Director of Hughes Planning and Development Consultants.

Ms. Anne McElligott of Hughes Planning and Development Consultants, graduated from University College Cork (UCC) with a Masters in Planning and Sustainable Development (MPLAN) in 2011, having previously completed a Bachelor of Arts Degree in Geography and Irish from University College Cork in 2011. Anne has 13 years professional experience in the field of planning and development consultancy, which has included providing consultancy services in respect of several major urban regeneration projects including EIA. Anne is currently Director in the Practice of Hughes Planning and Development Consultants

Mr. Christopher Browne of Hughes Planning and Development Consultants, graduated from University College Dublin (UCD) with a Masters in Urban Design and Planning in 2018, having previously completed a Bachelor of Arts Degree in Geography and History from Dublin City University in 2012. Christopher has 7 years professional experience in the field of planning and development consultancy, which has included providing consultancy services in respect of several major urban regeneration projects including EIA. Christopher is currently an Associate in the Practice of Hughes Planning and Development Consultants.

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

3.2 Statutory Planning Context

The subject lands are subject to national, regional and local objectives and planning policies. 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 residential development at Greenhills Road, as these are addressed the Statement of Consistency and Planning Report, prepared by Hughes Planning and Development Consultants, which accompanies the planning application. Documents of note are as follows:

National

- Project Ireland 2040 – National Planning Framework (2018);
- National Development Plan 2018-2027 as updated 2021-2030;
- Housing For All – A New Housing Plan for Ireland (2021);
- Urban Development and Building Heights - Guidelines for Planning Authorities, December 2018;
- Quality Housing for Sustainable Communities – Guidelines for Planning Authorities (2007);
- Sustainable Residential Development and Compact Settlements Guidelines for Planning Authorities (2024)
- Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities (2023);
- Smarter Travel: A Sustainable Transport Future - A New Transport Policy for Ireland (2009);
- The Planning System and Flood Risk Management Guidelines for Planning Authorities (2009); and,
- Guidelines for Planning Authorities on Childcare Facilities (2001).

Regional

- Regional Spatial & Economic Strategy for the Eastern and Midland Regional Assembly, June 2019.

Local

- South Dublin County Development Plan 2022-2028

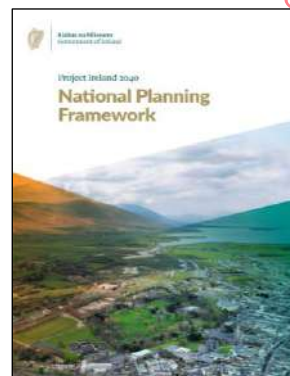
3.3 National and Regional Planning Policy Context

3.3.1 Project Ireland 2040 – National Planning Framework (2018)

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

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

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



With regards to managing growth, Section 1.2 of the National Planning Framework sets out that more balanced growth also means more concentrated growth and that the key five cities of Dublin, Cork, Limerick, Galway and Waterford are targeted for 50% of overall national growth between them, with **Ireland's large and smaller towns, villages and rural areas accommodating the other 50% of growth.**

In addition, National Strategic Outcome No. 1 '*Compact Growth*', provides that the NPF is focused on the careful management of the sustainable growth of compact cities, **towns** and villages in order to add value and create more attractive places in which people can live and work. To achieve this outcome, there must be an increase in the proportion of more compact forms of growth in the development of settlements of all sizes, from the largest city to the smallest village. The National Planning Framework outlines that;

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

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

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

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

National Policy Objective 4 Ensure the creation of attractive, liveable, well designed, high-quality urban places that are home to diverse and integrated communities that enjoy a high quality of life and well-being.

National Policy Objective 5 Develop cities and **towns of sufficient scale** and quality to compete internationally and to be drivers of national and regional growth, investment and prosperity.

National Policy Objective 6 Regenerate and rejuvenate cities, towns and villages of all types and scales as environmental assets, that can accommodate changing roles and functions, increased residential population and employment activity and enhanced levels of amenity and design quality, in order to sustainably influence and support their surrounding area.

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

National Policy Objective 33 Prioritise the provision of new homes at locations that can support sustainable development and at an appropriate scale of provision relative to location.

National Policy Objective 35 Increase residential density in settlements, through a range of measures including reductions in vacancy, re-use of existing buildings, infill development schemes, area or site-based regeneration and increased building heights.

The proposed development seeks to construct a sustainable residential development on a brownfield site which lies on the periphery of an established residential area meaning it is appropriately sited at the edge the existing settlement and does not constitute urban sprawl. The proposed location of the site will ensure that growth is contained within the metropolitan boundary, and will offer '*improved housing choice, transport mobility and quality of life*'.

The proposed development is consistent with the above as it involves the re-development of underutilised land which is in close proximity to a number of public transport services. The proposed development complies with the relevant National Policy Objectives identified in the National Framework comprised within Appendix 1 on pages 159 to 169.

The development proposed within this pre-planning report accords with the above-noted objectives comprised within the National Planning Framework (NPF), particularly in respect of its principles relating to compact growth and the reinforcement of the country's existing urban structure at all levels. The proposal provides 588 no. residential units and will positively contribute towards addressing the current deficit in residential accommodation within Dublin.

It is considered that the proposed scheme represents proper planning and sustainable development, given the site's capacity of accommodating increased densities and building heights in line with national policy.

The proposal is consistent with the above as it involves the re-development of underutilised land within an area which has been strategically targeted for regeneration in the South Dublin Development Plan 2022-2028. As such the area is well-served being accessible by a number of Dublin Bus Routes to the immediate north of the site which also provide connecting links to the local Luas stops at the Red Cow and Kingswood providing high-quality public transport provision to the subject site. In the context of the above extract from the NPF, it is submitted that the said high-frequency and high-capacity public transport make the subject site an ideal location for a high-quality residential development.

3.3.2 Project Ireland 2040 – National Development Plan 2018-2027

The National Development Plan 2018—2027 sets out the investment priorities that will underpin the successful implementation of the National Planning Framework, including the development of the necessary housing stock set out therein.

‘By 2040 the population of Ireland is expected to reach almost 6 million with a need for 550,000 more homes and the creation of 660,000 additional jobs to achieve and maintain full employment. The need to provide in excess of half-a- million more homes over the period to 2040 corresponds to a long-term trend of 25,000 new homes every year’.

The subject proposal which lies within a targeted regeneration area is considered to aid in meeting the targets and objectives of the National Planning Framework through the more efficient use of an underutilised site within the existing built-up area proximate to Dublin City. The proposed development is considered to reflect the type of sustainable development which is sought throughout National Policy in regard to the appropriate development of under-utilised sites.

3.3.3 Housing for All - A new Housing Plan for Ireland (2021)

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

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

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

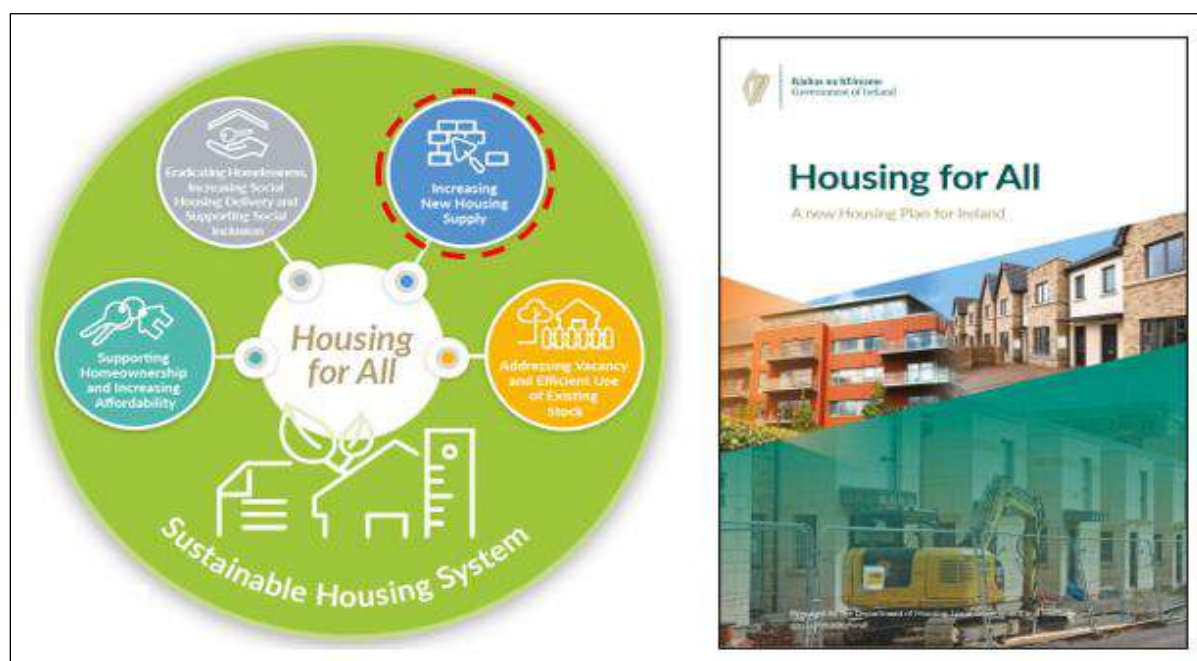


Figure 3.1 Figure indicating the four pathways to Housing for All.

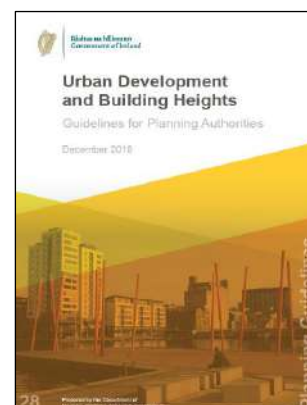
Pathway No. 3 *'Increasing New Housing Supply'* stipulates a number of key aspects to providing for new homes. It is also noted that by 2040, an additional one million people will be residing in Ireland. The state is acting decisively to activate supply across both public and private lands, which is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

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

3.3.4 Urban Development and Building Heights – Guidelines for Planning Authorities

Under Section 28 (1C) of the Planning and Development Act 2000 (as amended), Planning Authorities and An Bord Pleanála are required to have regard to the guidelines and apply any specific planning policy requirements (SPPRs) of the guidelines in carrying out their function.

SPPRs, as stated in the Guidelines, take precedence over any conflicting, policies and objectives of development plans, local area plans and strategic development zone planning schemes. Where such conflicts arise, such plans/schemes need to be amended by the relevant planning authority to reflect the content and requirements of these guidelines and properly inform the public of the relevant SPPR requirements.



The proposed development is considered to be compliant with the provisions of the Urban Development and Building Heights Guidelines for Planning Authorities, as adopted on 7th December 2018. We note the following commentary from this document which is considered to be of relevance in the context of the currently proposed development:

'To meet the needs of a growing population without growing our urban areas outwards requires more focus in planning policy and implementation terms on reusing previously developed 'brownfield' land, building up urban infill sites (which may not have been built on before) and either reusing or redeveloping existing sites and buildings that may not be in the optimal usage or format taking into account contemporary and future requirements.'

The current proposal allows for the redevelopment of vacant, residentially zoned lands, providing for a residential scheme comprising the construction of a total of 101 no. residential units, which is considered to represent the optimal means of achieving the redevelopment of this site whilst protecting adjoining residential amenities, improving visual amenities and optimising usage of the site. Whilst the principal aim of the above document is to identify the scope for the appropriate increase in height/density of both existing and undeveloped sites within urban areas, it is considered that aspects of placemaking, the protection of the streetscape and the protection of the character of the area, must be respected.

In addition to the above, SPPR 4 of the 2018 guidelines deals with the future development of greenfield or edge of city/town locations and states that planning authorities must secure:

- The minimum densities for such lands (generally 35 units per hectare but no less than 30, as per the 2009 Sustainable Residential Development in Urban Areas – Guidelines for Planning Authorities);
- Greater mix of unit types and heights in suburban locations; and
- Avoid monotype building typologies, particularly in schemes over 1100 units or more.

The subject site is located within the development boundary of Walkinstown. National planning policy requires greater densification on zoned lands in these types of locations. The proposed development options, provide for residential densities in the order of approximately 210 dwellings per hectare, with a mix of units proposed, which is in compliance with the aforementioned requirements.

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

The purpose of these Guidelines is to assist in achieving the objectives for Delivering Homes, Sustaining Communities contained in the Government Statement on Housing Policy which focuses on creating sustainable communities that are socially inclusive by promoting high standards in the design and construction and in the provision of residential amenity and services in new housing schemes. The above guidelines encourage the best use of building land and the optimal utilisation of services and infrastructure in the provision of new housing, guide the way to cost-effective options for housing design that goes beyond minimum codes and standards and seek to ensure that residents of new housing schemes enjoy the benefits of first-rate living conditions in an accessible, healthy and visually attractive environment, whilst also providing homes and communities that may be easily maintained and managed.



It is submitted that the best-practice guidance principles of Quality Housing for Sustainable Communities (2007) have been incorporated in the design of the proposed development. The site is located in close proximity to several local amenities located in the Walkinstown area such as shops, restaurants etc. and these are all located within a comfortable walking distance of the subject. The proposal provides a high-quality, high-standard residential accommodation facility which makes more efficient use of an otherwise underutilised site.

We submit that all dwellings exceed the minimum standards set out for room sizes and widths for houses as demonstrated in the architectural drawings prepared by CW O'Brien Architects. The proposed development is entirely compliant with the standards as set out in the Quality Housing for Sustainable Communities – Guidelines for Planning Authorities (2007).

3.3.6 Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities (2023)

The proposed development has been designed to be fully compliant with the standards set out in *Sustainable Urban Housing: Design Standards for New Apartments - Guidelines for Planning Authorities*, 2023. The 2023 Guidelines update previous guidance 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 original 2015 guidelines. The proposed developments consistency with the various standards is discussed overleaf.



3.3.6.1 Housing Mix

The following guidance is provided in relation to housing mix:

Specific Planning Policy Requirement 1

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

The proposed development of 588 no. apartments will include 291 no. one-bedroom apartments, 238 no. two bedroom apartments and 59 no. three-bedroom apartments. The one-bedroom apartments equate to 49.49% of the overall development. Therefore, the proposed development complies with this aspect of the 2020 guidelines.

3.3.6.2 Minimum Floor Area

Specific Planning Policy Requirement 3 sets out minimum apartment floor areas. The overall apartment floor area sizes required for apartment units' area as follows:

Requirement

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

Proposed

- 1-bedroom apartment 46-60sq.m
- 2-bedroom apartment (3 persons) 74sq.m
- 2-bedroom apartment (4 persons) 74-87sq.m
- 3-bedroom apartment (5 person) 94-114sq.m

The floor areas for each of the different apartment types is fully compliant with the various floor area and floor width standards, and in most instances are in excess of the required minimum standards set out in the guidelines for new apartments as illustrated in the Architectural Drawings prepared by CW O'Brien Architects. Further to this, the subject proposal is consistent with the 10% exceedance outlined in Section 3.8 of the New Apartment Guidelines. The applicable requirement reads as follows:

'The majority of all apartments in any proposed scheme of 10 or more apartments shall exceed the minimum floor area standard for any combination of the relevant 1, 2 or 3 bedroom unit types, by a minimum of 10% (any studio apartments must be included in the total, but are not calculable as units that exceed the minimum by at least 10%).'

Compliance is illustrated in the following table:

Unit Mix:	Number of Apartments	Cumulative Min Floor Area
49.49% 1-bed units	291	291 x 45sq.m = 13,095sq.m
0.17% 2-bed (3P) units	1	1 x 63sq.m = 63sq.m
40.3% 2-bed (4P) units	237	237 x 73sq.m = 17,301sq.m
10.03% 3-bed units	59	59 x 90sq.m = 5,310sq.m
Total 100%	Total 588 apartments	Total 35,769sqm
1-bed (2P) + 10% min area	150	150 x 4.5sq.m = 675sq.m
2-bed (4P) + 10% min area	100	100 x 7.3sq.m = 730sq.m
3-bed +10% min area	45	45 x 9sq.m = 405sq.m
Total + 10% of Majority	Total 295 Apartments (Majority)	675sq.m + 730sq.m + 405sq.m = 1,810sq.m
Total Required Minimum Floor Area		1,810sq.m + 35,769sq.m = 37,579sq.m
Cumulative Floor Area of Proposed 588 no. Residential Units		38,704sqm (which exceeds the minimum floor area outlined above)

Table 3.1 Table outlining compliance with Section 3.8(a) of the Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities, 2023.

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

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

Requirement

• One Bedroom	23sq.m, minimum width 3.3m
• Two Bedroom (3P)	28sq.m, minimum width 3.6m
• Two Bedroom (4P)	30sq.m, minimum width 3.6m
• Three Bedrooms	34sq.m, minimum width 3.8m

Proposed

• One Bedroom	23.5-30.8sq.m, proposed minimum width 3.8m
• Two Bedroom (3P)	30.1sq.m, proposed minimum width 5.1m
• Two Bedroom (4P)	30-36.6sq.m, proposed minimum width 3.8m
• Three Bedrooms	34sq.m, proposed minimum width 3.8m

The proposed development is compliant with the minimum aggregate floor areas and minimum widths for living/dining/kitchen area, as illustrated in the drawings prepared by CW O'Brien Architects, which accompanies this application.

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

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

Requirement

• Single Bedroom	7.1sq.m, minimum width 2.1m
• Double Bedroom	11.4sq.m, minimum width 2.8m
• Twin Bedroom	13sq.m, minimum width 2.8m

The proposed development is fully compliant with the minimum aggregate floor areas, minimum widths and minimum aggregate floor areas for bedrooms, as illustrated in the drawings prepared by CW O'Brien Architects, which accompanies this application.

3.3.6.5 Internal Storage

The minimum internal storage areas required for apartment units are as follows:

Requirement

• One bedroom	3sq.m
• Two bedrooms (3 person)	5sq.m
• Two bedrooms (4 person)	6sq.m
• Three bedrooms	9sq.m

Proposed

• One bedroom	3.3sq.m
• Two bedrooms (3 person)	5sq.m
• Two bedrooms (4 person)	6.3sq.m
• Three bedrooms	9sq.m

Overall, the development provides ample storage for each individual apartment that meets the required storage space needs for each unit, as illustrated in the drawings prepared by CW O'Brien Architects, which accompanies this application.

3.3.6.6 Minimum private open space requirements

The Guidelines provides minimum private open space requirements in new apartments as follows:

Requirement

• One Bedroom	5sq.m
• Two Bedrooms (3P)	6sq.m
• Two Bedrooms (4P)	7sq.m
• Three Bedrooms	9sq.m

Proposed

• One Bedroom	5 – 29.1sqm
• Two Bedrooms (3P)	24.3sqm
• Two Bedrooms (4P)	7 – 37.4sqm
• Three Bedrooms	9 – 67.5sq.m

Overall, the development provides ample private open space for each individual apartment and complies with the above, as illustrated in the drawings prepared by CW O'Brien Architects, which accompanies this application. Furthermore, all units are provided with access to a communal open space at the rear of the development.

3.3.6.7 Communal Open Space

The Guidelines provide the following minimum floor areas for communal amenity space in new apartments:

- One Bedroom	5sq.m
- Two Bedrooms (3 Person)	6sq.m
- Two Bedrooms (4 Person)	7sq.m
- Three Bedrooms	9sq.m

The proposed development provides for 291 no. one-bedroom units, 1 no. two-bedroom (3P) unit, 237 no. two-bedroom (4P) units and 59 no. three-bedroom units, which equates to a communal amenity space requirement of 3,651sq.m to serve the proposed development. As is indicated in the accompanying plans prepared by CW O'Brien Architects, a total provision of 3,876sq.m of external communal open space, located at roof level (746sq.m) and at podium level (3,130sq.m) which is fully in compliance with the requirements of this aspect of the guidelines.

3.3.6.8 Dual Aspect Ratios

Specific Planning Policy Requirement 4 provides guidance in regards to dual aspect apartments. The minimum number of dual aspect apartments are as follows:

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

The proposed development provides 270 no. dual aspect apartments, accounting for 46% of the 588 no. apartments proposed, which complies with the above requirements. In addition, the proposed single aspect apartment units have been orientated to face in eastern direction to allow for maximum light exposure for each individual apartment throughout long periods of the daylight hours. This is consistent with the 2020 Guidelines which recommend, in Section 3.18, that single aspect apartments be orientated to face south, east or west, to allow for maximum sunlight exposure.

3.3.6.9 Floor to Ceiling Height

The Guidelines require minimum floor to ceiling heights of 2.4 metres for apartments above ground floor, and 2.7 metres at ground floor to allow flexibility for future use. The subject scheme complies with the Guidelines in both respects, with floor to ceiling heights of 3.1 – 3.4m at ground floor level and 2.4 – 2.75m for upper floors.

3.3.6.10 Security Considerations

Section 3.40 of the Guidelines recommend that in order to ensure visitor and occupant safety natural surveillance should be maximised for all streets, open spaces, play areas and any surface bicycle or car parking areas. Particular attention should be given to entrance points being well lit and overlooked in building blocks.

The proposed development has been designed in a manner that allows for maximum natural surveillance throughout the development site, with windows/balconies overlooking all internal and external public spaces.

3.3.6.11 Bicycle Parking

The Guidelines seeks that the design of apartment schemes should ensure that bicycle parking spaces are located to be conveniently accessible to residents, both in terms of proximity to access points to apartments and routes to the external road / street network. Section 4.17 of the above guidelines, outline the following guidance regarding the quantity of bicycle parking spaces required for new apartment developments:

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

The proposed development is served by 1,269 no. bicycle parking spaces (962 no. resident spaces and 307 no. visitor spaces which exceeds that required by the apartment guidelines.

3.3.6.12 Car Parking

The proposed development, on the basis of its proximity to the Greenhills Road bus stop is situated in Zone 2, is therefore recommended to provide 0.75 spaces per studio and 1 bed apartments; 1 space per 2 bed apartments; and 1.25 spaces per 3 bed apartments. The following table provides a breakdown of parking spaces required for the proposed development scheme.

Breakdown of Car Parking Requirement				
Parking Requirement Per Unit	1-Bed Unit	2-Bed Unit	3-Bed Unit	Total Maximum No. of Spaces Required
Proposed Development	291	238	59	530

Table 3.2 Table showing the breakdown of maximum car parking spaces recommended to serve the proposed development scheme.

3.3.7 Sustainable Residential Development and Compact Settlements Guidelines for Planning Authorities (2024)

In January 2024, the Sustainable Residential Development and Compact Settlements Guidelines for Planning Authorities (2024) were published by the Department of Housing, Local Government and Heritage for public consultation. These new Guidelines replace the Sustainable Residential Development in Urban Areas Guidelines for Planning Authorities (the 'Sustainable Residential Development Guidelines') published in 2009.

3.3.7.1 Density

Under said guidelines, settlement types are categorised on their area types and density ranges. The subject site is located in an established residential/industrial area near Walkinstown. Section 3.3.1 of the guidelines refer to Cities and Metropolitan (MASP) Areas with Table 3.3 providing the density ranges for Metropolitan Towns and Cities. To clarify, Greenhills Road is located within the Metropolitan boundary of Dublin. Having reviewed the provisions of this section, the subject site is considered to fall under the heading *City Urban Neighbourhood* under which the following is specified:

(iv) lands around existing or planned high-capacity public transport nodes or interchanges (defined in Table 3.8) – all within the city and suburbs area. These are highly accessible urban locations with good access to employment, education and institutional uses and public transport. It is a policy and objective of these Guidelines that residential densities in the range 50 dph to 250 dph (net) shall generally be applied in urban neighbourhoods of Dublin and Cork.

As outlined earlier in this report, the subject development provides for a net residential density of approximately 210 dwellings per hectare, which falls within the upper-density range above. The site is considered an Accessible Location as defined in Table 3.8 of the guidelines as it adjoins the recently approved Bus Connects route connecting Tallaght to the city centre. When operational this will provide high-frequency bus routes. As outlined above, the net residential density proposed as part of this housing development is 210 units per hectare, which we strongly consider appropriate in this location.

3.3.7.2 Public Open Space

Other notable development management standards set out within the Compact Settlement Guidelines (2024) include the following with regard to public open space:

The requirement in the development plan shall be for public open space provision of not less than a minimum of 10% of the net site area and not more than a minimum of 15% of the net site area save in exceptional circumstances.

Further to the above, we note the wording of Policy and Objective 5.1 'Public Open Space' of the Guidelines as follows:

'It is a policy and objective of these Guidelines that statutory development plans include an objective(s) relating to the provision of public open space in new residential developments (and in mixed-use developments that include a residential element). The requirement in the development plan shall be for public open space provision of not less than a minimum of 10% of the net site area and not more than a minimum of 15% of the net site area save in exceptional circumstances. Different minimum requirements (within the 10-15% range) may be set for different areas. The minimum requirement should be justified taking into account existing public open space provision in the area and broader nature conservation and environmental considerations.'

The Guidelines also proceed to state the following:

In some circumstances, a planning authority might decide to set aside (in part or whole) the public open space requirement arising under the development plan. This can occur in cases where the planning authority considers it unfeasible, due to site constraints or other factors, to locate all of the open space on site. In other cases, the planning authority might consider that the needs of the population would be better served by the provision of a new park in the area or the upgrade or enhancement of an existing public open space or amenity. It is recommended that a provision to this effect is included within the development plan to allow for flexibility. In such circumstances, the planning authority may seek a financial contribution within the terms of Section 48 of the Planning and Development Act 2000 (as amended) in lieu of provision within an application site.

In the case of the current application, 6,650sq.m. of public open space is proposed for the northern portion of the subject site. This provision is fully compliant with the requirements of the 2024 Compact Settlement Guidelines.

In conclusion, it is considered that the proposed development aligns well with the standards and requirements set out within the 2024 Compact Settlement Guidelines.

3.3.7.3 Separation Distances

Another notable development management standard set out within the Compact Settlement Guidelines (2024) includes the following with regard to public separation distances:

When considering a planning application for residential development, a separation distance of at least 16 metres between opposing windows serving habitable rooms.

SPPR1 states:

It is a specific planning policy requirement of these Guidelines that statutory development plans¹⁵ shall not include an objective in respect of minimum separation distances that exceed 16 metres between opposing windows serving habitable rooms at the rear or side of houses, duplex units or apartment units above ground floor level. When considering a planning application for residential development, a separation distance of at least 16 metres between opposing windows serving habitable rooms¹⁶ at the rear or side of houses, duplex units and apartment units, above ground floor level shall be maintained. Separation distances below 16 metres may be considered acceptable in circumstances where there are no opposing windows serving habitable rooms and where suitable privacy measures have been designed into the scheme to prevent undue overlooking of habitable rooms and private amenity spaces.

There shall be no specified minimum separation distance at ground level or to the front of houses, duplex units and apartment units in statutory development plans and planning applications shall be determined on a case-by-case basis to prevent undue loss of privacy.

In all cases, the obligation will be on the project proposer to demonstrate to the satisfaction of the planning authority or An Bord Pleanála that residents will enjoy a high standard of amenity and that the proposed development will not have a significant negative impact on the amenity of occupiers of existing residential properties.

It is submitted that the potential for overlooking adjacent properties from the proposed development is limited. The application site does not overlook any sensitive interfaces. It is submitted that no undue overlooking will occur at this site.

Overlooking within the development has been addressed by design solutions which do not locate windows and balconies adjacent to one another to prevent overlooking. Please refer to the architectural drawings prepared by CW O'Brien Architects for further details.

3.3.7.4 Car Parking

SPPR 3 of the guidelines pertains to car parking and states that Car parking ratios should be reduced at all urban locations, and should be minimised, substantially reduced or wholly eliminated at locations that have good access to urban services and public transport. In areas where car parking is reduced local authorities should be satisfied that the mobility needs of residents and workers can be satisfied (e.g. through shared mobility solutions such as car and bike share).

It is noted that the proposed development includes a provision of 952 no. resident bicycle spaces and 10 no. cargo bicycle parking spaces in a secure and convenient location for each apartment at basement level and 307 no. visitor bicycle spaces located at ground floor level. The total number of bicycle parking spaces proposed is 1,269 spaces. This is considered appropriate in this instance as the required resident bicycle parking spaces are compliant with the guidelines and the proximity of the site's public transport options.

SPPR 3 states the following with regard to car parking:

It is a specific planning policy requirement of these Guidelines that:

(ii) In accessible locations, defined in Chapter 3 (Table 3.8) car- parking provision should be substantially reduced. The maximum rate of car parking provision for residential development, where such provision is justified to the satisfaction of the planning authority, shall be 1.5 no. spaces per dwelling.

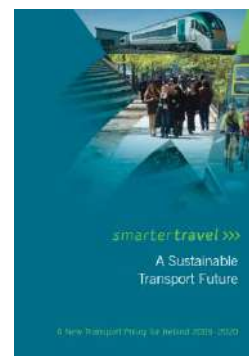
Applicants should be required to provide a rationale and justification for the number of car parking spaces proposed and to satisfy the planning authority that the parking levels are necessary and appropriate, particularly when they are close to the maximum provision. The maximum car parking standards do not include bays assigned for use by a car club, designated short-stay on-street Electric Vehicle (EV) charging stations or accessible parking spaces. The maximum car parking standards do include provisions for visitor parking.

The proposed development seeks to provide 297 no. car parking spaces comprising 265 no. standard spaces (including 6 no. car club spaces, 15 no. mobility spaces) located at surface level and within undercroft car parks within Blocks A, B and D and an additional 17 no. commercial/unloading/drop-off on-street parking spaces at ground level. This is considered acceptable as the subject site is deemed a High-Capacity Public Transport Node as it is located adjacent to an approved Bus Connects spine which will be served by high-frequency bus routes with buses arriving at 10-minute intervals. On this basis, the guidelines encourage reduced parking at such locations.

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

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

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



The five key goals of this transport policy document are as follows:

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

The Smarter Travel Plan also states that local authorities should ensure safe walking and cycling routes to and from schools and other educational institutions are identified and implemented. The proposed development complies with the key goals outlined within Smarter Travel: A Sustainable Transport Future. As noted in the preceding sections of this planning report, the proposed development will benefit from a reduced vehicular parking provision and a substantial bicycle parking provision as proposed under a concurrent application on site. The subject site is well-served by existing public transport services. The development encourages cycling as a sustainable mode of travel by providing a total of 1,269 no. bicycle parking spaces for the proposal, whilst the use of a number of Dublin Bus Routes servicing the subject site provides alternative access to surrounding parts of Dublin City and beyond through the use of public transport.

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

The proposed development has been designed having appropriate regard to the Planning Systems and Flood Risk Management Guidelines for Planning Authorities (2009). It is noted that the site historically has no record of flood events as noted in the OPW's historical flood maps. Additionally, the site has not been identified as being within Flood Zones highlighted on the Flood Maps as included in the Development Plan. For further information please refer to the Flood Risk Assessment prepared by Lohan and Donnelly Consulting Engineers as submitted with this application.

3.3.10 Guidelines for Planning Authorities on Childcare Facilities (2001)

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

The following definition of Childcare is included in the Guidelines:

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

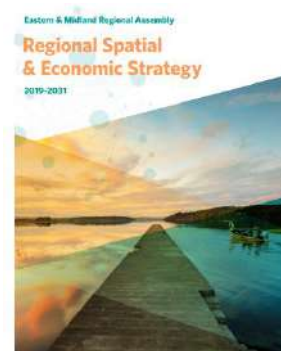
As set out on the architectural drawings accompanying this application, the proposed development includes the provision of 1 no. creche unit (570.91sq.m) within Block A and B. This facility includes the associated external play area provided to serve the unit (128.26sq.m within Block B), which is considered an appropriate provision to serve the overall development.

The exact capacity of the proposed childcare facilities will only become apparent when an operator comes on board and will be subject to operator's particular requirements and will be dependent on what types of childcare facility are already available in the area. However, it is estimated that proposed childcare facilities could cater for in the order of 60 no. children having regard to an accepted industry average of c. 3 to 4sq.m gross floor space per child depending on the type of childcare offered by the end user. This generally complies with the minimum place requirements set out in the abovementioned guidelines. It is envisaged that parents will drop-off children on their way to work within the area or on-route to the public transport linkages available to the proposed development.

3.4 Regional Planning Context

3.4.1 Regional Spatial and Economic Strategy for the Eastern and Midlands Region 2019 - 2031

The Regional Spatial and Economic Strategy (RSES) for the Eastern and Midland Region was published and adopted in June 2019. A Regional Spatial & Economic Strategy (RSES) is a strategic plan which identifies regional assets, opportunities and pressures and provides appropriate policy responses in the form of Regional Policy Objectives. At this strategic level, it provides a framework for investment to better manage spatial planning and economic development throughout the Region. The principal statutory purpose of the RSES is to support the implementation of Project Ireland 2040 and the economic policies and objectives of the Government by providing a long-term strategic planning and economic framework for the development of the Regions. The RSES outlines the following objectives for Dublin City and Metropolitan Area:



- To sustainably manage Dublin's growth as critical to Ireland's competitiveness, achieving growth to 1.4 million people in Dublin City and Suburbs and 1.65 million people in the Dublin Metropolitan Area by 2031.
- To realise ambitious compact growth targets of at least 50% of all new homes to be built, to be within, or contiguous to, the existing built-up area of Dublin city and suburbs and a target of at least 30% for other metropolitan settlements, with a focus on healthy placemaking and improved quality of life.

Dublin plays a key role in attracting internationally mobile talent and investment and combines vibrant urban living, a rich heritage and character and access to nature including Dublin Bay, the coastline and Dublin-Wicklow mountains. The Dublin Metropolitan Area Strategic Plan (MASP) in Chapter 5 sets out a strategy to achieve growth of 1.4 million people in Dublin City and suburbs and 1.65 million people in the Dublin Metropolitan Area by 2031 through the delivery of large-scale strategic development areas.

The overall vision for MASP over the years to 2031 and with a 2040 horizon is to build on the strengths of the area and to become a smart, climate resilient and global city regions, *'expanding access to social and economic opportunities and improved housing choice, travel options and quality of life for people who live, work, study in or visit the metropolitan area'*. This high-level vision is further underpinned by a spatial framework that supports the overall Settlement Strategy outlined in Chapter 4 of the RSES 'People and Place' and sets out an integrated land use and transportation strategy for sequential development of the metropolitan area, focused on:

- Consolidation of Dublin City and suburbs;
- Key Towns of Swords, Maynooth and Bray;
- Planned development of strategic development area in Donabate, Dunboyne, Leixlip and Greystones

Section 9.2 of the RSES *'Diverse and Inclusive Region'* provides that the age profile of the Eastern and Midlands Region is generally similar to that of the country as a whole, with slightly higher rates in the young working ages i.e. 20-39 years, and it is expected to follow similar trends over the coming years. It is further noted that *'changing household formation trends will require a range of housing typologies including student housing, smaller units, shared living schemes and flexible designs that are adaptive for people's full life cycle to meet their housing needs today and into the future.'*

The proposed development at the subject lands facilitates the intensification of a site to provide a high-quality residential accommodation proposal within the existing built-up areas of suburban Dublin. Due to the site's locational context adjoining frequent public transport, it is considered that the proposal is well-suited for the subject lands whilst addressing the significant shortfall in residential accommodation throughout the County. Moreover, the scheme will promote sustainable compact growth with access to existing public transport infrastructure.

3.5 Local Planning Context

3.5.1 South Dublin County Development Plan 2022 - 2028

Under The South Dublin Development Plan 2022-2028 is the relevant statutory development plan for the proposed application site. The South Dublin Development Plan 2022-2028 was adopted by the Elected Members of South Dublin County Council at the Special Meeting of the Council and came into effect on 3rd August 2022.

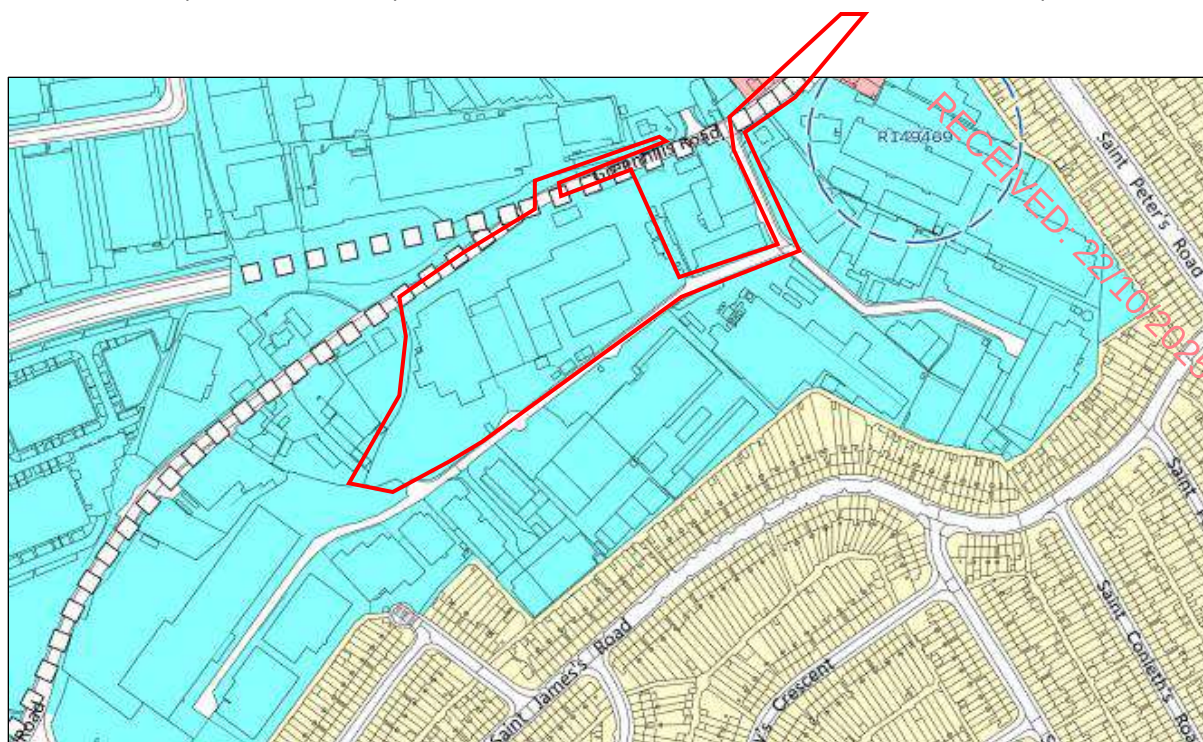


Figure 3.2 Extract from Sheet No. 5 of the Development Plan with the subject site outlined in red.

Under the South Dublin County Development Plan 2022-2028, the subject site is zoned 'REGEN', the objective of which is 'To facilitate enterprise and/or residential-led regeneration subject to a development framework or plan for the area incorporating phasing and infrastructure delivery'.

Permitted in Principle: Advertisements and Advertising Structures, Childcare Facilities, Community Centre, Education, Enterprise Centre, Health Centre, Home Based Economic Activities, Hotel / Hostel, Housing for Older People, Industry-Light, Live-Work Units, Motor Sales Outlet, Office-Based Industry, Office less than 100 sq m, Offices 100 sq m-1,000 sq m, Offices over 1,000 sq m, Open Space, Petrol Station, Public Services, Recreational Facility, **Residential**, Restaurant / Café, Residential Institution, Science and Technology Based Enterprise, Shop-Local, Sports Club / Facility, Stadium, Traveller Accommodation, Work-Live Units.

The 'REGEN' zone is a relatively new addition to the land-use zoning classifications, adopted in the previous South Dublin County Development Plan 2016-2022, and aimed at supporting and facilitating the regeneration of underutilised industrial lands that are within close proximity to town centres and/or public transport nodes, with a particular emphasis on more intensive enterprise and residential-led development. The 'REGEN' zone is a relatively broad zoning designation under which a wide range of uses may be permitted.

3.5.1.1 Housing

A set out in Chapter 2 of the South Dublin County Development Plan 2022-2028, a core objective is to provide new housing of good quality, with a focus on the creation of sustainable new communities at locations that can be well served by high quality public transport, with a particular focus on the intensification of infill and brownfield lands with links to existing transport services. It is noted in Section 2.5.6 of the development plan that South Dublin County Council will require 15,576 additional housing units over the period from 2022 to 2028, and the 'Interim Housing Strategy' forecasts that 8,415 social housing units will be required during this period as well, with a portion of these housing units being delivered through Part V of the Planning and Development Act 2000 (as amended).

As stated above, the vision for housing in the South Dublin County Council administrative area is to 'ensure the delivery of high quality and well-designed homes in sustainable communities to meet a diversity of housing needs within the County.' Developments should comply with Government guidance in terms of design and sustainability, adaptability and where adequate private amenity open space and public open space is provided with passive surveillance. The proposal would significantly improve the subject site by offering a high standard of accommodation near a high-quality transportation corridor.

The following development plan policies are relevant to the proposal on the subject site:

Policy CS1: Prioritise housing and employment growth within the identified residential and employment growth areas set out under the Metropolitan Area Strategic Plan.

Policy CS2: Deliver a development framework for the regeneration of the Naas Road lands in conjunction with Dublin City Council which underpins the strategic aims of the National Planning Framework and Regional Spatial and Economic Strategy.

Policy CS4: Facilitate the re-use and regeneration of vacant sites and landbanks through various measures to promote compact urban growth in line with the Core Strategy.

Policy CS6: Promote the consolidation and sustainable intensification of development within the urban settlements identified in the settlement hierarchy.

The proposed development seeks to develop underutilized brownfield lands and provide 588 no. apartments. The provision of additional housing and the reuse of a large vacant site is consistent with the objectives listed above.

Chapter 6 of the Development Plan also provides guidance on housing in the county. The following development plan policies are relevant to the proposal on the subject site:

Policy H2: Ensure that sufficient zoned land continues to be available at appropriate locations to satisfy the housing requirements of the County.

Policy H7: Promote high quality design and layout in new residential developments to ensure a high-quality living environment for residents, in terms of the standard of individual dwelling units and the overall layout and appearance of the development.

Policy H8: Ensure that all residential development is served by a clear hierarchy and network on high quality public open spaces that provide for active and passive recreation and enhances the visual character, identity and amenity of the area.

Policy H9: Ensure that all dwellings have access to high quality private open space and semi-private open space (where appropriate) and that such space is carefully integrated into the design of new residential developments.

Policy H10: Ensure that all new housing provides a high standard of accommodation that is flexible and adaptable, to meet the long-term needs of a variety of household types and sizes.

Policy H12: Ensure that development on lands with a steep and/or varying topography is designed and sited to minimise impacts on the natural slope of the site.

Policy H13: Promote and support residential consolidation and sustainable intensification at appropriate locations, to support ongoing viability of social and physical infrastructure and services and meet the future housing needs of the County.

The objective for housing in the South Dublin County Council administrative area is to provide high quality residential development that contributes to the communities. In this regard housing on 'REGEN' zoned lands at higher densities will be supported where it respects the residential development established in the surrounding area and complies with the Government guidance in terms of design and sustainability, adaptability and where adequate private amenity open space and public open space is provided with passive surveillance. Higher buildings will also be supported in such areas; however, varied heights are preferable.

The proposal for the site is to construct a 588-no. unit residential development complete with interior and exterior public open space. The building has been designed and scaled to respond to the site and the adjoining development whilst providing a layout that allows an adequate provision of surveillance over public spaces within the property as well as pathways and roads surrounding the development.

Furthermore, the proposed apartment units have been designed to comply with the varying quantitative standards for residential schemes set out in the Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities (2022).

In addition, the proposed development provides a housing choice in a suitably located area, offering a mix of build to rent apartments on an otherwise underutilised site and is therefore consistent with the housing objectives set out in the development plan.

3.5.1.2 Quality Design and Healthy Placemaking

South Dublin County Council's vision for development in the area is 'to create a leading example in sustainable urban design and healthy placemaking that delivers attractive, connected, vibrant and well-functioning places to live, work, visit, socialise and invest in.' Chapter 5 of the South Dublin County Council Development Plan 2022-2028 has due regard to 'Quality Design and Healthy Placemaking' as envisioned by the Council. It is considered that the following objectives within Chapter 5 are of particular relevance to this planning application:

QDP1 Objective 6: To build residential neighbourhoods in a manner that aims to provide for adequate numbers of affordable homes in line with provisions set out in Goal 11 of the UN Sustainable Development Goals, the National Planning Framework and the Regional Spatial and Economic Strategy towards the delivery of long-term sustainable communities.

The proposed development, comprising 588 no. residential units, provides for an inclusive, safe, resilient, and sustainable neighbourhood in accordance with the NPF and RSES.

3.5.1.3 Building Height and Density

It is stated in Section 5.2.7 of the South Dublin County Development Plan 2022-2028 that varied building heights are supported for proposed developments within urban centres and regeneration zones and are recognised as playing a key role in creating a sense of place, urban legibility, and visual diversity. This is acknowledged in accordance with Urban Development and Building Height Guidelines (2018), as amended in 2020. It is noted in this section of the development plan that proposals for building in excess of five-storeys in height will only be considered at strategic and landmark locations in Town Centres, Regeneration and Strategic Development Zones in accordance with Local Area Plans or SDZ Planning Schemes. The following policy objectives are relevant to the proposal:

Policy QDP8: Adhere to the requirements set out in the Urban Development and Building Height Guidelines (2018) issued by DHLGH through the implementation of the Assessment Toolkit set out in the South Dublin County's Building Heights and Density Guide 2021.

QDP8 Objective 1: To assess development proposals in accordance with the Building Height and Density Guide set out in Appendix 10 of this Development Plan and associated planning guidelines. In this regard, all medium to large scale and complex planning applications (30 + residential units, commercial development over 1,000 sq m or as otherwise required by the Planning Authority) shall be accompanied by a 'Design Statement'. The Design Statement shall include, inter alia, a detailed analysis of the proposal and statement based on the guidance, principles and performance-based design criteria set out in South Dublin County's Height and Density Guide. Any departures within the proposed development from the guidance set out in the Building Height and Density Guide for South Dublin County (Appendix 10) shall be clearly highlighted in the Design Statement. (See Chapter 12: Implementation and Monitoring).

QDP8 Objective 2: In accordance with NPO35, SPPR1 and SPPR3, to proactively consider increased building heights on lands zoned Regeneration (Regen), Major Retail Centre (MRC), District Centre (DC), Local Centre (LC), Town Centre (TC) and New Residential (Res-N) and on sites demonstrated as having the capacity to accommodate increased densities in line with the locational criteria of Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities (2020) and the Urban Design Manual – Best Practice Guidelines (2009), where it is clearly demonstrated by means of an urban design analysis carried out in accordance with the provisions of South Dublin County's Building Height and Density Guide that it is contextually appropriate to do so.

Policy QDP9: Apply a context driven approach to building heights in South Dublin, as supported by South Dublin's Building Heights and Density Guide.

QDP9 Objective 1: To require that designers and applicants demonstrate to the satisfaction of the Planning Authority that applications for landmark type buildings or for amplified heights akin to a landmark, are contextually appropriate and that the proportionate function of the landmark justifies it, having regard to the primary, secondary and local landmark classifications.

The height and density proposed is consistent with the above guidance due to the subject site's proximity to the bus network serving the Walkinstown area. Further to this, the proposed development scores highly when assessed against the development management criteria set out in the guidelines as, aside from being well served by public transport, it:

- Enhances the character, built environment and public realm of the area, featuring well-considered high-quality materials, displaying architectural elements and incorporating a public area adjacent to the bus stop; appropriately responds to the lower-scale residential development in the surrounding area;
- Makes a positive contribution to the legibility of the wider urban area as it provides links to the bus stop;
- Maximises access to natural daylight, ventilation, and views due to the positioning of the blocks along the northern, southern and western perimeter; and
- Has limited impact in relation to overshadowing and loss of light due to its separation from existing residential developments in the surrounding area.

In addition, the subject site is situated within 'REGEN' – Regeneration area, which under the current development plan is designated for building heights up to five storeys and allows for up to seven storeys at landmark locations.

The proposed development adopts landmark components which is consistent with the above direction. We consider the proposed building height to be appropriate having regard to recent national planning policy direction, including the Urban Development and Building Heights - Guidelines for Planning Authorities (2020) and the Sustainable Residential Development and Compact Settlements Guidelines for Planning Authorities (2024). This particular policy and commentary are discussed further in Sections of this report.

3.5.1.4 Mix of Dwelling Types

It is the policy of the Council to improve a balanced range of dwelling types and sizes throughout the South Dublin County Council development area. The following objective is relevant to the proposal:

H1 Objective 12: Proposals for residential development shall provide a minimum of 30% 3-bedroom units, a lesser provision may be acceptable where it can be demonstrated that:

- There are unique site constraints that would prevent such provision; or
- That the proposed housing mix meets the specific demand required in an area, having regard to the prevailing housing type within a 10-minute walk of the site and the socio-economic, population and housing data set out in the Housing Strategy and Interim HNDA; or
- The scheme is a social and/or affordable housing scheme.

Appendix 11 The table below taken from Appendix 11 of the South Dublin County Development Plan 2022-2028 displays the household size cohort forecast for the life of the plan. The Development Plan states that *'the analysis shows that one- and two-persons households will increase their percentage share from 44% to 45% by 2028. In combination with the 3-person household, these three groups make up 65% of the household size formation, the largest cohort by the end of the plan period'*.

Table 50: Household Size Cohort Forecast in South Dublin (2016 – 2028)

Persons per Household	2016	2028
1-person household	16.83%	17.68%
2-person household	27.13%	27.38%
3-person household	19.77%	19.88%
4-person household	20.29%	19.75%
5-person+ household	15.91%	15.85%

Figure 3.3 Household size cohort forecast in Appendix 11 under the South Dublin County Development Plan 2022-2028.

In contrast to the above, the Development Plan states that 'the 4-person and 5-person+ household will only reduce from 36.2% to 35%. It can be assumed that a small proportion of the 4 person households would typically give rise to a need for some 2-bedroom units'. As demonstrated in the above table, the future forecast demonstrates a steady increase in 1 and 2-person households by 2028. Moreover, it is demonstrated that the only household size category demand to decrease is the 4 and 5+ household categories. It is expected that this trend will continue thus indicating a fundamental shift in household sizes and therefore demonstrating a requirement for a greater mix of household types, particularly for smaller 1 and 2-bed units.

This change in household types was evident in the most recent census of 2022 which again showed a shift in demand for unit types as a result of a shrinking average household size and larger increases in smaller per-person households. In 2022, the average household size in Ireland decreased to 2.74 and in South County Dublin it decreased to 2.97 persons per household, which is down from 3.00 in 2016 and 3.94 in 1971.

The number of one and two-person households in South Dublin County accounted for 44% of households in the county. When combined with three-person households, this accounts for 65% of all housing in the county, up from 63.8% in 2016. It is noted that in the same period, 3 and 4-person households decreased slightly from 30.5% to 30%.

Housing in South Dublin and in particular Walkinstown is dominated by semi-detached 3-bedroom dwellings which were built to accommodate 3, 4 and 5+ person households. Yet it is clear that the largest growth has been in the 1 and 2-person households, where 2-person households have grown by 6.1% since 1966. While 3-person households have also seen growth over the past 20 years, both 4 and 5+ person households have decreased, and we contend that this justifies the provision of 1 and 2-bed units in the proposed development.

Despite the change in households reported in the most recent census, the number of apartment developments approved in the area is minimal. In 2024, An Bord Pleanála granted permission for 42 no. apartments (19 no. one-bed and 23 no. two-bed) at the Walkinstown Roundabout. In 2021, An Bord Pleanála granted permission for 171 no. apartments on the Ballymount Road, Walkinstown which comprised 162 no. one and two-bed units. As per the 2022 census, 14% of all dwellings in the county were apartments or flats, and the number of one and two-bed dwellings comprise only 18% of the total number of dwellings in the county.

We contend, therefore, that the proposed unit mix, comprising 291 no. one-bedroom units (50%), 238 no. two-bedroom units (40%), and 59 no. three-bedroom units (10%) is entirely appropriate in this instance given the subject site's urban location, the infill nature of the subject site and the limited provision of apartments within the local area. Further to this, we note that the unit mix capable of being accommodated on the subject site has been dictated to a degree by the size of the subject site and the existing character of the area.

The development as proposed, allows for the increased efficiency of the subject site with regards to residential density as is supported by national policy. The subject site is located at a central location in

and is situated within walking distance of all facilities necessary to provide a high standard of residential accommodation including recreational, educational and transport services. The proposed unit mix is further considered to be in accordance with the provisions of the Project Ireland 2040 National Planning Framework which seeks more balanced and concentrated growth within the developed urban areas of the five major cities within Ireland. Noting the aforementioned mix of units, the National Planning Framework states the following in relation to changing family size:

‘Currently, 7 out of 10 households in the State consist of three people or less, with an average household size of 2.75 people. This is expected to decline to around 2.5 people per household by 2040. Household sizes in urban areas tend to be smaller than in the suburbs or rural parts of the country. In Dublin city, one, two and three person households comprise 80 percent of all households. Yet, the stock of housing in Ireland is largely comprised of detached and semi-detached houses with three to four bedrooms.’

Having regard to the above, the proposed unit mix responds to the identified strategic need for smaller units in the housing stock in urban areas. The proposed development will include one-bedroom, two-bedroom and three-bedroom units and, in improving the variety of house types in the area, is considered consistent with national policy guidance. In relation to the principal focus of the Project Ireland 2040 document, we would note that a key element of national growth is the more efficient use of underutilized sites within existing built-up areas. In this regard we note the following commentary from the document:

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

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

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

Section 2.1 of the Housing for All plan sets out a number of key objectives to eradicate homelessness, this includes a focus on the construction and acquisition of one-bedroom homes and the increased availability of social housing. In this regard, it is stipulated that *‘Local Authorities will set out delivery targets, including targets for one-bed homes, in their new Housing Delivery Action Plans which Housing for All mandates them to prepare and which will be available by December 2021’.* The South Dublin County Council Housing Delivery Action Plan 2022-2026 states that the average household size (2.99 persons per household at the last census, CSO, 2016) is reflected in current social housing need with 82.7% of households requiring one- or two-bedroom homes:

Housing Need %	
One Bed	49.5 %
Two Bed	33.2 %
Three Bed	15.2 %
Four Bed	2.1 %
Total: 100%	

Over 60% of existing social homes are three-bedroom homes so we need to rebalance delivery to align better with demand typology. [2.97 persons per household as per 2022 census]

We submit that the proposed development which comprises a total of 291 no. one-bedroom units (50%), 238 no. two-bedroom units (40%), and 59 no. three-bedroom units (10%), is fully consistent with the above policy content as it provides an appropriate mix of unit types on a centrally located site and responds to the recognised need within the Dublin Metropolitan area for the increased provision of smaller unit sizes to accommodate 1 and 2 person households. The provision of residential units on site, in the manner proposed under this application, supports homeownership and affordability results in increased housing provision and provides for the efficient use of zoned and serviced land. The proposed development is considered to respond to a recognised need at a national level, for residential accommodation and is consistent with policy in this regard.

Having regard to the afore-referenced data, it is reasonable to conclude that the mix of housing demand is changing and evolving with a much-increased output of housing required to cater for one or two-person households. Based on the foregoing, it is considered that the proposed unit mix, accommodating 291 no. one-bedroom units (50%), 238 no. two-bedroom units (40%), and 59 no. three-bedroom units (10%), is appropriate in considering the highly accessible location of the subject lands and the most recent census population data which clearly indicates the significant proportion of 1 and 2-person households within Dublin City, thus inevitably translating into higher demand for smaller residential unit sizes. The proposed development will cater for this demand and offer a feasible scheme which will aid in meeting current and future market demand, in respect of unit types and sizes. It is considered that the proposed development accords with the most recent iteration of the Housing Need and Demand Assessment 2022-2028, the Sustainable Urban Housing guidelines, and the South Dublin County Development Plan 2022-2028.

3.5.1.5 Car Parking Standards

The South Dublin County Council Development Plan 2022-2028 requires any new development to provide a maximum of car parking spaces depending on the location of the development. Tables 13.25 and 13.26 in the Development Plan set out the Maximum Parking rates for non-residential and residential development. Parking rates are divided into two main categories:

- **Zone 1:** General rate applicable throughout the County.
- **Zone 2 (Non-Residential):** More restrictive rates for application within town and village centres, within 800 metres of a train or Luas station and within 400 metres of a high-quality bus service (including proposed services that have proceeded to construction).

The provision of parking spaces for car sharing/pooling will be encouraged and will not impact on the maximum rates in Table 13.25.

- **Zone 2 (Residential):** More restrictive rates for application within town and village centres, within 400 metres of a high-quality public transport service (includes a train station, Luas station or bus stop with a high-quality service).

The maximum parking rates associated with new residential developments, as set out in Table 13.25 of the South Dublin County Development Plan 2022-2028 are as follows:

- 1 no. space per 1 bed apartment in Zone 1 and 0.75 spaces in Zone 2;
- 1.25 spaces per 2 bed apartments in Zone 1 and 1 space in Zone 2;
- 1.5 spaces per 3 bed or more apartments in Zone 1 and 1.25 spaces in Zone 2

The proposed development, on the basis of its proximity to the Greenhills Road bus stop is situated in Zone 2, is therefore recommended to provide 0.75 spaces per studio and 1 bed apartments; 1 space per 2 bed apartments; and 1.25 spaces per 3 bed apartments. The following table, overleaf, provides a breakdown of parking spaces required for the proposed development scheme.

Breakdown of Car Parking Requirement				
Parking Requirement Per Unit	1-Bed Unit	2-Bed Unit	3-Bed Unit	Total Maximum No. of Spaces Required
Proposed Development	291	238	59	530

Table 3.3 Table showing the breakdown of maximum car parking spaces recommended to serve the proposed development scheme.

It is noted in Section 12.7.4 'Car Parking Standards' that the number of spaces set out above are not to be exceeded, and in some instances a lower rate of parking may acceptable subject to the following:

- The proximity of the site to public transport and the quality of the transport service it provides. (This should be clearly outlined in a Design Statement submitted with a planning application),
- The proximity of the development to services that fulfil occasional and day to day needs,
- The existence of a robust and achievable Workforce Management or Mobility Management Plan for the development,
- The ability of people to fulfil multiple needs in a single journey,
- The levels of car dependency generated by particular uses within the development,
- The ability of residents to live in close proximity to the workplace,
- Peak hours of demand and the ability to share spaces between different uses,
- Uses for which parking rates can be accumulated, and
- The ability of the surrounding road network to cater for an increase in traffic.

Furthermore, the Sustainable Urban Housing: Design Standards for New Apartment Guidelines for Planning Authorities (2022) outlines that the quantum of car parking or the requirement for any such provision for apartment developments will vary, having regard to the types of locations in cities and towns suitable for apartment development, and broadly based on proximity and accessibility criteria. The following guidance is provided in regard to Central and/or Accessible Urban Locations:

In 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.

These locations are most likely to be in cities, especially in or adjacent to (i.e. within 15 minutes walking distance of) city centres or centrally located employment locations. **This includes 10 minutes walking distance of DART, commuter rail or Luas stops or within 5 minutes walking distance of high frequency (min 10 minute peak hour frequency) bus services.**

The proposed development is considered to be well-served by public transit and a Bus Connect Spine was recently approved and run adjacent to the site's northern boundary. As such, 270 no. car parking are proposed for the Greenhills development site. As noted in the Sustainable Urban Housing Guidelines (2022), it is national policy to reduce car parking in circumstances where developments are centrally located employment areas, within 5 minutes walking distance of high-frequency bus services.

Given that the Greenhills Road Bus stop is located approximately 124 metres east of the site, which is serviced by Dublin Bus Route nos. 27 and 77a which provide services from Citywest to Clare Hall and Jobstown to Ringsend respectively. Moreover, the subject development features 1269 no. resident bicycle spaces at ground floor level and 307 no. visitor bicycle spaces located at ground floor level, it is considered that the car parking standard is acceptable in this instance.

3.5.1.6 Travel Plans

Section 12.7.3 of the South Dublin County Development Plan 2022-2028 requires a Mobility Management Plan for larger-sized developments as listed in Table 12.24 of the plan. The purpose of such plans is to outline a series of measures to encourage sustainable travel modes and reduce car borne traffic within a development. Those developments are as follows:

Land Use	Workplace Travel Plan Statement	Indicative Number of Jobs	Standardised Workplace Travel Plan	Indicative Number of Jobs
Offices / Financial	>500 sq m	25-100	>2,000 sq m	>100
Retail / Shops	>600 sq m	25-100	>2,500 sq m	>100
Industrial	>2,500 sq m	25-100	>6,000 sq m	>100
Leisure		25-100		>100 or >100,000 visitors per annum
Hospitals / Medical Centres		25-100		>100 or >100,000 visitors per annum
Warehousing	>2,500 sq m	25-100	>10,000 sq m	>100

Figure 3.4 Extract of Table 12.24 of the South Dublin County Development Plan 2022-2028 indicating thresholds for submission of a Workplace Travel Plan.

Given the size of the proposed residential development which provides for 588 no. apartments as well as commercial space, a Travel Plan has been prepared by NRB Consulting Engineering and submitted with the full application in due course. This plan will provide a detailed outline of sustainable travel modes available to future occupants of the site, both residential and commercial.

3.5.1.7 Bicycle Parking Standards

Section 12.7.1 of the Development Plan provides guidance on bicycle parking in the county. Table 12.23 sets out the minimum bicycle parking rates for all new developments, with developments divided into two categories.

- **Long Term:** These are to be designed for use by residents and employees. Such spaces should be located in a secure area that is not freely accessible to the general public.
- **Short Stay:** These are to be designed for ease of use by the general public. Such spaces should be located in highly visible areas that are easy to access.

Table 12.23 requires the following minimum bicycle parking / storage rates.

Category	Land-Use	Long Term	Short Stay
Accommodation	Hotel ¹	1 per 5 staff	1 per 10 bedrooms
	Nursing Home	1 per 5 staff	1 per 10 residents
	Residential Apartment	1 per bedroom	1 per two apartments
	Student Accommodation	1 per bedroom	1 per 5 bedrooms

Figure 3.5 Extract from Table 12.23 of the South Dublin County Development Plan 2022-2028 which provides bicycle parking rates for new developments.

It is submitted that 1,269 no. long-term bicycle parking spaces will be provided in secure parking facilities for residents including 307 no. bicycle parking spaces are provided for visitors all at ground level. This meets the minimum requirements as set out in Table 12.23 of the South Dublin County Development Plan 2022-2028.

3.5.1.8 Bicycle Parking Design

Section 12.7.1 of the Development Plan also provides guidance on bicycle parking design. All parking areas should comply with the requirements of the National Cycle Manual, NTA (2011) or any superseding document. Bicycle parking/storage associated with residential apartments shall comply with the requirements of the Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities (2022) ('the Apartment Guidelines') in relation to the design and provision of facilities, including the following:

- **Location:** Cycle storage facilities should be directly accessible from the public road or from a shared private area that gives direct access to the public road.

The proposed bicycle parking areas will be located at ground floor level for residents and visitors which can be directly accessed from the residential accommodation.

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

The proposed development will meet the minimum requirements for bicycle parking spaces by providing 307 short-term and 1269 long-term bicycle parking spaces.

- **Design:** Cycle storage facilities shall be provided in a dedicated facility of permanent construction, preferably within the building footprint or, where not feasible, within an adjacent or adjoining purpose-built structure of permanent construction. Refer to the Apartment Guidelines for further details on design requirements.

The bicycle parking has been placed in dedicated storage areas to the front and rear of the residential building at the ground floor level. In addition, the bicycle facilities are easily accessible via stairwells and lifts.

- **Management:** An acceptable quality of cycle storage requires a management plan that ensures the effective operation and maintenance of cycle parking. Refer to the Apartment Guidelines for further details on management.

A management plan will be in operation once the building is completed and will include the management of bicycle parking areas as per the Development Plan requirements.

3.5.1.9 Childcare Facilities

Section 12.8.4 of the South Dublin County Council Development Plan 2022-2028, provides guidance on childcare facilities. This guidance has due regard to the requirements of the 'Childcare Facilities; Guidelines for Planning Authorities', DEHLG (2001) and Circular Letter PL 3 / 2016 (DECLF) and any superseding guidelines, or as required by the Planning Authorities.

The Guidelines require the objectives section of development plans to include childcare facilities as a specific use in 'appropriate locations/zones'. These locations would include 'new communities/larger new housing developments'. The Guidelines state the following in relation to new housing developments:

'Planning authorities should require the provision of at least one childcare facility for new housing areas unless there are significant reasons to the contrary for example, development consisting of single bed apartments where there are adequate childcare facilities in adjoining developments.'

For new housing areas, an average of one childcare facility for each 75 dwellings would be appropriate. The threshold for provision should be established having regard to the existing geographical distribution of childcare facilities and the emerging demographic profile of the areas. Authorities could consider requiring the provision of larger units catering for up to 30/40 children in areas of major residential development on the basis that such a large facility might be able to offer a variety of services – sessional/drop in/after-school, etc.'

In addition to the above, Section 3.3.1 elaborate further by stating that 'a standard of one childcare facility providing for a minimum 20 childcare places per approximately 75 dwellings may be appropriate' for new residential developments. However, it continues by clarifying that such guidelines are exactly that and 'will depend on the particular circumstances of each individual site'.

The proposed development pertains to the provision of 588 no. residential units with associated retail units at ground floor level. As per the guidance illustrated above, there is a requisite standard of 20 no. childcare spaces per 75 units – which equates to a total of 156 no. childcare spaces required for the proposed development. The subject proposal seeks to provide for a 443sq.m creche which will have capacity to accommodate 60 no. children.

3.5.1.10 Landscaping / Public Open Space / Children's Play

Section 12.6.10 of the South Dublin County Development Plan 2022-2028 requires that 10% of the total site area for residential developments in 'REGEN' zoned lands are to be allocated to public open space, and in the case of residential developments exceeding 30 units provisions for children's play areas will be required.

The application site extends to an area of 27,900sq.m. and therefore the minimum open space required on the site is 2,790sq.m. The public open space proposed comprises 6,650sq.m. which is in excess of the 10% requirement. Please refer to the Landscape drawings prepared by Park Hood Landscape Architects confirming the public and communal open space for the scheme.

Please refer to the Landscape drawings, prepared by Park Hood Landscape Architects, for comprehensive detailing in regard to the open space provisions, landscaping treatment and furniture, and details regarding the proposed play spaces.

3.5.1.11 Housing Standards

Chapter 6 of the South Dublin Development Plan 2022-2028 provides guidance on the quality of residential development in the county. This section has regard to the Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas, DEHLG (2009) which advise that residents are entitled to expect that new homes offer a high level of amenity, privacy, security and energy efficiency. The following objectives are relevant to the subject site.

Residential Layout and Design

H7 Objective 1: To promote a high quality of design and layout in new residential development and to ensure a high-quality living environment for residents, in terms of the standard of individual dwelling units and the overall layout and appearance of the development in accordance with the standards set out in the Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas, DEHLG (2009) and the accompanying Urban Design Manual – A Best Practice Guide and the Design Standards for New Apartments (DHLGH as updated 2020) and Chapter 13 Implementation and Monitoring.

H7 Objective 2: To ensure that new residential developments incorporate energy efficiency measures and promote innovation in renewable energy opportunities.

H7 Objective 3: To support the principle of permeability schemes that provide improved connections between housing estates and their surrounds for walking and cycling whilst taking account of anti-social behaviour and only progressing vehicle permeability schemes where necessary.

The proposed development complies with national guidelines in the Sustainable Residential Development and Compact Settlements Guidelines for Planning Authorities 2024 and the Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities (2022). It is therefore submitted that the proposal also complies with the above objectives.

3.5.1.12 Landscape

Chapter 3.0 of the Development Plan provides guidance on the landscapes of South Dublin County. The Landscape Character Assessment identifies Several Landscape Character Types within the County as follows and as identified below:

- River Valley
- Canal
- Agricultural Lowlands
- Low Foothills
- Foothills
- Mountains
- Transport Corridors
- Green Space
- Urban
- Historic Urban
- Urban Fringe

The capacity of each Landscape Character Type to absorb new development will largely depend on the sensitivity of the landscape. Landscape capacity means the ability of a landscape to accommodate different amounts of change for the development of a specific type without adversely affecting the intrinsic character of the landscape. Assessment of sensitivity takes account of the overall landscape character, quality and condition of the landscape and considers its potential ability to adapt to change without losing its intrinsic character. Sensitivity is classed as Low, Moderate or High. Thus, a high-sensitivity landscape would have a low capacity, but the level of the capacity will vary according to the type of development concerned.

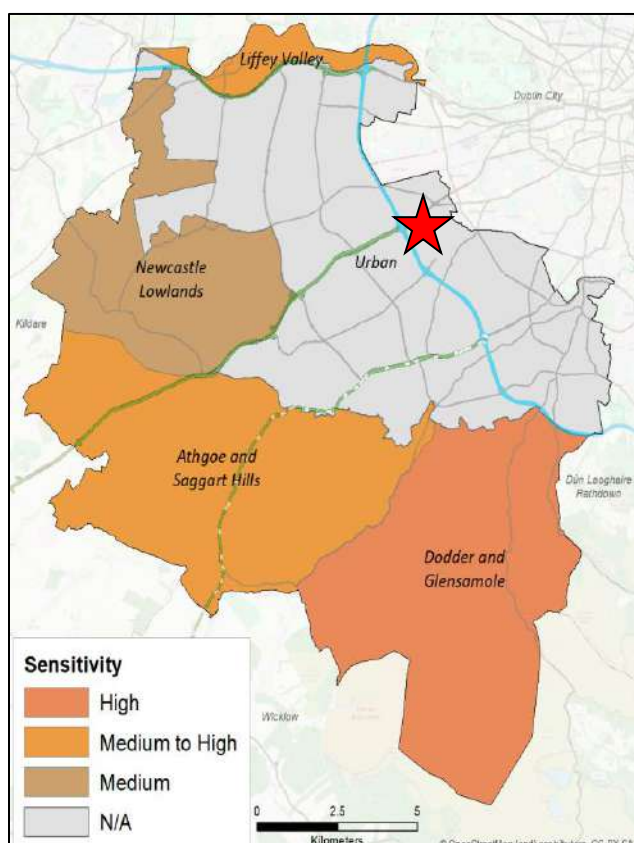


Figure 3.6 The Landscape Character Areas and Sensitivity Map of South Dublin County shows the subject site (red star located within a non-sensitive and urban area).

The following objectives are relevant to the subject site:

NCBH14 Objective 1 To protect and enhance the unique landscape character of the County by ensuring that development retains, protects and, where necessary, enhances the appearance and character of the landscape, taking full cognisance of the Landscape Character Assessment of South Dublin County (2021).

NCBH14 Objective 2 To ensure that development is assessed against Landscape Character, Landscape Values and Landscape Sensitivity as identified in the Landscape Character Assessment for South Dublin County (2021) in accordance with Government guidance on Landscape Character Assessment and the National Landscape Strategy 2015-2025.

NCBH14 Objective 4 To require a Landscape/Visual Impact Assessment to accompany all planning applications for significant proposals, located within or adjacent to sensitive landscapes and to provide mitigation measures to address any likely negative impacts.

As the proposed high-quality designed residential development is situated within an

urban area and classed as low sensitivity it is submitted that the proposal complies with the objectives of its Landscape Character Type.

3.5.1.13 Height and Density

Section 5.2.7 refers explicitly to Density and Building Heights. Proposals of higher density must ensure that they are enacting design strategies at the tactical level that will improve quality of life. Central to this is ensuring that massing and height can be modulated so as to maximise access to natural daylight and ventilation, take advantage of views and minimise overshadowing.

As such, in response to such policy provisions and guidelines, in particular SPPR1, this plan is accompanied by South Dublin County's Building Height and Density Guide which is located in Appendix 11 of the plan. The guide contains a detailed set of performance-based criteria for the assessment of developments of greater density and increased height. The following commentary from same is noted:

With regard to locating areas for increased building heights, this conceptual framework allows for the proactive consideration of increased heights within areas with specific land zoning designations as well as on sites demonstrated as having the capacity to accommodate increased densities in line with national guidance. However, while increased height can be considered in these locations, it must be demonstrated on a case-by-case basis as that it is contextually appropriate to do so.

It is submitted that the subject site is well serviced and provides an appropriate location for increased density and height which is consistent with national policies and the updated guidance provided in the South Dublin Development Plan 2022-2028.

3.6 Planning History of the Site

A review of the South Dublin County Council planning register found the following historical planning applications in relation to the subject site. The following are considered to be of particular relevance:

3.6.1 Recent Applications on the Subject Site

As noted, the proposed development has been subject to an extensive iterative process between a multi-disciplinary team of expert consultants who have revised the design of the residential development to provide a development that accords with the proper planning and sustainable development of the area. We note that this report relates to a Stage 2 pre-planning meeting, herewith, the design and layouts submitted have been done so with particular regard to the Stage 1 pre-planning meeting held with the planning authority on the 20th September 2022 and a previous Strategic Housing Development (SHD) application for the site (Reg. Ref. ABP-313129-22).

This Section 247 request is being submitted due to the expiration of the Large Residential Development (LRD) Opinion issued on the 21st February 2024. The design team had previously completed both the Section 247 consultation and the LRD meeting with the Planning Authority, with the formal LRD Meeting being held on the 18th January 2024. Both meetings were received very well by the planning authority.

Following the issuance of the LRD Opinion, the design team immediately began preparing the final planning application. However, progress was interrupted when Irish Water expressed concerns about the landscaping proposals, specifically those affecting the area above a water main located at the front of the site. Irish Water highlighted the potential risks posed to the pipe, prompting a pause in the design process.

Over the following months, the design team engaged in extensive negotiations with several departments within Irish Water, aiming to reach an agreement on measures to safeguard the pipe while maintaining the integrity of the proposed landscaping design. These discussions were finally concluded in September 2024, with both parties arriving at a mutually acceptable solution that protects the water infrastructure without compromising the site's landscaping vision.

Regrettably, this resolution came too late, after the expiration of the original LRD Opinion. As a result, the application is now being re-submitted to restart the LRD process. This step is necessary to ensure that all aspects of the development align with current planning and infrastructure requirements, and to formally incorporate the agreements reached with Irish Water.

As noted, in the previous meetings the planning authority was supportive of the development in principle subject to the inclusion of a suite of reports and some design changes. Those design changes were implemented in the preceding months and the design team prepared a final LRD application to the planning authority. The response to the opinion is summarised below:

- Permeability and connection through the site have been improved, connecting Greenhills Road to the road to the south.
- Landscaped area to the front of the site has been improved to allow for easy pedestrian and cyclist access to the site, whilst navigating the sloped entrance into it.
- A more defined street network has been established on the site in a grid-like form.
- The commercial units to the south have been modified to include larger floor plates and floor-to-ceiling heights.
- NTA is satisfied with the proposed entrance and works on the northern boundary. They will not compromise the delivery of Bs Connects which was granted permission yesterday.
- Proposed 588 units, 1814 sqm commercial space, 614 sqm amenities, creche

ABP. Ref. 313129-22 Permission refused by An Bord Pleanála on the 27th July 2022 for the demolition of the former Chadwicks Builders Merchant and the construction of a mixed-use Build-to-Rent residential and commercial development comprising 633 build-to-rent apartment units 4 blocks ranging in height from 5 to 12 storeys which include provision of indoor communal residential amenity/management facilities. The proposal included the provision of 3 no. vehicular entrances, 1363 no. bicycle parking spaces, 439 car parking spaces and all associated works to facilitate the development.

Refusal reasons provided by the Board related to the design and layout of the development, contesting that there was a lack of active frontages provided along the Greenhills Road, combined with issues related to the public realm, and the dominance of cars within same.



Figure 3.7 Site layout plan refused under ABP. Ref. 313129-22.

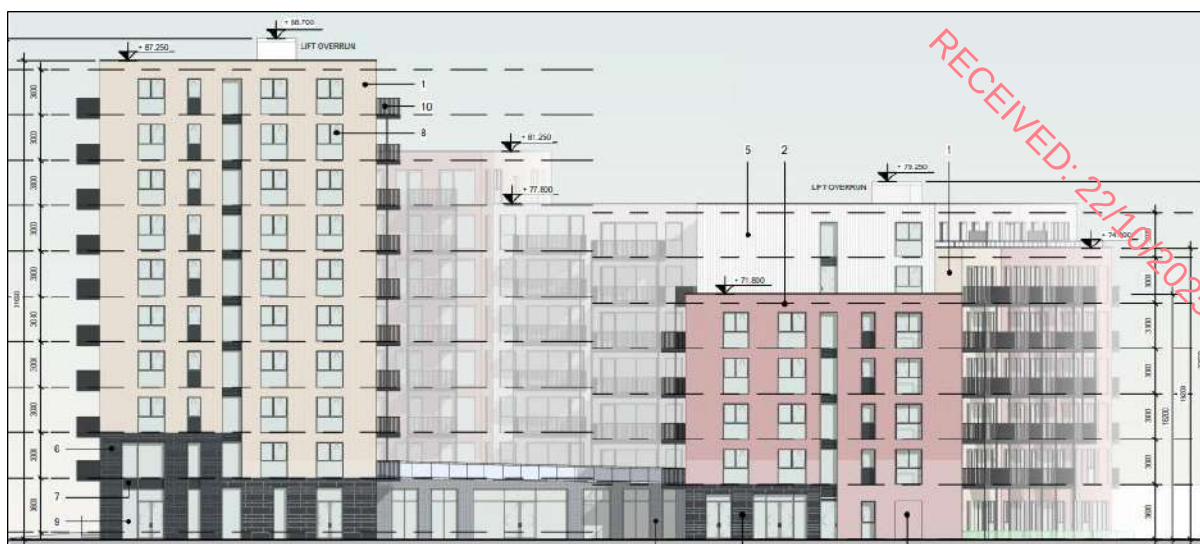


Figure 3.8 Southern elevation of Block A from the refused development.

We note that the principle of development was considered to be acceptable on these lands, while the scale of development was also said to be sufficient. We have regard to the following comments as provided by the Case Inspector:

‘I consider that the proposed residential and commercial development is acceptable in principle on these REGEN zoned lands...the proposed residential density of 226.9 units/ha is acceptable in principle at this location, subject to design and amenity standards’

Based on the foregoing, we consider that a high density, mixed use residential proposal is acceptable on the subject lands and is in accordance with the South Dublin Development Plan 2022-2028.



Figure 3.9 CGI of the development refused under ABP. Ref. 313129-22 as viewed from the Greenhills Road.

While the refusal related to the design of the proposal, we note the positive feedback relating to the provision of development on the subject site as per the following remarks from the Inspectors Report:

‘The proposed residential development is acceptable in principle at this site with regard to the relevant REGEN zoning objective under the South Dublin County Development Plan 2016-2022 and to the

accessible location of the site on several bus routes and in an established area with a wide range of social infrastructure and public amenities. An appropriate development on this site has the potential to contribute to the provision of high-quality housing within the area, at a density and scale that would achieve the optimum use of the zoned and serviced lands, in accordance with national planning policy.'

As such, it is submitted that the revised proposal has been redesigned with due regard to the above refusal. It is herewith considered that the submitted proposal provides for a high quality, well designed residential accommodation which is afforded high accessibility to surrounding services and amenities. Notwithstanding the above case, the subject site is an ideally situated to absorb a large-scale residential development which will provide much needed housing to the area.

3.6.2 Planning History of Surrounding Area

A review of the South Dublin County Council and An Bord Pleanála's planning registers found the following planning applications relating to large infill sites within the surrounding area and within the nearby Cookstown Industrial Estate, which are also zoned for regeneration.

3.6.2.1 Units 64 & 65, Cherry Orchard Industrial Estate and Kennelsfort Road Upper, Palmerstown, Dublin 10

Reg. Ref. LRD23A/0003	Permission granted by South Dublin County Council on the 3 rd July 2023 for the demolition of an existing warehouse / factory building and the construction of a residential development of 127 no. apartments (55 no. 1-bedroom apartments, 41 no. 2-bedroom apartments and 31 no. 3-bedroom) with supporting tenant amenity facilities (gym and activity areas, lounges and meeting rooms), employment uses comprising 3 no. incubator units, building management facilities and all ancillary site development works. The development will range from 5-8 storeys.

A decision to grant was issued by South Dublin County Council on the 3rd July 2023. An appeal was lodged to An Bord Pleanála on the 27th July 2023 where a decision is expected on the 15th November 2023.

Whilst the above is before the Board on third party appeal, it is considered a relevant precedent to the proposed development due to its scale and zoning objectives. We note the above development was granted permission by South Dublin County Council on lands zoned '*REGEN*' and seeks to provide for a development of high-density residential scheme, establishing a contemporary ridge height to the area. The Case Officer provides the following applicable commentary:

'This site is well located and serviced with options to access existing high frequency, high-capacity public transport routes, with links between modes, as well as increased access and connections available through more active modes of walking/cycling, and with an array of services and amenities within walking and cycling distance. The site is therefore suitable for a high density of development in accordance with the principles established in the National Planning Framework'.

Like the proposed development, the above case was redesigned following a refusal for a Strategic Housing Development on the site. Based on the foregoing, it is considered that the revised development, as approved by South Dublin County Council mirrors the proposed development in the sense that it provides a new, well-articulated vertical emphasis which accords with the general objectives of the '*REGEN*' zoning.

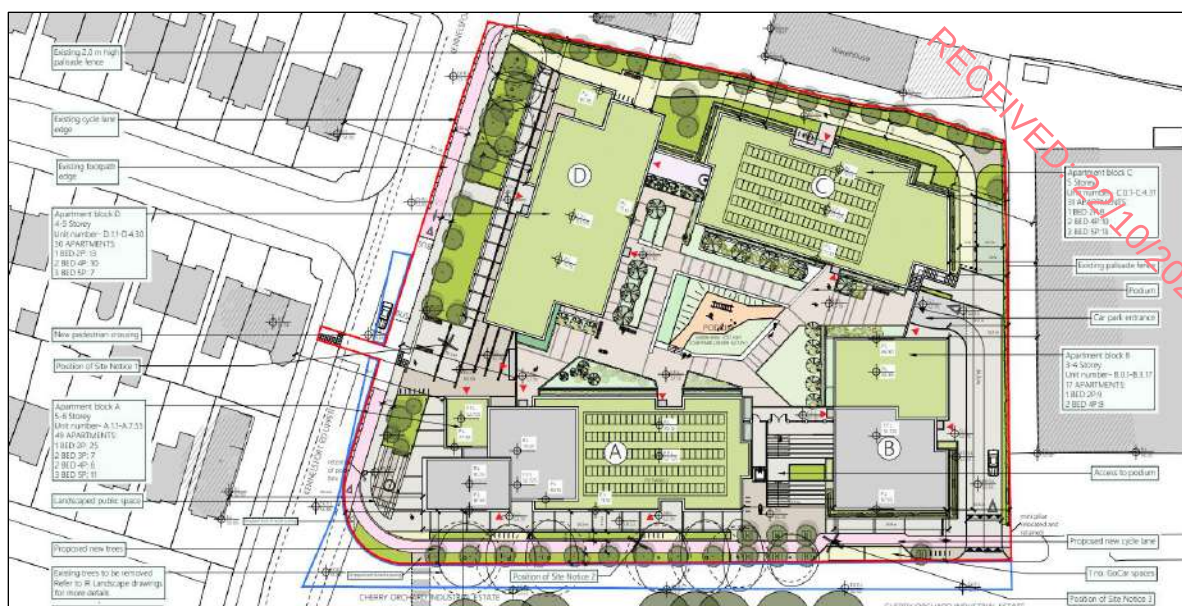


Figure 3.10 Site layout plan approved by SDCC under Reg. Ref. LRD23A/0003.



Figure 3.11 Western elevation of the development approved by SDCC under Reg. Ref. LRD23A/0003.



Figure 3.12 Photomontage of the development approved by SDCC under Reg. Ref. LRD23A/0003 as viewed from Palmers Crescent.

3.6.2.2 CHM Premises, Ballymount Road Lower, Walkinstown, Dublin 12

ABP. Ref. 309658-21 Permission granted by An Bord Pleanála on 23rd June 2021 for Demolition of an existing warehouse/factory building and ancillary outbuildings/structures and the construction of a residential development of 171 apartments with supporting tenant amenity facilities (gym, lounges and meeting room), café, creche, landscaping, public realm improvements, and all ancillary site development works. The proposed development will consist of 2 x studio apartments, 59 x 1-bedroom apartments, 103 x 2-bedroom apartments and 7 x 3-bedroom apartments contained in two apartment blocks ranging in height from 1 to 8 storeys. The proposed development provides for outdoor amenity areas, landscaping, under-podium car parking, bicycle racks, bin stores, ancillary plant, and roof-mounted solar panels.

The approved development ranged in heights from 1 to 8 storeys across the subject site, in contravention of the South Dublin Development Plan 2016-2022. The Inspector's Report, dated 18th June 2021, notes that the county development plan does not provide for buildings more than 5 stories in height in the area in question. The Inspector noted, however, that the proposed 8 storeys were consistent with national policy:

'The proposed development is consistent with objectives 33 and 35 of the NPF which encourage increased scale and densities in settlements.'

The Inspector tested the scheme against SPPR3 of the Building Height Guidelines and concluded with the following statement:

I consider that the criteria above are appropriately incorporated into the development proposal and on this basis that SPPR3 of the Building Height Guidelines can be applied. I am satisfied that the proposal positively assists in securing National Planning Framework objectives to focus development into key urban centres, fulfilling targets related to brownfield, infill development and to deliver compact growth in our urban centres.



Figure 3.13 Site layout plan of development approved under Reg. Ref. ABP-309658-21.



Figure 3.14 Elevation of development approved under Reg. Ref. ABP-309658-21.

We note that this proposal was assessed under the South Dublin Development Plan 2016-2022, which has now been superseded. As per the most recent plan, Section 5.2.7 refers explicitly to Density and Building Heights. As such, in response to such policy provisions and guidelines, in particular SPPR1, this plan is accompanied by South Dublin County's Building Height and Density Guide which is located in Appendix 11 of the plan. The guide contains a detailed set of performance-based criteria for the assessment of developments of greater density and increased height. The following commentary from same is noted:

With regard to locating areas for increased building heights, this conceptual framework allows for the proactive consideration of increased heights within areas with specific land zoning designations as well as on sites demonstrated as having the capacity to accommodate increased densities in line with national guidance. However, while increased height can be considered in these locations, it must be demonstrated on a case-by-case basis as that it is contextually appropriate to do so.

It is submitted that as per the above approved development, the subject site is well serviced and provides an appropriate location for increased density and height which is consistent with national policies and the updated guidance provided in the South Dublin Development Plan 2022-2028.



Figure 3.15 Photomontage of development approved under Reg. Ref. ABP-309658-21.

3.6.2.3 Lands immediately east of the Assumption National School, Long Mile Road, Walkinstown, Dublin 12 (Dublin City Council)

ABP Ref. ABP-304686-19

Permission was granted by An Bord Pleanála on 18th September 2019 for a Strategic Housing Development at Lands immediately east of the Assumption National School, Long Mile Road, Walkinstown, Dublin 12. In summary, the development involved the construction of 153 no. residential units (comprising of 15 no. Duplex/Maisonettes and 138 no. apartments) and associated site works. Of particular note, the development will have 129 no. car parking spaces, 5 no. motorbike parking spaces 198 no. secure bike parking spaces, the majority of which will be at undercroft level, with 2 no. disabled car parking spaces and 4 no. car parking spaces at grade to the front of the development along with some visitor cycle parking spaces.



Figure 3.16 Ground floor plan approved under ABP Ref. ABP-304686-19.



Figure 3.17 Landscape plan, including proposals for first-floor courtyard, approved under ABP Ref. ABP-304686-19

3.6.2.4 Carraiglea Industrial Estate, Muirfield Drive, Naas Road, Dublin 12 (Dublin City Council)

Reg. Ref. 3940/17

Permission was granted by Dublin City Council for amendments to a previously permitted development of 306 units, which comprises of a development of 5 to 7 storeys in height. The description of development was as follows: amendments to previously permitted residential development, Reg. Ref. 4244/15 and Reg. Ref. 2438/17. The proposed amendments comprise of: (i) the provision of an additional floor on permitted Block AC (Reg. Ref. 2438/17) increasing the height of the block from 6 no. storeys with a 7 no. storey pop up corner element to 7 no. storeys on the north-west elevation (ii) the provision of 2 no. additional floors on Block D and L, increasing the height of the Blocks

from 5 no. storeys to 7 no. storeys. (iii) the reconfiguration of permitted basement increasing the car parking provision from 316 no. to 346 no. car parking spaces and 545 no. to 552 no. cycle parking spaces, (iv) Revised hard and soft landscaping masterplan, (v) provision of new balconies to serve each of the proposed 32 no. units; together with all necessary site development work to facilitate the proposed development. The proposed amendments will provide for 12 no. additional units in Block D (8 no. 2 bed, 4 no. 3 bed units), 12 no. additional units in Block L (10 no. 2 bed, 2 no. 3 bed units) and 8 no. additional units in Block AC (1 no. 1 bed, 6 no. 2 bed, 1 no. 3 bed units), increasing the total provision within the development from 306 to 338 no. units comprising of (55 no. 1 bed, 222 no. 2 bed, 61 no. 3 bed units).



Figure 3.18 Site layout plan as approved under Reg. Ref. 3940/17

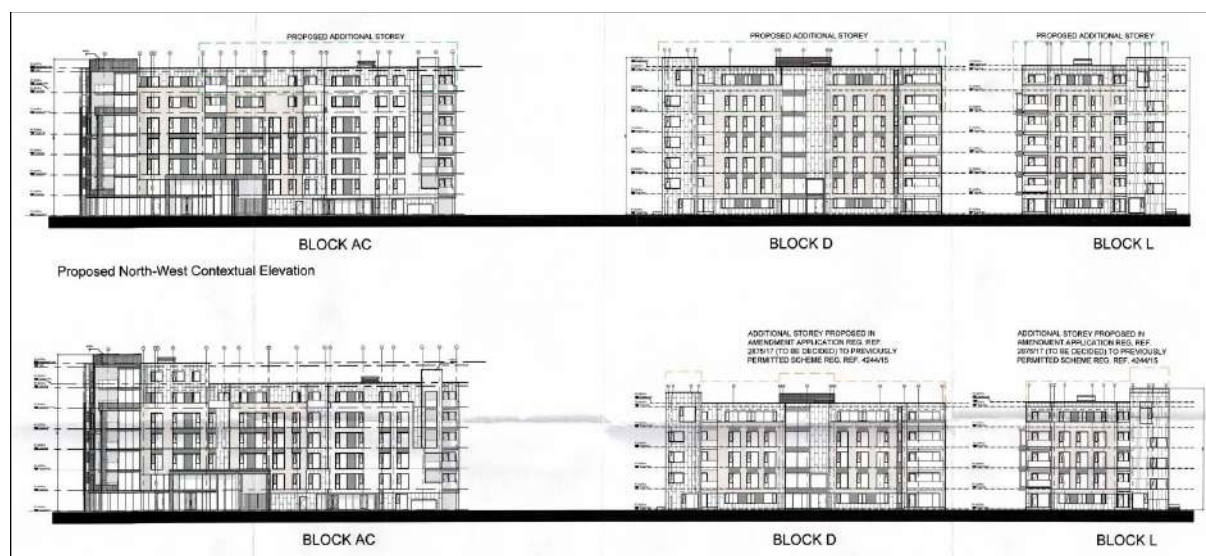


Figure 3.19 Elevations as approved under Reg. Ref. 3940/17.

3.6.2.5 Lands at the Former Concorde Industrial Estate, Naas Road, Walkinstown, Dublin 12 (Dublin City Council)

ABP Ref. ABP- 304383-19

Permission was granted by An Bord Pleanála on 15th August 2019 for a mixed-use development comprising of a Build to Rent Residential Development and commercial units including the construction of 492 residential units (104 no. studios, 136 no. 1 bed units and 252 no. 2 bed units), ranging in height from 4 no. storeys (12 m) to 8 no. storeys (24.1 m) over basement level.

The proposed development with a density of c. 262 units per hectare was considered to be an acceptable level due to the site's zoning and proximity to public transport in the area. Due to the build-to-rent nature of the development, the unit mix and provision of private amenity spaces are offered flexibility due to SPPR 7 and SPPR 8 of the Design Guide for New Apartments. It is considered that this development sets a precedent for suitably designed residential developments in this area. In the Inspector's Report prepared for a review of the application, it is noted that the proposed development with its height and scale, was considered to be acceptable at this site:

'I am satisfied that the integration of the development as proposed and the scale of the apartment blocks is justifiable at this location.

Further to this, we note the following commentary in the Report which details the positive contributions of the development to the area:

'I am satisfied that the proposed development will enhance the urban form at this location directly overlooking the Naas Road and will result in the removal of low quality and low-intensity commercial units and provide structures of strong architectural merit so as to create a better sense of place at this location. The redevelopment of the site for residential and commercial purposes will also greatly assist in the creation of a more lively and active streetscape along the Naas Road'.

The development with which this Statement of Material Contravention pertains to is submitted to make similar contributions to the Greenhills Road and wider Walkinstown area as the proposal includes a mixed-use development providing much-needed apartments to future occupants as well as commercial units on a site currently underutilised in a high-amenity area. We consider that the proposed development is similar to that as granted under ABP Ref. ABP- 304383-19 and request the Board review the application under similar merit.

It is considered that both proposals contribute to more sustainable and concentrated development within the existing built footprint of Dublin and so, therefore, presents itself as a better land use than which currently is in place as the subject site.



Figure 3.20 Front elevation of development granted under ABP Ref. ABP- 304383-19.



Figure 3.21 Site layout plan of development granted under ABP Ref. ABP- 304383-19.



Figure 3.22 CGI of development granted under ABP Ref. ABP- 304383-19.

3.6.2.6 The Cuckoo's Nest, Greenhills Road, Tallaght

Reg. Ref. SD19A/0287 Permission was granted by South Dublin County Council for development comprising the demolition of the rear and side extensions of the existing building but retaining the original front part of the building to accommodate a cafe (137sq.m) at ground floor level of the existing building & a 2-bed apartment overhead at first floor. The proposed development also provides for the construction of a 3 and 4 storey building to the side and rear of the existing building, accommodating 18 apartments. The proposed residential accommodation consists of 19 apartments in total, comprised of 12 1-bed apartments and 7 2-bed apartments.

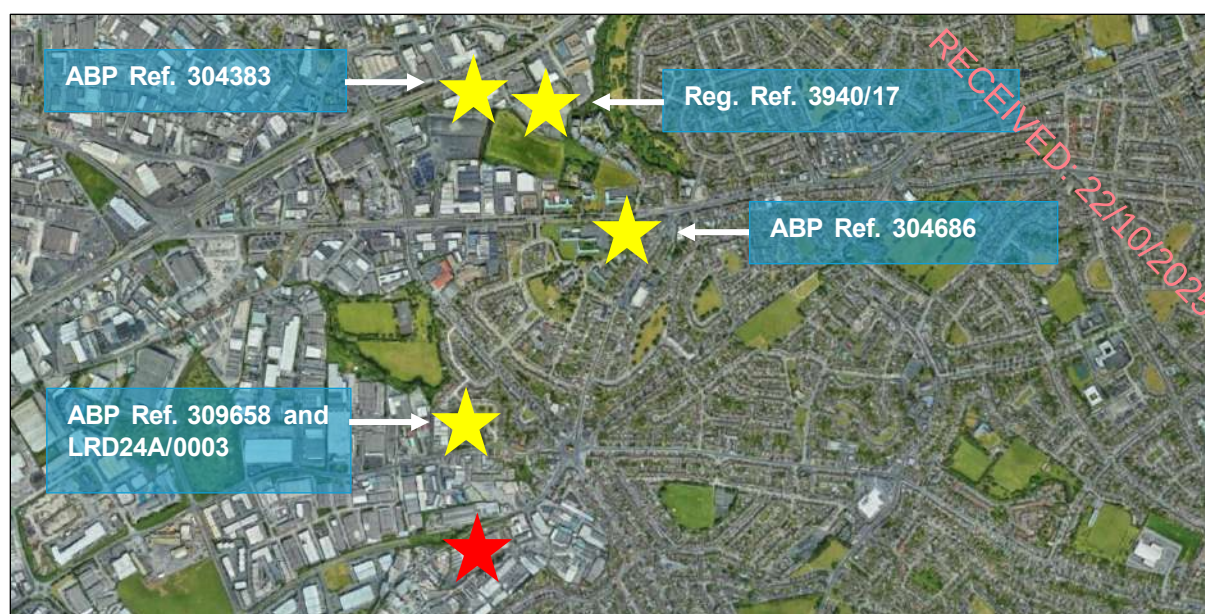


Figure 3.23 Locations of SHD applications (yellow stars) in relation to the subject site (red star) in Dublin 12.

3.7 Conclusion

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

- The subject proposal involves the redevelopment of a large serviced and well-connected underutilised brownfield site in an existing built-up area which is identified for 'regeneration' in the South Dublin County Development Plan 2022-2028.
- The 'sustainable transport' focus adopted in the context of the proposed development's design is consistent with national planning policy which encourages reduced car parking provision in central areas such as this which are well served by public transport.
- The proposed development has been designed having regard to the South Dublin County Development Plan 2022-2028 and incorporates a variety of new open spaces; improving legibility throughout the area through the introduction of a new block structure and the creation of new streets and introducing a series of buildings, which adopt varying heights and feature a rich palette of materials and finishes and create visual interest.
- The proposed development is consistent with the requirements outlined for apartments in the Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities (2023) and provides numerous amenity spaces (both internal and external) across the site to serve residents.
- The proposed development will result in a highly accessible and sustainable modern high-quality urban residential neighbourhood, as sought by the South Dublin County Development Plan 2022-2028, due to the design/quality of the development proposed as well as the employment opportunities existing in the surrounding area and the site's proximity to multiple public transport services and the nearby Tallaght Town Centre.

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

4.0 POPULATION AND HEALTH

4.1 Introduction

This section of the EIAR has been prepared by Hughes Planning and Development Consultants. More specifically, this chapter of the EIAR was prepared jointly by Mr. Kevin Hughes, Director, Ms. Anne McElligott, Associate Director, and Mr. Christopher Browne, Associate, with Hughes Planning and Development Consultants.

Mr. Kevin Hughes of Hughes Planning and Development Consultants, graduated from University College Dublin (UCD) with a Masters in Regional and Urban Planning (MRUP) in 2002, having previously completed a Bachelor of Arts Degree in Sociology from National University of Ireland in 1999. Kevin has over 22 years professional experience in the field of planning and development consultancy, which has included providing consultancy services in respect of several major urban regeneration projects including EIA. Kevin is currently the Director of Hughes Planning and Development Consultants.

Ms. Anne McElligott of Hughes Planning and Development Consultants, graduated from University College Cork (UCC) with a Masters in Planning and Sustainable Development (MPLAN) in 2011, having previously completed a Bachelor of Arts Degree in Geography and Irish from University College Cork in 2011. Anne has 13 years professional experience in the field of planning and development consultancy, which has included providing consultancy services in respect of several major urban regeneration projects including EIA. Anne is currently Associate Director in the Practice of Hughes Planning and Development Consultants.

Mr. Christopher Browne of Hughes Planning and Development Consultants, graduated from University College Dublin (UCD) with a Masters in Urban Design and Planning in 2018, having previously completed a Bachelor of Arts Degree in Geography and History from Dublin City University in 2012. Christopher has 7 years professional experience in the field of planning and development consultancy, which has included providing consultancy services in respect of several major urban regeneration projects including EIA. Christopher is currently an Associate Planner in the Practice of Hughes Planning and Development Consultants.

According to European Commission's Environmental Impact Assessment of Projects: Guidance on the Preparation of the Environmental Impact Assessment Report (2022), human health is:

'a very broad factor that would be highly project dependent. The notion of human health should be considered in the context of the other factors in Article 3(1) of the EIA Directive and thus environmentally related health issues (such as health effects caused by the release of toxic substances to the environment, health risks arising from major hazards associated with the Project, effects caused by changes in disease vectors caused by the Project, changes in living conditions, effects on vulnerable groups, exposure to traffic noise or air pollutants) are obvious aspects to study. In addition, these would concern the commissioning, operation, and decommissioning of a Project in relation to workers on the Project and surrounding population

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

This section of the EIAR assesses the impact of the proposed development on the human environment in the general area of the subject site the Former Chadwick's Site, Greenhills Road, Walkinstown, Dublin 12, in terms of population levels; employment and economic activity; land use and settlement patterns; housing; community infrastructure and social facilities; health and safety; and risk of major accidents and disasters.

This chapter addresses potential impacts of the proposed mixed-use development at the Former Chadwick's Site, Greenhills Road, Walkinstown, Dublin 12, on population and human health. Potential impacts of this proposal on population and human health arising from traffic and transportation, air

quality and climate, noise and vibration, visual amenity and material assets: utilities and the risk of major accidents and/or disasters are dealt with in the specific chapters in this EIAR dedicated to those topics.

4.2 Methodology

At the time of writing there is no guidance from the EU Commission on the EIA Directive to indicate how the new term 'Human Health' should be addressed. Therefore, this chapter of the EIAR document has been prepared with reference to recent national publications which provide guidance on the 2014 EIA Directive including *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022)* and *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (DoHPL, 2018)*.

To establish the existing receiving environment / baseline, several site visits were undertaken to appraise the location and likely and significant potential impact upon human receptors. Further to this, a desk top study of a number of relevant policy documents and data sources was carried out, including: the Central Statistics Office (CSO) Census data; the ESRI Quarterly Economic Commentary; the Regional Spatial and Economic Strategy for the Eastern and Midlands Regional Assembly, and the South Dublin County Development Plan 2022-2028.

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

4.3 Population

4.3.1 Receiving Environment (Baseline Scenario)

The subject site is located in Greenhill Industrial Estate, to the south of Ballymount Industrial Estate, therefore, the population to the north, west and east are minimal due to the presence of the Ballymount Industrial Estate which mostly comprise large industrial or retail units. Lands immediately to the south contain residential dwellings.

The subject site is located within the Electoral Division (ED) of Terenure-St. James which, according to the Census had a population of 2,404 no. persons in 2022. This represents a population percentage change of 6.4% or an actual population decrease of 164 persons from the 2016 Census figures. The subject site is also located south of the Tallaght-Kinamanagh ED which has a total population of 4,394 persons in 2022 and 4,386 persons in 2016 – an increase of 8 persons.

From the census figures, it can be gathered that the population within the immediate vicinity of the proposed development has remained similar over recent intercensal periods. Within the ED area of Terenure-St. James, the population growth levels have been very disparate, as illustrated in Table 4.1, the population growth within the ED, in comparison to the the 2km catchment area surrounding the site and Ireland as a whole, continues to decrease. In addition, the population levels of the areas within a 2km radius have remained relatively similar with the population modestly increasing in the intercensal periods. This can be attributed to the restrictions in available land for development due to the established suburbs of Kilnamnagh, Kingswood, Perrystown and Templeogue as well as the Greenhills and Ballymount Industrial Estates.



Figure 4.1 Location of subject site

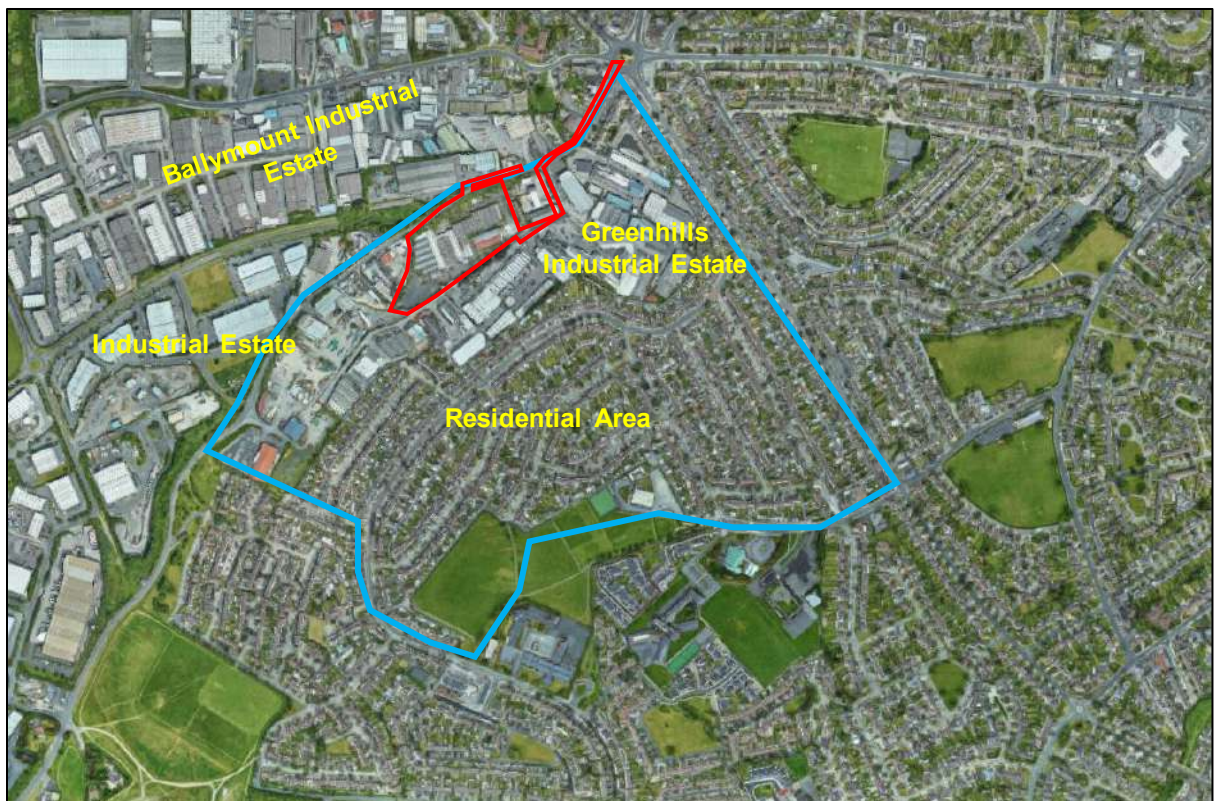


Figure 4.2 Location of subject site in context of the Electoral Division of Terenure St. James (outlined in blue)



Figure 4.3 Location of the subject site (yellow star) in the context of the 21 no. Electoral Divisions within 2km (in yellow), and the Electoral Division of (Terenure-St. James) that make up the subject site (outlined in red).

Settlement/Area	2011	2016	2022	Percentage Change		
				11-16	16-22	11-22
Ireland - State	4,588,252	4,761,865	5,149,139	3.8%	7.5%	12.2%
South Dublin County	265,205	278,767	301,075	5.1%	7.4%	13.5%
EDs within 2km	69,415	70,781	73,157	2.0%	3.2%	5.4%
Terenure St. James	2,623	2,568	2,404	-2.1%	-6.8%	-8.3%

Table 4.1 Population Trends 2011-2022

The above table identifies the population decline up to 2022 since 2011 (-8.3%) within the Terenure-St. James ED, with a minor population increase within the immediate area, a 2km radius, since 2011 (5.4%). In comparison to Ireland as a whole, it is considered that the population has maintained a moderate population growth over the years. The CSO data outlines that Ireland has seen a 12.2% increase in population from 2011 to 2022, whilst during the same period, the area surrounding the subject site has experienced an increase of 5.4%. The electoral division of Terenure-St. James decreased by 8.3% in the same time period. It is noted that the subject site is situated to the south of Ballymount Industrial Estate, therefore, the population to the north, west and east are minimal due to the presence of the Ballymount Industrial Estate which mostly comprise large industrial or retail units. The population of the area is expected to grow in the coming years with the recent announcement of the City Edge project, a collaborative regeneration project between Dublin City Council and South Dublin Council. The project will see the development of c. 700 hectares with existing industrial estates being redeveloped for mixed-use developments.

4.3.2 Potential Impact of the Proposed Development

4.3.2.1 'Do Nothing' Scenario

Were the development to not proceed, the present industrial/commercial use of the subject site would remain vacant. This would be an underutilisation of the site from a sustainable planning and development perspective, particularly considering the location of the lands adjacent to high quality public transport, and within an area which is identified for regeneration. The subject site is zoned 'REGEN', the objective of which is: *'to facilitate enterprise and/or residential-led regeneration'*. As such, a 'do nothing' scenario would mean that this objective of the Development Plan would not be met, at least in the short-to-medium term, and some 588 no. households would remain uncatered for.

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

Failure to deliver the proposed residential units would result in existing housing need and demand remaining unmet. The new pedestrian and cycle links, childcare facility and public open spaces to be provided in the development and serving the wider area would also not be provided. The proposed development provides for the regeneration and re-use of existing and vacant buildings to provide a high quality of residential amenity.

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

4.3.2.2 Construction Phase

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

The construction phase will generate a greater number of people within the area on a temporary basis, as the construction will see construction workers and delivery drivers arriving and leaving the site at the start and end of each day. However, the implications of this are not considered to have significant effects to the surrounding community due to the location of the site near Ballymount Industrial Estate, separated from the nearest residential area by St. James Road to the south.

4.3.2.3 Operational Phase

The operational phase of the proposed development will have a direct impact on the population of the area and the subject lands. With a total of 588 no. residential units proposed to be built, the anticipated increase in population for the site can be expected to be c. 1,405 based on the average household size of 2.39 in the Terenure-St. James electoral division. This is based on average household numbers for studio, one, two, and three-bedroom residential units. The impacts of an increase in the population within the site will be gradual during the completion of the development. The population of the development will therefore be significant and positive particularly in the context of current housing demand and taking account of the subject site's location in close proximity to public transport links such as the proposed bus connects routes and access to areas of employment

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

4.4 Employment and Economic Activity

4.4.1 Receiving Environment (Baseline Scenario)

The CSO's Quarterly Labour Force Survey provides information in relation to national employment levels, unemployment levels and current labour force participation rates. The CSO's quarterly Labour Force Survey (Q3 for 2024) indicated an annual increase of 3.7% (+98,600) in employment at national level, bringing total employment to 2,794,800. This compares with an annual increase of 4.0% or + 138,900 in the year to Q3 2023, and an increase of 9.4% or + 240,500 in the year to Q3 2022.

The number of persons employed aged 15-64 was 75.3% in Q3 2024 compared to 74.2% in Q3 2023 and 73.3% in Q3 2022. This is the highest number of persons employed in the State since the series began in 1998. Many of the economic sectors saw an increase in employment numbers. The largest of these was the Professional, Scientific & Technical activities sector which increased by 11.8%, followed by the Accommodation & Food Service activities sector which increased by 9.2%.

Nationally, in the CSO's quarterly Labour Force Survey (Q3 for 2024) the number of persons who were unemployed decreased by 400 (-0.3%) to 129,500 from the previous year.

The above sources demonstrate that the national economy and employment levels are expected to improve in 2025 and beyond, with the Government faced with the challenge of sustaining economic activity and competitiveness during a period of likely full employment. This in turn results in increased demand for residential dwellings particularly within the Dublin region. Further to this, a wide range of businesses operate, and employment opportunities currently exist in the Ballymount Industrial Estate. It is expected that the variety of businesses operating, and the employment opportunities will improve further in the immediately surrounding area.

Employment opportunities in the broader Dublin area are highly accessible from Walkinstown. It is proximate to a number of main arterial routes into Dublin City centre and the M50 motorway thereby providing access to a large extent of the Irish road network. It is also well serviced by public transport with multiple Red Line Luas stops featuring in the area offering a high frequency, high-capacity public transport service with direct links to Dublin City Centre, Dublin Docklands, Heuston Station, Citywest Campus and Tallaght Hospital. Multiple Dublin Bus Routes also serve the Walkinstown area.

4.4.2 Potential impact of the Proposed Development

4.4.2.1 'Do Nothing' Scenario

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

In a 'do nothing' scenario, the economic investment arising from a large-scale construction project would not be availed of, and this strategically located, zoned site would remain vacant with established industrial/commercial land use. This would represent a lost opportunity in economic terms.

4.4.2.2 Construction Phase

The construction phase of the proposed development will provide a positive improvement to the to the economy and employment prospects within Ballymount and the surrounding area more broadly, particularly within the wider construction sector for a 36-month period (estimated construction period). The construction of a mixed-use development, including 588 no. apartments, will provide a substantial number of construction-related jobs for the duration of the development. Whilst it is difficult to place a total number on the employment for the proposed development, the extent of work and varying construction-related industries required for the residential development will provide a variety of employment phased throughout the development including up to 80 works during construction.

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

viability of the construction sector and related services and professions over the phased construction period.

Whilst there will be some negative impacts felt to the wider community during the construction phase by way of noise, dust and traffic, this is unlikely to be significant. These issues and appropriate mitigation measures are addressed in Chapters 8, 9 and 13 of the EIAR and in the Construction & Demolition Waste Management Plan and Construction Environmental Management Plan, both prepared by AWN Consulting, which accompany the application.

4.4.2.3 Operational Phase

The operational phase of the proposed development will result in the provision of 588 no. apartments in 4 no. 5-12 storey blocks, a 443sqm childcare facility, 1814sqm of commercial space and 614sqm of internal communal amenity space to serve residents of the development.

This increase in population in the area will enhance local spending power and will assist with the delivery of a critical mass of population which will support a wide range of additional local businesses, services, transport infrastructure and employment opportunities. This will play a role in the future growth of the area and the improvement of local amenities and infrastructure.

4.5 Land Use and Settlement Patterns

4.5.1 Receiving Environment (Baseline Scenario)

The subject site is a brownfield site that has been earmarked for regeneration. Located adjacent to the southern boundary of the Ballymount Industrial Estate, the site is located in an area that offers direct connections to Dublin City Centre and surrounding prominent centres. The lands are located within Greenhills Industrial estate with industrial uses immediately abutting the subject lands. Further to the south there are residential dwellings.

Similar developments have been granted permission in the surrounding area in recent years, paving the way for a high-density suburb with strong transport links to Dublin.

Whilst the subject site and immediately adjoining lands have predominantly operated as industrial land, present zoning (REGEN) reflects changing land use patterns for this area, south west of Walkinstown village. The zoning of the land reflects the opportunity for the area to increase the population and employment opportunities for the area and become more than a suburb of Dublin City. As **Figure 4.4** below outlines, the subject site is zoned REGEN, the objective of which is to *'facilitate enterprise and/or residential led regeneration'*.

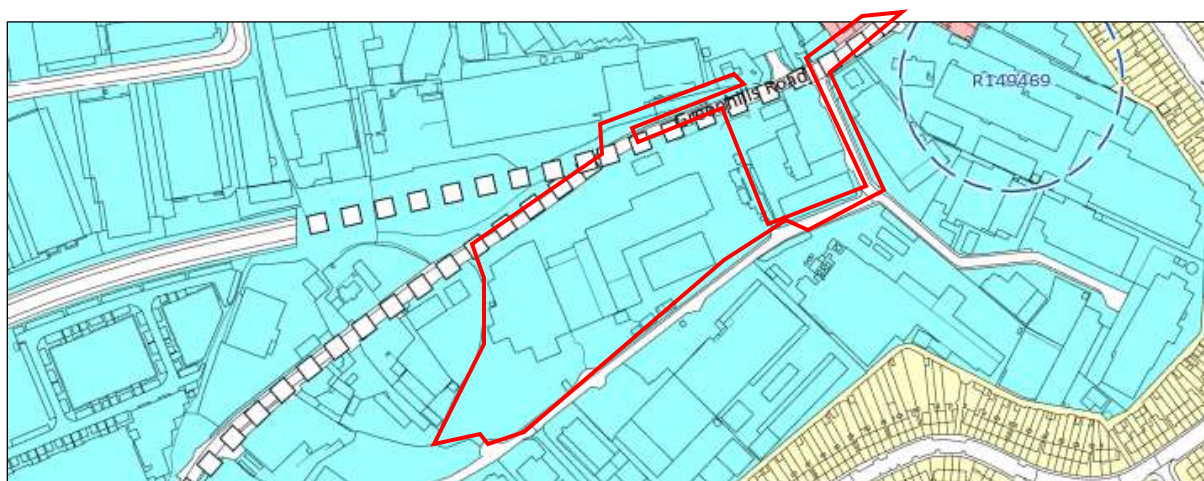


Figure 4.4 Extract from South Dublin Development Plan 2022-2028 zoning Map No. 5 showing the application site (in red) within lands with Zoning Objective 'REGEN'

The proposed development is in keeping with the policies and objectives for South Dublin and is consistent with the identified land uses earmarked for the site and appropriately responds to the existing settlement pattern and residential densities of nearby developments, including recently approved developments.

4.5.2 Potential impact of the Proposed Development

4.5.2.1 'Do Nothing' Scenario

Were the development not to proceed, the present industrial/commercial use of the subject site would remain, and the site would remain vacant which represents an inefficient use of land resources. Vacant sites can have adverse effects on the character of an area by means of urban blight and decay. Vacant sites often attract anti-social behaviour which can have a negative effect on the local population. As discussed in Section 4.3.2 above, a do-nothing scenario would mean that the objectives of the Development Plan would not be met, and some 588 no. households would remain uncatered for.

4.5.2.2 Construction Phase

The construction phase of the development will see site works comprising primarily of infrastructural works in preparing the road and drainage infrastructure and works on the subject site to accommodate the residential apartments.

As the development is on a brownfield site within an industrial estate, the demolition works are limited to the existing warehouses and industrial units. Given the nature of work carried out at this location and the lack of residential units, it is submitted that the proposed development works will not cause any significant disturbance to the adjoining properties.

There will be an increase in population on the site during construction as a result of the proposed development. Given the location and size of the subject site, the rise of employment numbers on-site is not considered to negatively impact the surrounding community. There may be some increase in traffic on Greenhills Road which immediately abuts the site, however, this is considered to be within reason and will be managed in accordance with a Traffic Management Plan which will be prepared and agreed with South Dublin County Council prior to construction commencing. Construction works are likely to take place on a phased basis over 36 months, which may result in a marginally increased population in the wider area due to increased construction employment in the area, however, this would be temporary in nature and the impact would be imperceptible.

4.5.2.3 Operational Phase

The operational phase will see former industrial land transformed into residential land use which in keeping with planning policy, helps address the growing population and housing shortage across Ireland and Dublin in particular. In light of the existing housing crisis, it is considered that a high-density development at this location would result in a likely significant positive impact as it would realise the objective of compact urban growth through the efficient and effective use of zoned and services landbank to provide much needed housing for future populations.

The proposed development will feature a creche, commercial space, and a range of amenity facilities for residents. It is noted that the area is well served by primary and secondary schools.

The development will include public open space to be utilised by the surrounding community. The public open space will be fronted by the proposed commercial units as well proposed apartments, providing passive surveillance over the public space.

4.6 Housing

4.6.1 Receiving Environment (Baseline Scenario)

Housing completions across the country plummeted after the recession occurred in 2007/2008 with completions declining from almost 90,000 no. per year in 2007 to approximately 11,000 no. in 2014. In light of this, the Government published the 'Rebuilding Ireland - Action Plan for Housing and Homelessness' policy document to increase housing supply. This document has been subsequently

replaced by the 'Housing for All - A new Housing Plan for Ireland' was published in September 2021 as part of the Irish Government's 'Our Shared Future' programme which, in turn, sets out the Government's mission to tackle the housing crisis. The objective of the plan is to ensure that everybody has access to sustainable, good quality housing to purchase or rent at an affordable price, built to high standard, and located close to essential services, offering high quality of life.

The plan seeks to increase new housing supply to an average of at least 33,000 new units per year with specific pathways outlined to achieve the four overarching objectives of the plan which are:

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

According to the CSO Q4 2024 New Dwelling Completions Report, 30,330 new dwellings were completed in 2024, a decrease of 6.7% from 2023. The number of apartments completed in 2024 was 8,763, down 24.1% from 2023. The ESB domestic connections dataset provides information on the type of connection and whether it is in an urban or rural area. The number of completions in urban areas in 2024 was 25,834, a fall of 7.7% from 27,999 in 2023. In Q4 2024 the number of completions in urban areas was 7,507, falling 16.4% from 8,976 in Q4 2023.

The National Planning Framework - Ireland 2040 (NPF) requires delivery of a baseline of 25,000 homes annually to 2020, followed by a likely level of 30-35,000 annually up to 2027. Within this output 112,000 households are expected to have their housing needs met in a social housing home over the next decade. To achieve the objective of compact growth, 40% of future housing delivery is to be delivered within and close to the existing footprint of built-up areas.

Despite these strategic targets, the reported decline in dwelling completions, particularly in urban areas and apartments, raises concerns regarding the feasibility of achieving the NPF's housing objectives. The shortfall in delivery compared to the baseline requirements indicates the increasing challenge of sustaining housing supply in the face of continued population growth in the Greater Dublin Area, where demand remains consistently high.

The South Dublin County Development Plan 2022-2028 identifies Walkinstown as part of the established suburban areas within the county, with a focus on sustainable residential development and compact growth. The Regional Spatial and Economic Strategy (RSES) for the Eastern and Midland Region, published in 2019, identifies South Dublin County as part of the Dublin Metropolitan Area (DMA), which plays a critical role in the economic and social development of the Greater Dublin Area. The Core Strategy contained within the South Dublin County Development Plan outlines the need for increased housing supply to accommodate the projected population growth, ensuring sustainable urban consolidation within existing built-up areas.

According to the Core Strategy, the projected housing demand for South Dublin County from 2022-2028 is significant, with a focus on delivering new housing units within the designated growth areas and urban villages such as Walkinstown. The plan aims to meet the projected population target through the promotion of compact and sustainable growth, supporting higher residential densities where appropriate and reinforcing the role of Walkinstown as an established suburban area with strong connectivity to Dublin City Centre and surrounding employment hubs.

Further to the above, the RSES outlines the importance of compact and focused development within the Metropolitan Area Strategic Plan (MASP) boundary, where Walkinstown is strategically positioned to benefit from ongoing investment in public transport infrastructure, including improved bus services under the BusConnects program and enhanced cycling and pedestrian infrastructure. These transport initiatives aim to strengthen the area's connectivity, ensuring sustainable growth and improved access to employment and services.

The proposed development aligns with the objectives of the South Dublin County Development Plan and the broader regional planning framework by contributing to the delivery of much-needed housing within an existing urban area. The additional residential units will support the ongoing population growth within the county while promoting compact growth principles, enhancing the viability of local services, and optimizing the area's access to sustainable transport options. The proposal represents a strategic

response to the county's housing demand, reinforcing Walkinstown's role within the wider Dublin Metropolitan Area and contributing to the achievement of the plan's core objectives.

4.6.2 Potential impact of the Proposed Development

4.6.2.1 'Do Nothing' Scenario

There are currently no persons residing on the subject lands. The subject site comprises a brownfield site with existing buildings on site comprising industrial and commercial units. Were the development not to proceed, this scenario would continue, and the site would remain in its current use.

The impact of a 'do nothing' scenario would be negative in terms of housing in the Walkinstown area as the subject site would fail to realise the development potential afforded by its regeneration zoning.

4.6.2.2 Construction Phase

As discussed in Section 4.3.2 previously, the construction phase of the proposed development will see no additional persons will be housed on site and therefore it is not anticipated to impact on the quantum of or access to housing. The amenity of the surrounding area will be affected during construction however this impact is temporary and not considered to be significant.

4.6.2.3 Operational Phase

The proposed development will result in the addition of 588 no. units to the supply of housing in the Walkinstown area. These will be a mixture of 1-bedroom, 2-bedroom and 3-bedroom apartments.

The proposed development directly responds to the decline in new dwelling completions within South Dublin County, as highlighted in recent reports, and aligns with the housing targets set out in the South Dublin County Development Plan 2022-2028. The plan outlines the need to accommodate projected population growth through compact and sustainable development within existing urban areas. The proposed residential units will contribute to addressing the housing supply shortage in Walkinstown, an area identified for sustainable growth and urban consolidation.

The development site is located within a well-established suburban area with access to essential infrastructure and services, including public transport links such as the BusConnects network and nearby employment hubs. The proposal aligns with the Development Plan's objectives to optimize the use of serviced lands, promote higher residential densities, and enhance connectivity to sustainable transportation options, thereby supporting national and regional policy goals for compact growth.

In addition, the proposed development will contribute to the county's housing supply by providing additional residential units in a strategically located urban area. The proposal is consistent with the planning objectives set out in the Development Plan and broader regional strategies, offering a sustainable solution to housing demand while supporting South Dublin County Council's long-term growth targets.

4.7 Community Infrastructure and Social Facilities

4.7.1 Receiving Environment (Baseline Scenario)

This section of the EIAR assesses the impact of the proposed development on the local community and the social infrastructure and facilities in the vicinity of the subject site.

The subject site is located to the south of Ballymount Industrial Estate and within the Greenhills Industrial Estate. The spread of the population is contained to the north east, south, south-east, and south-west of the subject site. Currently, the population is sparse to the north-west of the subject site, an area comprised mostly of industrial units.

It is noted that the Walkinstown area offers a wide range of community infrastructure including education facilities; facilities associated with social service provision; health and medical centres; childcare facilities including private nurseries; sporting and recreation facilities; social/community facilities; and religious buildings.

4.7.2 Potential impact of the Proposed Development

4.7.2.1 'Do Nothing' Scenario

There are no social services currently located on the subject site, therefore there would be a neutral impact in a 'do nothing' scenario.

4.7.2.2 Construction Phase

The construction of the proposed development will not have any significant implications for the existing community infrastructure and social facilities. The immediate effects of the construction phase will be centred around the subject site. The construction phase will have some impacts on the surrounding environment through noise and increased traffic. There are however no foreseeable short-term construction impacts that will impact negatively on the community infrastructure or social facilities.

4.7.2.3 Operational Phase

The population growth that will occur as a result of the proposed development will provide a positive impact to Walkinstown and its environs and will contribute to the existing social and community infrastructure. The new residents of the development would likely lead to increased funding and patronage of existing services and facilities. The overall size of the development and population growth will not be of vast proportions that the existing community and social infrastructure cannot cope with the demand. In addition, the critical mass generated by the proposal would likely create demand for new facilities and services, which would indirectly benefit the wider area.

The commercial units and childcare facility featuring within the proposed development, due to the proposed positioning and access arrangements, will serve both residents of the subject development and the surrounding area more broadly. This will improve community infrastructure and social facilities in this area.

The inclusion of landscaped public open space areas, new commercial activities and facilities will enable more residents and visitors to gain access to the high-quality open space, improving residents' ability to lead a healthy lifestyle, and will improve pedestrian safety. This will be a significant positive impact of existing and future residents.

It is therefore considered that the proposal will not have any adverse impacts on the existing community and social infrastructure.

4.8 Health and Safety

4.8.1 Receiving Environment (Baseline Scenario)

The subject site is a brownfield site located to the south of the Ballymount Industrial Estate and comprises the Former Chadwick's Site. The site forms part of the Greenhill Industrial Estate. As noted previously in this report, a very strong feature of the site includes a level difference that exists between the Greenhills Road interface and the subject site's southern boundary.

The surrounding environs consists of a mix of commercial, warehousing and industrial land uses. The Ballymount Industrial Estate, to the north, contains three Seveso sites which are located more than 1km from the site. It is considered that these sites are unlikely to result in a risk to human health and safety. This is illustrated in the Extracts from the South Dublin Development Plan 2022-2028 zoning Map No. 5 included at **Figure 4.5**.

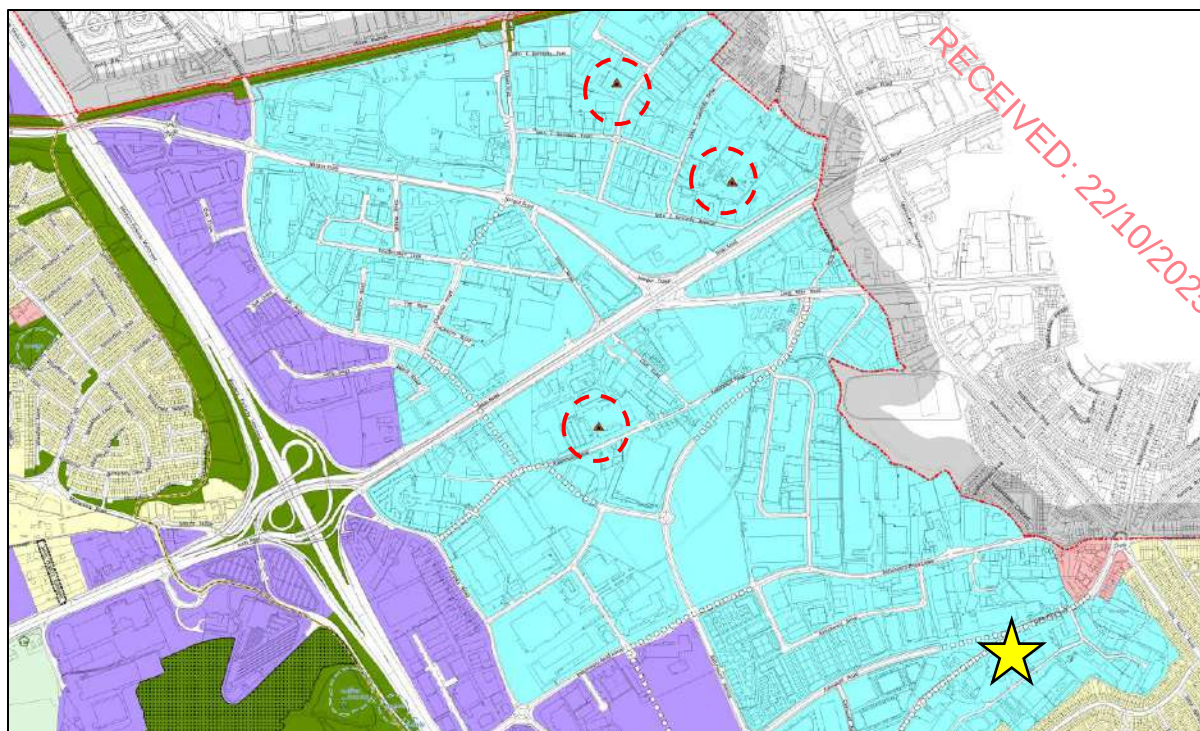


Figure 4.5 Extract from South Dublin Development Plan 2022-2028 zoning Map No. 5 showing the application site (yellow star) and the location of Seveso sites (in red)

4.8.2 Potential impact of the Proposed Development 'Do Nothing' Scenario

The site is in a brownfield state and is used for purposes. The subject site does not contain any dwellings and therefore does not currently accommodate a resident population. Were the development not to proceed, this scenario would continue, and the site would remain in its current use. Accordingly, there would be a neutral impact on health and safety in a do-nothing scenario.

4.8.2.1 Construction Phase

The construction of the proposed development will give rise to several short-term impacts which will include noise, dust and an increase in traffic flow arising from site workers, deliveries etc. The construction impacts are dealt with in the relevant chapters of this EIAR document. In general, the construction of the proposed development will be done so in accordance with the Construction Management Plan and Traffic Management Plan (both of which will be agreed with South Dublin County Council) which will ensure that the works do not pose an adverse risk to the health and safety of both the surrounding properties/community and the workers on-site. Particular care will be taken in relation to construction proximate to the existing petrol station being retained on site.

The construction methods employed, and the hours of construction proposed will be designed to minimise potential impacts. The development will also comply with all Health & Safety Regulations during the construction of the project.

The construction of the development may also generate localised dust during the demolition and construction phases. Mitigation measures will be implemented during construction to control dust and other air pollutants to ensure that the residual impact on Human health will be short-term, slight to moderate negative in nature.

The potential impact on human beings in relation to noise and vibration during the construction phase in the absence of mitigation is that high levels of noise and vibration could impact people in noise sensitive areas. Implementation of the mitigation measures set out in Chapter 8 and 9 of this EIAR as well as measures within the Construction and Environmental Management Plan (CEMP) will ensure that the residual impact on Human health will be short-term, slight to moderate negative in nature.

The potential impacts on human beings in relation to the generation of waste during the demolition, construction and operational phases would occur from the incorrect management of waste. This could result in littering which could cause a nuisance to the public and attract vermin. A carefully planned approach to waste management and adherence to the project specific C&DWMP and OWMP, will ensure appropriate management of waste and avoid any negative impacts on the local population. Given the nature of the development when operational, the predicted residual effects during the operation phase are long-term, imperceptible and neutral.

There is a risk to Human Health should the ground water or the existing water supply become contaminated during the construction or operational stages, and the water is consumed. In order to mitigate these risks, the measures outlined within the EIAR will be adopted (refer to Chapter 7). The mitigation measures that will be put in place during construction of the proposed development will ensure that the impact of the development complies with all EU ambient air quality legislative limit values which are based on the protection of human health. Therefore, the impact of construction of the proposed development is likely to be negative, short-term, localised and imperceptible with respect to human health.

Given the above, it is considered that the construction impacts of the proposed development on health and safety will be short-term, slight and negative.

4.8.2.2 Operational Phase

The operational stage of the development is unlikely to precipitate any significant negative impacts in terms of health and safety. The design of the proposed development has been formulated to provide for a safe environment for future residents and visitors alike. The paths, roadways and public areas have all been designed in accordance with best practice and the applicable guidelines. Likewise, the proposed residential units accord with the relevant guidelines and will meet all relevant safety and building standards and regulations, ensuring a development which promotes a high standard of health and safety for all occupants and visitors.

The inclusion of multiple open space areas throughout the development will increase the availability of exercise and leisure activities. This will encourage residents and visitors to move around the site therefore giving a greater level of physical activity improving the physical health of the local people whilst also improving the levels of mental health and wellbeing.

The scheme is designed to encourage more sustainable forms of transport including walking, cycling and an increased use of public transport, as well as upgrades to the road, junction and streetscape proposed along Greenhills Road. Walking and cycling can help increase activity levels which again can help improve cardiovascular health, mental health and wellbeing. The increased level of sustainable journeys will help to reduce the level of car use in and around the area. Reduced car use is linked to improvements in air quality levels which is beneficial for respiratory health. The operation of the proposed development will therefore have a long term, moderate positive effect on residents and visitors.

The proposed development will not result in any significant impacts on human health and safety once completed and operational. The impacts on population and human health to future residents from the surrounding area has been assessed with mitigation measures proposed to reduce any impacts on human health as a result of noise, dust, air quality during the operation of the proposed development. The implementation of mitigation measures throughout the scheme ensures that the proposed development therefore is unlikely to result in negative impacts in relation to population and human health in this regard.

4.9 Risk of Major Accidents and Disasters

4.9.1 Receiving Environment (Baseline Scenario)

The 2018 EIA Guidelines state that an EIAR must include the expected effects arising from the vulnerability of the project to risks of major accidents and/or disasters that are relevant to the project. Regarding natural disasters, the site does not occur in an area prone to earthquakes or volcanic eruptions.

Annex IV of the Directive 2011/92/EU as amended by Directive 2014/52/EU refers to both a proposal's potential to cause accidents/disasters and to the vulnerability of the proposal to accidents/disasters. These risks can be from both man-made and natural disasters and there is a requirement to build resilience into projects and to invest in risk prevention. Regarding natural disasters, the site does not occur in an area prone to earthquakes or volcanic eruptions.

In respect of man-made accidents and disasters, the site does not occur within the consultation distance of any Tier 1 or Tier 2 SEVESO III site.

There is potential for risk of accidents to occur given the proximity of the subject lands to Walkinstown and such accidents could occur during construction and operational phases of the development.

The development is considered as a highly vulnerable development and is located in a Flood Zone C category. This flood zone in accordance with the *"The Planning System and Flood Risk Management Guidelines for Planning Authorities, 2009"* is of the lowest significance type flood zone, having a very remote chance and consequential outcome of flooding. The risk of flooding for the development is minimal and within the acceptable limits.

The identification and assessment of risks of accidents and/or disasters is provided in Chapters 5, 7, 8, 9, 12 and 14 of this Report.

4.9.2 Potential impact of the Proposed Development

4.9.2.1 Do nothing

Were the development not to proceed, risk would be low to major accidents noting no works would be proposed. From a traffic accident, risk would also be low noting access to the site will remain to the south.

4.9.2.2 Construction Phase

The construction of the proposed development will be done so in accordance with a Construction Management Plan (based on the Construction Environmental Management Plan, prepared by AWN Consulting) to manage the day-to-day proceedings and to ensure that works on site do not create an unsafe environment. The construction traffic entering and exiting the site will be managed appropriately through a Traffic Management Plan which will be agreed with South Dublin County Council prior to construction commencing.

Therefore, there is not expected to be any major accidents or disasters as a result of the construction of the proposed development.

This assessment did not identify significant risks to human health during the construction phase. The proposed construction traffic was found to have a minimal and insignificant impact in terms of traffic, air quality and noise.

4.9.2.3 Operational Phase

This assessment found that the risk of accidents arising from the scheme was low, and the proposed works will significantly improve pedestrian and cyclist accessibility and safety within the subject lands. In this way, no significant impacts on human health were identified.

4.10 Cumulative Impacts

The cumulative effects of the development on the surrounding population and human health have taken into consideration in conjunction with other projects in the surrounding environment. A review of the South Dublin County Council planning register has indicated that there are a number of small-scale alterations/extensions permitted in the area and that there are no major or substantial developments permitted abutting the subject lands. Large scale developments have been identified in Section 1.9 of Chapter 1 of the EIAR.

The only the cumulative impact of the proposed development will be a further increase in the population of the wider area. This impact is likely to be long term and is considered to be positive, having regard to the zoning objective for the subject lands, and their strategic location in close proximity to high quality, high frequency public transport, and the high level of demand for new housing in Dublin.

With regard to human health, the cumulative impact of the proposed development in conjunction with other nearby developments will provide for the introduction of high-quality new neighbourhoods in the area with a high level of accessibility and amenity. The overall cumulative impact of the proposed development will therefore be long term and positive with regard to human health, as residents will benefit from a high quality, visually attractive living environment, with ample opportunity for active and passive recreation and strong links as well as access to commercial/retail facilities within the development.

The development of the site will likely have a positive cumulative impact on Greenhills in helping the area contribute to the projected growth for South Dublin. The economy will benefit both during the construction phase and operation phase increasing the economic activity within the town.

There are not considered to be any significant adverse cumulative impacts to the population and human health either during construction or operation phase of the proposed development at Greenhills Road.

4.11 Mitigation Measures

4.11.1 Construction Phase

All standard health and safety procedures will be implemented at every stage of this project. The Main Contractor for the project is responsible for the method in which the demolition and construction works are carried out and to ensure that best practices and all legal obligations including Local Authority requirements and Health and Safety legislation are complied with. Further to this, Building Regulations will also be adhered to during the construction phase. The health and safety procedures are set out in the Construction Management Plan which will provide a mechanism for the implementation of the construction mitigation measures set out within the EIAR.

A range of construction related remedial and mitigation measures are proposed throughout this EIAR document with reference to the various environmental topics discussed under each. These measures seek to ensure that any likely significant adverse environmental impact on human health during the construction phases are either ameliorated to have an acceptable level of impact or avoided altogether. Included in these measures is the requirement that a detailed construction traffic management plan be prepared by the Contractor and agreed with South Dublin County Council as the Road Authority prior to commencing works on the public road. This Construction Traffic Management Plan will include restrictions on deliveries and access to the construction site. Further, measures with regards to noise and dust abatement covered elsewhere within this EIAR will be implemented during construction and will limit impacts on population and human health. The measures set out within the Construction Environmental Management Plan, Construction and Demolition Management Plan and Operational waste management plan will be strictly adhered to.

Further to the above, working hours on site will be as such that the residential amenity of adjacent residences is not unreasonably impacted upon. They will be agreed with the Council in full as part of the required construction management plan.

As a result of the implementation of the abovementioned measures, the impacts of the construction phase of the development on population and human health are not anticipated to be significant and will have an imperceptible and neutral impact in terms of health and safety. Furthermore, all impacts will be temporary in nature.

4.11.2 Operational Phase

The proposed development has been designed to avoid negative impacts on population and human health through the inclusion of landscaping, the provision of a creche, provision of energy efficient measures and through high quality finishes and materials. The mitigation measures relating to the operation phase of the development concerning traffic, transport, noise, vibration, water, air and dust

quality and landscaping as set out in this EIAR (and listed in Chapter 16.0) will be carried out in full to minimise impacts on residents of the development, adjacent residents and human health.

4.12 Residual Impacts

It is anticipated that the proposed development will realise significant positive overall economic and social benefits for the local community and the wider Greenhills/Walkinstown area.

Strict adherence to the mitigation measures recommended in this EIAR will ensure that there will be no negative residual impacts or effects on Population and Human Health from the construction and operation of the proposed scheme. Indeed, the delivery of much needed housing will realise a likely significant positive effect for the local area.

4.13 Monitoring

Measures to avoid negative impacts on Population and Human Health are largely integrated into the design and layout of the proposed development. Compliance with the design and layout will be a condition of any permitted development. There is no other ongoing monitoring required in relation to the effect of the proposed development on the population and human health.

4.14 References

- Central Statistics Office www.cso.ie.
- Central Statistics Office (2011) - Census 2011.
- Central Statistics Office (2016) - Census 2016.
- Central Statistics Office (2022) - Census 2022.
- Central Statistics Office – Quarterly Labour Force Survey
- DoHPLG (2017) Rebuilding Ireland - Action Plan for Housing and Homelessness.
- South Dublin County Development Plan 2022-2028
- ESRI Quarterly Economic Commentary (June 2019).
- Environmental Impact Assessment of Projects - Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017).
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022).

5.0 BIODIVERSITY

5.1 Introduction

This chapter provides an assessment of the effects of the Proposed Development on the ecological environment, i.e. flora and fauna. It has been compiled in compliance with 2014 EIA Directive, the Planning and Development Act 2000 as amended, and the European Commission's guidance on the preparation of the EIA Report (2017) and follows the EPA EIA Report Guidelines (2022).

The proposed development site is located within the existing former Chadwicks site, at Greenhill Road, Walkinstown, Dublin. The proposed development areas comprise buildings and artificial surfaces with pockets of mixed native and non-native trees and shrub species, mostly poor and scrubby examples.

5.1.1 Legislation, Policy & Guidance

EU Habitats Directive

The "Habitats Directive" (Council Directive 92/43/EEC) on the Conservation of Natural Habitats and of Wild Flora and Fauna is the main legislative instrument for the protection and conservation of biodiversity within the European Union. The Habitats Directive provides for the designation, conservation and protection of sites comprising Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), collectively forming the Natura 2000 network of 'European sites'. Article 3 of the Habitats Directive obliges Member States to designate as SACs sites hosting the natural habitat types listed in Annex I and habitats of the species listed in Annex II of the Habitats Directive. Article 10 of the Habitats Directive requires that Member States endeavour to improve the ecological coherence of the Natura 2000 network to manage and conserve features of the landscape which are of major importance for wild fauna and flora, for example ecological corridors or stepping-stones which are important for the migration, dispersal and genetic exchange of species.

Article 6(2) obliges Member States to take the necessary measures to avoid the deterioration of an SAC, or disturbance of a species for which the site is designated. Article 6(3) sets out the requirement for an "Appropriate Assessment", to ensure that a proposed plan or project will not have an adverse effect on the integrity of a SAC. Article 7 applies the requirements of Article 6(2) and 6(3) of the Habitats Directive to SPAs designated under the Birds Directive.

In addition, and separate to the Appropriate Assessment requirements, Article 12 of the Habitats Directive obliges Member States to establish a regime of strict protection for certain species listed in Annex IV of the Directive, wherever they occur within their natural range. The protection for species under Article 12 of the Habitats Directive is not confined to the boundary of SACs. Species listed in Annex IV include the otter and certain species of bat.

EU Birds Directive

The "Birds Directive" (European Council (2009) Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds) confers legal protection to all naturally occurring wild birds within the EU territory. Member States are obliged to adopt the necessary measures to maintain the population of bird species, and that includes, in accordance with Article 3, an obligation to create, maintain and manage habitats for birds, and specifically for the species of Bird listed in Annex I of the Directive. Article 4 requires Member States to create SPAs which, by virtue of Article 7 of the Habitats Directive, form part of the Natura 2000 network of European sites and are subject to the Appropriate Assessment requirements under Article 6(3) of the Habitats Directive.

Additionally, Article 5 of the Birds Directive requires that Member States establish a general system of protection for all naturally occurring wild birds within the EU territory, similar to the system of strict protection required for Annex IV species under the Habitats Directive.

Wildlife Acts 1976 - 2024

The primary domestic legislation providing for the protection of wildlife in general, and wild birds in particular, and the control of some activities adversely impacting upon wildlife is the Wildlife Act of 1976, as amended. The aims of the Wildlife Act, according to the National Parks and Wildlife Service (NPWS)

are “... to provide for the protection and conservation of wild fauna and flora, to conserve a representative sample of important ecosystems, to provide for the development and protection of game resources and to regulate their exploitation, and to provide the services necessary to accomplish such aims.” All wild bird species are protected under the Act. The European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) made significant amendments to the Wildlife Acts to ensure consistency with the Habitats and Birds Directives.

Birds and Natural Habitats Regulations

The European Communities (Birds and Natural Habitats) Regulations 2011 are also a key piece of legislation (S.I. No. 477/2011) included in the Planning and Development Acts containing legal direction on the protection of flora and fauna. The Planning and Development Acts also incorporates the AA requirements into the planning regime.

The Habitats Directive and the Birds Directive have been transposed into Irish law by Part XAB of the Planning and Development Acts and the European Communities (Birds and Natural Habitats) Regulations 2011, as amended.

5.2 Methodology

This chapter of the EIA Report concentrates on ecological features within the development area of significance, primarily designated habitats and species. This includes habitats/species listed in Annex I, II and IV of the EU Habitats Directive, rare plants listed in the Flora Protection Order and other semi-natural habitats of conservation value.

The objectives of the assessment are achieved by:

- Identifying baseline conditions of the site and its environs.
- Identifying the sensitivity of receptors with potential to be affected by changes in the baseline conditions.
- Predicting the magnitude of likely changes to the baseline receiving environment.
- Assessing the significance of effect taking into account sensitivity of receptors and magnitude of effect.
- Identifying and assessing appropriate mitigation measures, including alternatives.
- Assessing the significance of residual effects, taking account of any mitigation measures.

Desktop research to determine existing records in relation to habitats and species present in the study areas was firstly undertaken. This included research on the National Parks and Wildlife Services (NPWS) metadata website, the National Biodiversity Data Centre (NBDC) database and a literature review of published information on flora and fauna occurring in the Proposed Development study areas.

Other environmental information for the area was reviewed, e.g. in relation to soils, geology, hydrogeology and hydrology (Chapter 6 and Chapter 7 of this EIA Report). Interactions in terms of the Chapters on these topics presented in this EIA Report were important in the determination of source vector pathways and links with potentially hydrologically connected areas outside the Proposed Development site. For example, the determination of water courses and pathways to offsite water bodies or pathways to ground and potentially sensitive aquifers if present.

The potential effects on European sites are assessed in this chapter of the EIA Report in relation to the requirements of the EIA Directive and Irish legislation and does not purport to comprise information for the purposes of the screening assessment to be carried out by the competent authority or authorities pursuant to Article 6(3) of the Habitats Directive. The obligation to undertake appropriate assessment derives from Article 6(3) of the Habitats Directive and is the subject of an Appropriate Assessment Screening Report.

5.2.1 Study Area

While the main focus of biodiversity was on the Proposed Development site within the red line boundary, see Figure 5.1 below. The surrounding environment up to 150m from the redline boundary was taken

into account in addition to potential biological and hydrological connectivity in relation to European sites in a Zone of Influence which is detailed further in Section 5.2.2 below.

The ecological surveys were designed based upon the characteristics of the Proposed Development and its likely significant impacts on the baseline environment during construction and/or operation. The study areas are described as follows.

5.2.1.1 Habitats

The area within or immediately adjacent to the Proposed Development footprint where fauna species could be directly or indirectly affected during construction/operation.

The study area of this assessment included the footprint of the overall landholding as detailed below and shown on Figure 5.1.



Figure 5.1 Site Location and overall redline boundary with existing buildings.

5.2.1.2 Rare and/or Protected Flora Survey

The area within or immediately adjacent to the Proposed Development footprint where rare and/or protected flora could be directly or indirectly affected during construction/operation.

Fauna species other than those listed below (includes badger, otter, other protected mammal species, amphibians, and reptiles).

The area within or immediately adjacent to the Proposed Scheme footprint where fauna species could be directly or indirectly affected during construction/operation.

5.2.1.3 Bats

The area suitable for roosting, foraging and/or commuting bats (e.g. bridges, hedgerows, treelines, woodland and/or watercourses) within or immediately adjacent to the Proposed Development footprint where bats could be directly or indirectly affected during construction/operation.

5.2.1.4 Breeding Birds

All wild birds, and their nests and eggs, are protected under the Wildlife Acts. Some bird species are also listed on Annex I of the Birds Directive, and / or as SCIs within designated European sites.

Species considered to be Key Ecological Receptors of the Proposed Development include the following:

- Red and Amber Birds of Conservation Concern in Ireland (BoCCI) (Gilbert *et al.* 2021) species listed for their breeding populations.

5.2.2 Zone of Influence

The Zol, or distance over which a likely significant effect may occur will differ across the subject ecological receptors, depending on the predicted impacts and the potential impact pathway(s). The results of both the desk study and the suite of ecological field surveys undertaken have established the habitats and species present along the Proposed Development. The Zol is then informed and defined by the sensitivities of each of the ecological receptors present, in conjunction with the nature and potential impacts associated with the Proposed Development. In some instances, the Zol extends beyond the study area (e.g. surface water quality effects of a sufficient magnitude can extend, and affect, receptors at significant distances downstream). For example, the pollution of a water course by a significant quantity of a substance that could have an effect on a sensitive habitat or species where the substance was carried downstream to a receiving environment such as a protected coastal estuary.

The Zol of the Proposed Development in relation to terrestrial habitats is generally limited to the footprint of the Proposed Development and the immediate environs (to take account of shading or other indirect impacts, such as air quality). Hydrogeological / hydrological linkages (e.g. rivers or groundwater flows) between impact sources and wetland / aquatic habitats can often result in impacts occurring at significant distances.

The Zol of air quality effects is generally local to the Proposed Development construction dust tends to be deposited within 350m of a construction site, the majority of the deposition occurs within the first 50m (refer to Chapter 8 (Air Quality) for more detail).

With regards to hydrological impacts, the distances over which water-borne pollutants are likely to remain in sufficient concentrations to have a likely significant effect on receiving waters and associated wetland / terrestrial habitat is highly site-specific and related to the predicted magnitude of any potential pollution event. Evidently, it will depend on volumes of discharged waters, concentrations and types of pollutants (in this case sediment and/or hydrocarbons), volumes of receiving waters, and the ecological sensitivity of the receiving waters. In the case of the Proposed Development, this is unlikely as there is no interaction with surface water courses in the proposed development site area.

The Zol of the Proposed Development in relation to likely significant effects on most breeding bird species is generally limited to habitat loss within the footprint of the Proposed Development.

5.2.3 Ecological Surveys

5.2.3.1 Habitat Surveys

The habitat survey was carried out in two stages. The first stage comprised desktop research to determine existing records in relation to habitats and species present in the study area as defined by the area of the Proposed Development, site boundaries and surrounding buffer zones up to 150m away. This distance referred to by the standard ecological impact assessment guidance is adequate to include address potential effects on mobile species such as otters or badgers, if present.

The second stage of the survey involved a site visit to establish the existing environment in the footprint of the Proposed Development area. Areas which were highlighted during desktop assessment were investigated in closer detail according to the Heritage Council Best Practice Guidance for Habitat Survey and Mapping (Smith et al., 2011). Habitats in the Proposed Development area were classified according to the Heritage Council publication "A Guide to Habitats in Ireland" (Fossitt, 2000). This publication sets out a standard scheme for identifying, describing and classifying wildlife habitats in Ireland. This form of classification uses codes to classify different habitats based on the plant species present. Species recorded in this report are given in both their Latin and English names. Latin names for plant species follow the nomenclature of "An Irish Flora" (Parnell & Curtis, 2012).

Habitats were surveyed in October 2023 and May 2024 by conducting study area walkovers covering the main ecological areas identified in the desktop assessment. The survey date is toward the end of the optimal botanical survey period. However, it is adequate given the habitats present on site. A photographic record was made of features of interest.

5.2.3.2 Mammals (Excluding Bats) Surveys

Signs of mammals such as badgers and otters were searched for while surveying the study area noting any sightings, signs or any activity in the vicinity especially along adjacent boundaries.

5.2.3.3 Bats Surveys

Bat Surveys were completed by Ash Ecology and the most recent report (May 2024) is presented as Appendix 7.1 to this Chapter. It contains a specific methodology which is not repeated here. Previous surveys by that author were carried out for a previous application for the site.

5.2.3.4 Otters Surveys

An assessment of the suitability of the surrounding environment for usage by otters was undertaken.

5.2.3.5 Breeding Birds Surveys

Breeding Birds were surveyed using standard walked transects and signs were recorded where encountered during the field walkover survey. A desk study was carried out to identify any potential suitable inland feeding and / or roosting sites for winter birds located within or directly adjacent to the Proposed Development areas.

Field surveys carried out (see Section 5.3 below) deemed the overall lands to be unsuitable feeding and/or roosting sites for wintering birds, due to habitat conditions being dominated by mosaics of artificial surfaces and/or subject to high levels of disturbance. As such it was not deemed necessary to carry out detailed wintering bird surveys in these areas. The results of the desk-based study have informed the assessment of potential impacts on wintering bird species arising from the Proposed Development.

5.2.4 Categorisation of the Baseline Environment

Desktop research to determine existing records in relation to habitats and species present in the study areas included research on the National Parks and Wildlife Services (NPWS) metadata website, and the National Biodiversity Data Centre (NBDC) database. The following resources assisted in the production of this chapter of the report.

- The following mapping and Geographical Information Systems (GIS) data sources, as required:
 - National Parks & Wildlife (NPWS) protected site boundary data;
 - Ordnance Survey of Ireland (OSI) mapping and aerial photography;
 - OSI/Environmental Protection Agency (EPA) rivers and streams, and catchments;
 - Digital Elevation Model over Europe (EU-DEM);
 - Google Earth and Bing aerial photography 1995-2025;
 - Online data available on Natura 2000 sites as held by the National Parks and Wildlife Service (NPWS) from www.npws.ie including:
 - Natura 2000 - Standard Data Form;

- Conservation Objectives;
- Site Synopses;
- National Biodiversity Data Centre records;
- Online database of rare, threatened and protected species;
- Publicly accessible biodiversity datasets.
- Status of EU Protected Habitats in Ireland. (National Parks & Wildlife Service, 2019); and
- Relevant Development Plans;
 - South Dublin County Development Plan 2022-2028

5.2.5 Assessment Methodology

Following desktop assessment and fieldwork, an evaluation of the development area and determination of the potential effects on the flora and fauna of the area is based on the following guidelines and publications:

- Guidance document on Article 6(4) of the Habitats Directive 92/43/EEC (EC, 2007);
- Guidance document on the strict protection of animal species of Community interest under the Habitats Directive (EC, 2021);
- Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DEHLG, December 2009, Rev 2010);
- EPA Guidelines on Information to be contained in an EIA REPORT (EPA, 2022);
- Best Practice Guidance for Habitat Survey and Mapping (Heritage Council, 2011);
- Ecological Surveying Techniques for Protected Flora & Fauna (NRA, 2008);
- Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009);
- Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM, 2019).

5.3 Receiving Environment

5.3.1 Designated Areas

The potential for source pathway receptor connectivity is firstly identified through GIS interrogation and detailed information is then provided on sites with connectivity. Conservation sites that are located within a potential Zone of Influence of the Proposed Development are presented in Figures 5.2 below. Spatial boundary data on the Natura 2000 network was extracted from the NPWS website (www.npws.ie) on 6 February 2025. This data was interrogated using GIS analysis to provide mapping, distances, locations and pathways to all sites of conservation concern including pNHAs, NHA and European sites.

The nearest European site to the Proposed Development is the Glenasmole Valley SAC (Site Code 001209), 6.3km to the south. However this site is located in a separate hydrological catchment, and there is no connectivity. Similarly, the Wicklow Mountains SAC (Site Code 002122) and Wicklow Mountains SPA (Site Code 004040), both 8.7km to the south lack connectivity to the Proposed development. These three sites are screened out at this stage.

Four Dublin Bay sites, the North Dublin Bay SAC (Site Code 000206), 11.5km to the northeast, South Dublin Bay SAC (Site Code 000210), 8.45km to the east, the North Bull Island SPA (Site Code 004006), 11.4km to the northeast, and the South Dublin Bay and River Tolka Estuary SPA (Site Code 004024), 8.5km to the east are also within the potential Zone of Influence of the Proposed Development.

The Proposed Development is located within the hydrological catchment of the Camac River, which flows into the River Liffey at Heuston Station.

However, a review of aerial photography, Ordnance Survey Ireland (OSI) mapping and OSI Geographical Information System (GIS) data for rivers and streams indicates that there are no notable surface water features onsite and no direct hydrological pathways to offsite surface water bodies. This was confirmed during fieldwork on habitat assessment on 18 October 2023.

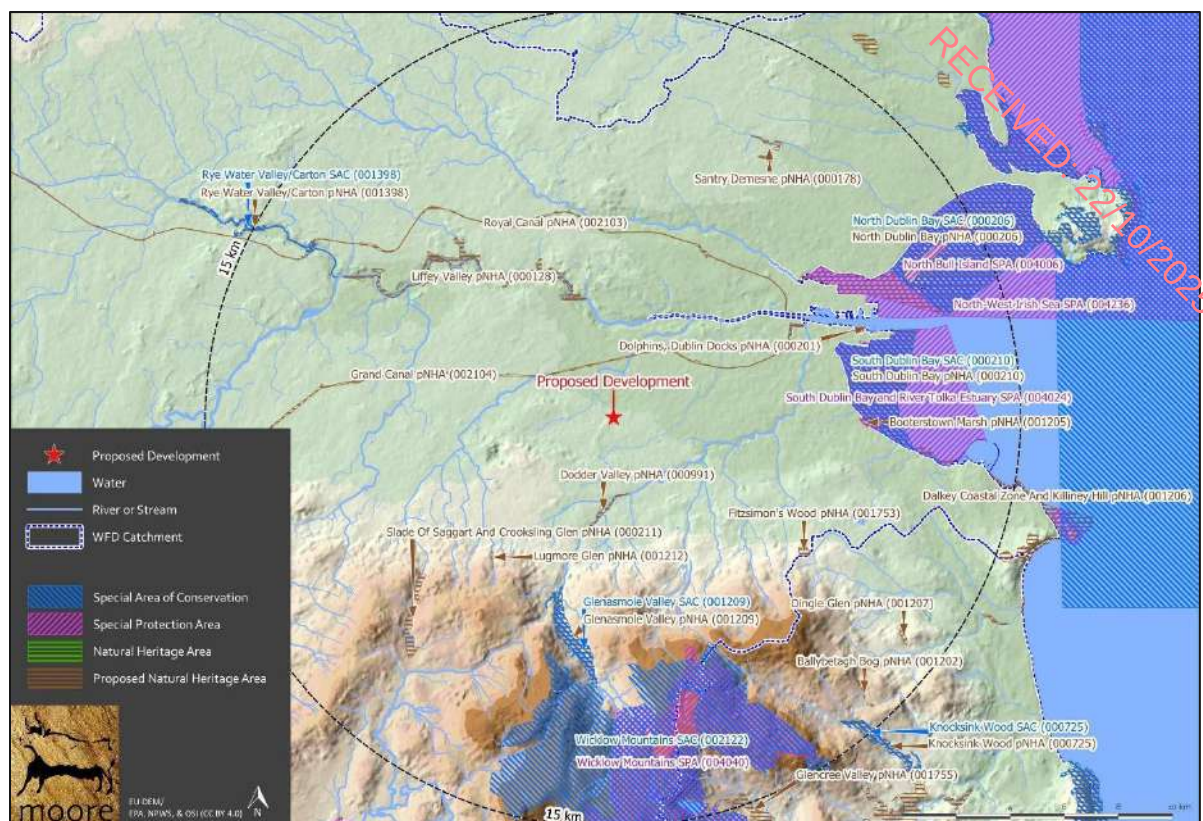


Figure 5.2 Showing European sites and NHAs/pNHAs within the wider Potential Zone of Influence of the Proposed Development.

5.3.2 Non-Designated Areas

The proposed development is to be sited on the former Chadwicks site, at Greenhills Road, Dublin 12, see the Habitat Map in Figure 5.3.

There are no records of rare plants in the 1km square in which the Project site is located (O1030). The site is located in an area of light industrial and commercial premises, and bounded to the north by the Greenhills Road, to the south by a minor road separating the site from the Beechlawm Industrial estate to the west by commercial premises, and to the east by the remaining Chadwicks retail site. The Greenhills Road, and the lands to the northwest are at a substantially greater elevation than the main Chadwicks site.

The site comprises principally single storey warehouses surrounded by hard surfaced access and external storage areas, with derelict 2-storey administration buildings along the eastern perimeter, all classed as Buildings and artificial surfaces (BL3). Ivy (*Hedera helix*) was recorded on a number of gable walls. The northern boundary with the Greenhills Road is steeply embanked and has been planted with ornamental shrubs including *Cotoneaster* sp. in the past. A mix of native and nonnative tree and shrub species, mostly poor and scrubby examples, have also colonised this area, including Hawthorn (*Crataegus monogyna*), Ash (*Fraxinus excelsior*), and Buddleia. Due to the species mix, lack of management, and general growth habit, this area is classified as Scrub (WS 1). Self-sown Buddleia is very common throughout the site, forming occasional thickets which are also classed as Scrub. Several areas of hard surfaces have vigorous ruderal growth and are classified as Recolonising bare ground (ED3). Species recorded in these areas include Hoary Ragwort (*Senecio erucifolius*), Bilbao Fleabane (*Erigeron floribunda*), Prickly Lettuce (*Lactuca serriola*), Common Chickweed (*Stellaria media*) and Water Bent (*Polypogon viridis*).

There were no invasive species recorded at the proposed development site.

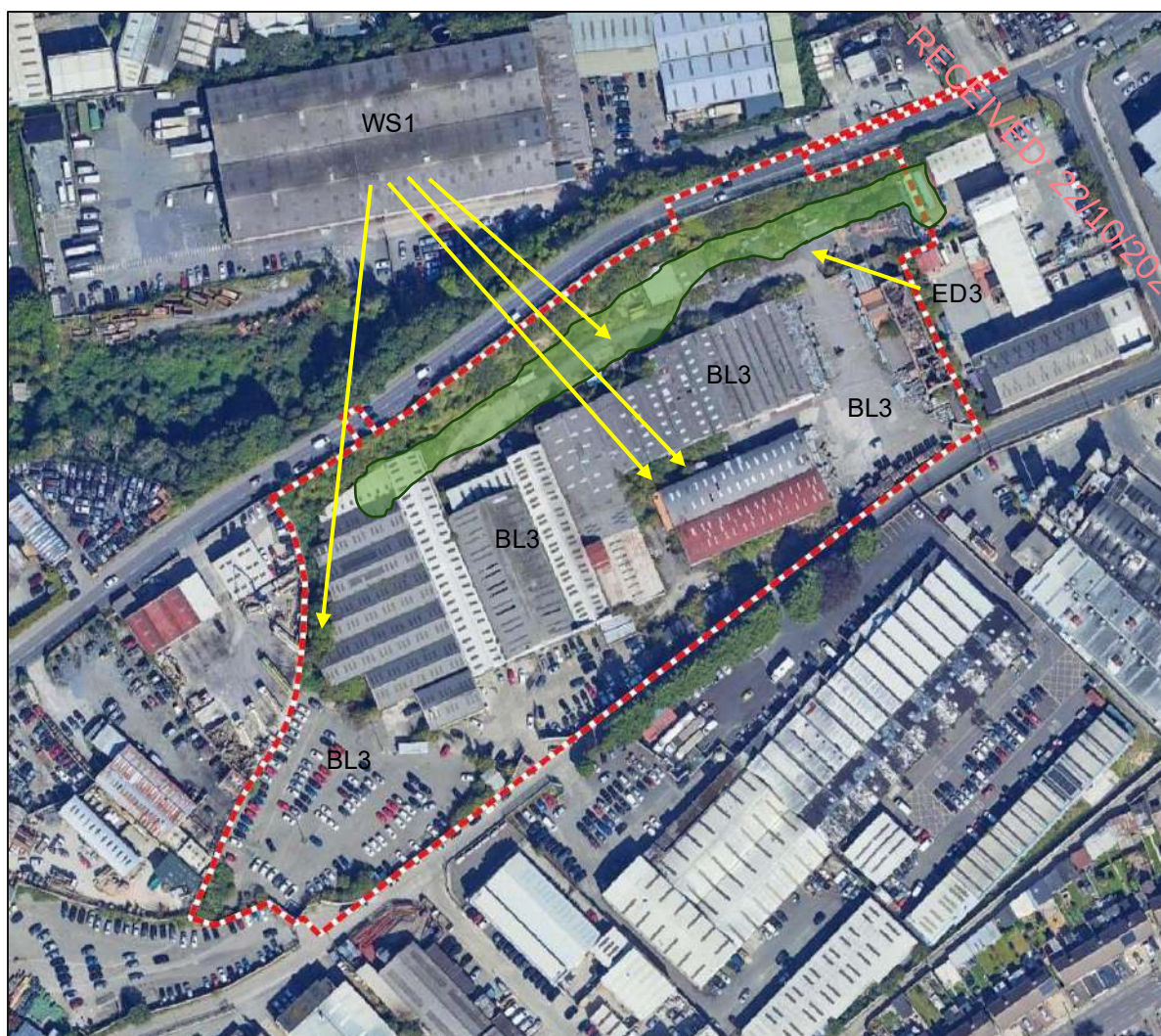


Figure 5.3 Showing existing habitats on the Proposed Development site.

5.3.3 Invasive Species

There were no records of Third Schedule invasive species in the Proposed Development areas. Buddleia bushes located in the bare ground areas are of low concern and can be removed with site clearance.

5.3.4 Fauna

5.3.4.1 Bats

Bat activity onsite during the April 21st, 2021, survey and October 2023 was absent on these nights. The inspection of all buildings onsite in April 2021, March 2022 and October 2023 revealed no bat signs inside the buildings for demolition.

The Site itself is considered to be of Lower Importance for bats for the following reasons:

- No bat activity were recorded across site visits in 2021, 2022 and 2023.
- No signs of bats were uncovered during an internal and external inspection of all 17 buildings and/or groups of buildings across site visits in 2021, 2022 and 2023. The lack of bat activity within the site boundary during the three previous surveys may be attributed to the site's location within a heavily urbanised and industrialised area, with high levels of traffic, lighting, and anthropogenic disturbance, which could discourage bats. Additionally, these surveys were carried out at times outside the optimal surveying periods. In contrast, the May 2024 survey

was conducted during optimal weather conditions and within the recommended survey timeframe, which likely contributed to the recorded bat activity.

The bat survey conducted on May 9th, 2024, recorded low to moderate levels of bat activity, with 13 Common Pipistrelle and 5 Leisler's Bat passes between 20:40 and 23:10 (sunset at 21:09).

Following the recorded bat activity in May 2024, the majority of the buildings were considered to have 'Low' roosting potential, see Appendix 3. Building 17 was assessed as having 'Negligible' potential due to the absence of a roof and Buildings 1, 2, and 3, 14 were also considered Negligible due to lack of access points. No buildings were classified as having 'Moderate' or 'High' suitability for bat roosting.

All immature trees and scrub onsite are to be felled to facilitate the development. The small trees onsite had no potential for roosting bats.

5.3.4.2 Otters

There is no potential for otters within the site.

5.3.4.3 Badgers

There were no badger setts along field boundaries which would be disturbed and no signs of badgers in the study area.

5.3.4.4 Breeding Birds

There are limited habitats for birds on the proposed development site and no suitable habitats for annexed or red listed bird species.

Species of low conservation concern noted in the surrounding greener areas include Feral pigeon (*Columba livia*), Chaffinch (*Fringilla coelebs*), Rook (*Corvus frugilegus*) and Wren (*Troglodytes troglodytes*).

The site development areas are not of value to Wintering annexed birds species. being light industrial and experiencing regular levels of human activity.

5.3.5 Habitat Evaluation

The ecological value of the site was assessed following the guidelines set out in the Institute of Ecology and Environmental Management's Guidelines for Ecological Impact Assessment (2019) and according to the Natura Scheme for evaluating ecological sites (after Nairn & Fossitt, 2004) in the TII Guidelines (formerly NRA) for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009) which outlines the methodology for evaluating ecological impacts Judgements on the evaluation were made using geographic frames of reference, e.g. European, National, Regional or Local outlined as follows:

5.3.5.1 Ecological valuation: Examples

International Importance:

- 'European Site' including Special Area of Conservation (SAC), Site of Community Importance (SCI), Special Protection Area (SPA) or proposed Special Area of Conservation.
- Site that fulfils the criteria for designation as a 'European Site' (see Annex III of the Habitats Directive, as amended).
- Features essential to maintaining the coherence of the Natura 2000 Network.
- Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive.
- Resident or regularly occurring populations (assessed to be important at the national level) of the following:
 - Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or
 - Species of animal and plants listed in Annex II and/or IV of the Habitats Directive.
- Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971).
- World Heritage Site (Convention for the Protection of World Cultural & Natural Heritage, 1972).

- Biosphere Reserve (UNESCO Man & The Biosphere Programme).
- Site hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals, 1979).
- Site hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979).
- Biogenetic Reserve under the Council of Europe.
- European Diploma Site under the Council of Europe.
- Salmonid water designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988, (S.I. No. 293 of 1988).

National Importance:

- Site designated or proposed as a Natural Heritage Area (NHA).
- Statutory Nature Reserve.
- Refuge for Fauna and Flora protected under the Wildlife Acts.
- National Park.
- Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA);
- Statutory Nature Reserve; Refuge for Fauna and Flora protected under the Wildlife Act; and/or a National Park.
- Resident or regularly occurring populations (assessed to be important at the national level) of the following:
 - Species protected under the Wildlife Acts; and/or
 - Species listed on the relevant Red Data list.
- Site containing 'viable areas' of the habitat types listed in Annex I of the Habitats Directive
- County Importance:
- Area of Special Amenity.
- Area subject to a Tree Preservation Order.
- Area of High Amenity, or equivalent, designated under the County Development Plan.
- Resident or regularly occurring populations (assessed to be important at the County level) of the following:
 - Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;
 - Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;
 - Species protected under the Wildlife Acts; and/or
 - Species listed on the relevant Red Data list.
- Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.
- County important populations of species, or viable areas of semi-natural habitats or natural heritage features identified in the National or Local BAP, if this has been prepared.
- Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county.
- Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.

Local Importance (higher value):

- Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared;
- Resident or regularly occurring populations (assessed to be important at the Local level) of the following:
 - Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;
 - Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;
 - Species protected under the Wildlife Acts; and/or
 - Species listed on the relevant Red Data list.
- Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality;
- Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value.

Local Importance (lower value):

- Sites containing small areas of semi-natural habitat that are of some local importance for wildlife;
- Sites or features containing non-native species that are of some importance in maintaining habitat links.

Due cognisance of features of the landscape which are of major importance for wild flora and fauna, such as those with a “stepping stone” and ecological corridors function, as referenced in Article 10 of the Habitats Directive were considered in this assessment.

Following a detailed literature review, desktop assessment and field survey the footprint of the proposed development site can be categorised into the following habitat types:

- Buildings and artificial surfaces (BL3)
- Scrub (WS1)
- Recolonising Bare Ground (ED3)

There were no rare or protected species recorded on the site and there were no records of invasive species.

The habitats under the footprint of the proposed development are of low local ecological value.

There is no connectivity with any European sites. Given the long-developed nature of the area, and lack of connectivity, adverse effects on the Dublin Bay European sites, or any other European sites, are highly unlikely and significant adverse effects have been ruled out in AA Screening.

5.4 Characteristics Of The Proposed Development

The proposed development comprises:

- (i) *The demolition of the former Chadwicks Builders Merchant development comprising 1 no. two storey office building and 9 no. storage/warehouse buildings ranging in height from 3m – 9.9m as follows: Building A (8,764 sq.m.), Building B (1,293 sq.m.), Building C (two-storey office building) (527 sq.m.), Building D (47 sq.m.), Building E (29 sq.m.), Building F (207 sq.m.), Building G (101 sq.m.), Building H (80 sq.m.), Building I (28 sq.m.), and Building J (44 sq.m.), in total comprising 11,120 sq.m.;*
- (ii) *the construction of a mixed-use residential and commercial development comprising 588 no. residential apartment units (291 no. one-beds, 238 no. two-beds and 59 no. three-beds), 1 no. 570.91 sq.m. (443 sq.m. indoor space) childcare facility and 6 no. commercial/retail units in 4 no. blocks (A-D) ranging in height from 5 to 12 storeys as follows:*
 - a. *Block A comprises 170 no. apartments (103 no. 1 bed-units, 59 no. 2 bed-units and 8 no. 3- bed units) measuring 8 storeys in height.*
 - b. *Block B comprises 197 no. apartments (89 no. 1 bed-units, 92 no. 2 bed-units and 16 no. 3 bed-units) measuring 10 storeys in height.*
 - c. *Block C comprises 81 no. apartments (44 no. 1-bed units, 16 no. 2-bed units and 21 no. 3-bed units) measuring 12 storeys in height.*
 - d. *Block D comprises 140 no. apartments (55 no. 1 bed-units, 71 no. 2 bed-units and 14 no. 3 bed-units) measuring 8 storeys in height.*

All apartments will be provided with private balconies/terraces;

- (iii) *provision of indoor communal residential amenity (614.14 sq.m.) at ground and first floors of Block A, B & C,;*
- (iv) *the construction of 1 no. childcare facility comprising 443 sq.m. with dedicated outdoor play area (128 sq.m.) located at ground floor of Block B;*
- (v) *the construction of 6 no. commercial units at ground floor level of Blocks A, B and D, and 1 no. commercial unit at first floor level of Block A as follows: Block A has 1 no. unit at ground floor comprising 455.8 sq.m. and 1 no. unit at first floor level comprising 160.79 sq.m., Block*

B has 1 no. unit at ground floor comprising 190.96 sq.m. and Block D has 4 no. units at ground floor comprising 361.6 sq.m., 232.3 sq.m., 238 sq.m. and 174.9 sq.m.;

- (vi) the construction of 4 no. vehicular entrances; a primary entrance via vehicular ramp from the north (access from Greenhills Road) and 3 no. secondary entrances from the south for access, emergency access and services (access from the existing road to the south of the site) with additional pedestrian accesses proposed along Greenhills Road;*
- (vii) provision of 270 no. car parking spaces comprising 240 no. standard spaces (including 6 no. car club spaces) and 13 no. mobility spaces located at surface level and within undercroft car parks within Blocks A, B, C and D, 17 no. commercial/ unloading/ drop-off parking spaces at ground level;*
- (viii) provision of 1,269 no. bicycle parking spaces comprising 952 no. residents' bicycle spaces, 10 no. cargo/accessable bicycle spaces in 14 no. bicycle storerooms in surface and undercroft parking areas and 307 no. visitors' bicycle spaces located externally at ground floor level throughout the development;*
- (ix) provision of outdoor communal amenity space (3,130.3 sq.m) comprising landscaped courtyards that include play areas, seating areas, grass areas, planting and scented gardens located on podiums at first floor level; provision of communal amenity roof gardens in Block A & B with seating area and planting (746.1 sq.m.) and inclusion of centrally located public open space (6,650 sq.m.) adjacent to Blocks A, B, C and D comprising grassed areas, planting, seating areas, play areas, water feature, flexible use space and incidental open space/public realm;*
- (x) provision of toucan crossing and all associated road markings and signage from the subject site to a new footpath on northern side of Greenhills Road;*
- (xi) development also includes landscaping and infrastructural works, foul and surface water drainage, bin storage, ESB substations, plant rooms, pv panels, boundary treatments, internal roads, cycle paths and footpaths and all associated site works to facilitate the development.*

This application is accompanied by an Environmental Impact Assessment Report (EIAR).

The proposed development is described in further detail in Chapter 2 (Description of the Proposed Development).

5.5 Potential Impacts Of The Proposed Development

There are no rare or protected habitats recorded in the study area inside the proposed development boundary.

There are no Annexed habitats at the proposed development site. The habitats under the footprint of the proposed development are of relatively low local ecological value.

There are no direct pathways to water courses leading to European sites. No direct impacts on the Dublin Bay European sites are predicted, and there will be no habitat loss or fragmentation as a result of the proposed development, given the distance from the European sites in Dublin Bay.

Potential direct impacts on SPA bird species can also be ruled out, as no suitable habitat was noted during site visits, as well as the distance of the site from Dublin Bay.

5.5.1 Construction Phase

5.5.1.1 Habitats

The new residential development will be sited on land currently classed largely as Buildings and artificial surfaces, with some linear and scattered scrub and ruderal recolonisation.

There will be no impact on biodiversity from the demolition of the buildings on site.

There were no invasive species recorded in the Project area.

Should best practice guidelines for the prevention of invasive species spread be adhered to, no potential for the spread or introduction of high impact invasive species are foreseen as a result of this Scheme. The overall effect on biodiversity is **imperceptible** and **neutral**.

5.5.1.2 Fauna

Despite the recorded bat activity in May 2024, the site is considered to be of Lower Importance for bats due to the following factors:

1. No bat activity was recorded during the surveys conducted in April 2021, March 2022, and October 2023, however these were carried out before or after the main bat activity season.
2. No signs of bats were uncovered during the internal and external inspections of all 17 buildings and/or groups of buildings across the 4 site visits spanning April 2021 and May 2024.
3. The site is illuminated in places due to its urban setting, which may deter bats from using the site.
4. The site lacks mature trees and well-connected commuting and foraging routes to other more suitable habitats.
5. The majority of the buildings onsite were constructed with corrugated steel and generally lacked suitable roosting features for bats.

There will be **no significant negative effects** on any species of fauna including bats, badgers, otters or birds during the construction stage.

5.5.2 Operational Phase

5.5.2.1 Habitats

There will be no significant negative operational effects on local biodiversity.

5.5.2.2 Fauna

There will be no significant negative operational effects on any species of fauna including bats, badgers, otters or birds during the operational phase.

Potential effects on bats from lighting can be avoided by standard avoidance mitigation outlined in Section 5.6.

5.6 Remedial And Mitigation Measures

5.6.1 Construction Phase

There are no specific measures for habitats.

Should best practice guidelines for the prevention of invasive species spread be adhered to, no potential for the spread or introduction of high impact invasive species are foreseen as a result of this Proposed Development.

The retention of existing green areas and promotion of biodiversity through native species landscaping will be undertaken where feasible.

Based on the findings of the survey work completed between April 2021 and May 2024, it is concluded that the overall impact on bats arising from the proposed development will likely be low to negligible, provided that the general recommendations and specific mitigation measures outlined in Section 4.0 of the Bat Report are implemented. These measures include:

1. Conducting a pre-demolition bat survey of all buildings with "Low" suitability the night before roof removal commences.
2. Implementing a phased demolition approach, with roof structures removed first, followed by a waiting period of at least one week before demolishing the walls.
3. Scheduling demolition works during the autumn months (September to November) to avoid sensitive periods for bats and nesting birds.

4. Installing a series of 5+ bat boxes on suitable structures around the site to provide future roosting opportunities for bats.
5. Implementing sensitive lighting design and strategies to minimise light spillage and disturbance to bats and other nocturnal wildlife.

5.6.2 Operational Phase

In addition to retention of existing green areas where feasible, the proposed development includes a Landscape Plan which provides for biodiversity offset through the additional planting.

The IPL and BCT (2023) guidelines provide a list of recommendations in relation to luminaire design, which is based on the extensive research completed to-date on the potential impact of lighting on bats and therefore provides best practice mitigation measures. The following recommendations to minimise disturbance to bats/other nocturnal wildlife are summarised as follows:

- Warm white (2700K or lower) LEDs should be used to minimize blue light disturbance. Light sources should lack UV and peak above 550nm.
- A photo-electric cell (PEC) for automatic switch-on at dusk and off with time control. Presence detection may also be incorporated for safety purposes & bat consideration, e.g. when nobody is outside, after a set interval time, lighting reduces to a pre-determined level, e.g. 50%, but as soon as human or vehicular movement is detected, full illumination is restored.
- Lighting should be installed where necessary for public safety. These lights should be designed and selected with specific shutters and filters to minimise any potential for back spills into the sensitive locations while still providing the primary function of safely lighting the pedestrian routes.
- Reflectance's – Downward lighting can be reflected from bright surfaces. To minimise bat disturbance, the design should avoid the use of bright surfaces and incorporate darker colour lamp heads and poles to reduce reflectance.
- Shielding of Luminaires & Light - the design should avoid the use of upward lighting by shielding or by downward directional focus.
- Type of Light – the design should avoid the use of strong UV lighting. The lighting design should be based on the use of LED lighting which has minimal or no UV output of significance.

Although no bats were observed emerging from or entering the buildings during the surveys, there was activity onsite and therefore it is crucial to adopt a precautionary approach to minimise the risk of harm to any bats that may have gone undetected.

To minimise the potential impact on bats, the demolition process should be carried out in a phased manner. The roof structures should be removed first, followed by a waiting period of at least one week before demolishing the walls. This approach will provide any bats that may have gone undetected during the surveys with an opportunity to escape and relocate to alternative roosting sites.

With the employment of appropriate mitigation measures with regard to local biodiversity, the Proposed Development will have a **neutral, imperceptible** and **long-term effect** on biodiversity.

5.7 Monitoring Or Reinstatement

5.7.1 Construction Phase

As a precautionary measure, it is recommended that a pre-demolition bat survey be carried out on all buildings with "Low" suitability the night before the commencement of demolition works, these include Buildings/structures numbered 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15 and 16 on Table 6 (Appendix 5.1). It is recommended that the demolition works be scheduled during the months September-October, which will avoid the sensitive maternity and hibernation periods for bats. This timing will also minimize the potential impact on birds, such as barn swallow, that may be using the buildings for nesting.

To compensate for the loss of potential roosting sites and to enhance the future biodiversity value of the site, a series of 5 x bat boxes should be erected on suitable structures/walls around the site.

No reinstatement measures are proposed.

5.7.2 Operational Phase

No ecological monitoring is required during the operational phase.

5.8 Residual Impacts Of The Proposed Development

5.8.1 Construction Phase

With the employment of appropriate mitigation measures with regard to local biodiversity, the Proposed Development will have a neutral, imperceptible and long-term effect on biodiversity.

5.8.2 Operational Phase

There will be no negative operational effects on biodiversity, habitats or fauna therefore, there are no residual effects.

RECEIVED: 22/10/2025

6.0 LAND, SOILS AND GEOLOGY

6.1 Introduction

This chapter assesses and evaluates the potential impacts of the proposed development on the land, soil, geological and hydrogeological aspects of the proposed development site and the surrounding area. In assessing likely potential and predicted effects, account is taken of both the importance of the attributes and the predicted scale and duration of the likely environmental effects.

This Chapter has been written and prepared by Luke Maguire Environmental Consultant and Geoscientist (BSc) at AWN Consulting and Teri Hayes Senior Hydrogeologist and director at AWN Consulting.

Luke Maguire; is an Environmental Consultant at AWN with over 4 years of experience in environmental consulting and water resource management. Luke holds a B.Sc. in Geoscience from Trinity College University of Dublin and has worked on a range of developments including pharmaceutical plants, medical device facilities, ICT facilities and energy projects. Luke has experience in EIA assessment, contaminated soil, basement impact assessments, bulk excavations, flood assessment, largescale dewatering assessment and water monitoring.

Teri (BSc MSc PGeol EurGeol) is a hydrogeologist with over 30 years of experience in water resource management and impact assessment. She has a Masters in Hydrogeology and is a former President of the Irish Group of the Association of Hydrogeologists (IAH) and has provided advisory services on water related environmental and planning issues to both public and private sector bodies. She is qualified as a competent person as recognised by the EPA in relation to contaminated land assessment (IGI Register of competent persons www.igi.ie). Her specialist area of expertise is water resource management eco-hydrogeology, hydrological assessment and environmental impact assessment.

6.2 Research Methodology

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

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

The rating of potential environmental effects on the land, soil, geological and hydrogeological environment is based on the standard EIAR impact predictions table included in Chapter 1 which takes account of the quality, significance, duration and type of effect characteristic identified (in accordance with impact assessment criteria provided in the Draft EPA Guidelines (2017) publication).

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

The TII (2009) criteria for rating the magnitude and significance of impacts on the geological related attributes and the importance of hydrogeological attributes at the site during the EIA stage are also relevant in assessing the impact and are presented in Tables 1-5 in Appendix 6.1.

The principal attributes (and effects) to be assessed include the following:

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

6.2.1 Source of Information

Desk-based geological information on the substrata (both Quaternary deposits and bedrock geology) underlying the extent of the site was obtained through accessing databases and other public archives where available. Data was sourced from the following:

- Geological Survey of Ireland (GSI) - on-line mapping, Geo-hazard Database, Geological Heritage Sites & Sites of Special Scientific Interest, Bedrock Memoirs and 1: 100,000 mapping;
- Teagasc soil and subsoil database;
- Ordnance Survey Ireland - aerial photographs and historical mapping;
- Environmental Protection Agency (EPA) – website mapping and database information;
- National Parks and Wildlife Services (NPWS) – Protected Site Register; and

Site-specific data was derived from the following sources:

- Engineering Services Report- Residential Development at Greenhills Road, Walkinstown, Dublin 12; Lohan & Donnelly Consulting Engineers Limited (2024).
- Construction Environmental Management Plan- development at GREENHILLS ROAD, WALKINSTOWN, DUBLIN 12 AWN Consulting (2025).
- Ground Investigations Ireland Ltd (GII). "Ground Investigations Ireland, Greenhills Road Ground Investigation Report March 2021, Rev A"
- Ground Investigations Ireland Ltd (GII). "Ground Investigations Ireland, Greenhills Road Ground Investigation Report February 2021, Rev A".
- Various design site plans and drawings; and
- Consultation with site engineers/ planners/ architects.

6.3 Receiving Environment

The receiving environment is discussed in terms of land geology, soils, hydrogeology and site history including potential for existing and historical contamination.

6.3.1 General Description of the Site

6.3.1.1 Site Setting

The site is located near the Walkinstown Roundabout on the southern side of Greenhills Road (R918), Dublin 12. The site is approximately 2.79 hectares in area, located within an industrially surrounded zone and comprises of existing low-rise disused industrial units which are to be demolished as part of the subject proposal. The site currently has 3 vehicular accesses all of which are located along the southern part of the site boundary. The existing development does not have any SuDS measures in

place. The site has been mostly infilled following quarrying and is currently occupied by several derelict industrial/commercial buildings and is situated near the Walkinstown Roundabout.

The surrounding environment can be described as industrial in the immediate environs but mostly to the northwest. Residential, parkland and community use occupy the majority of land to the south, east and northeast. The Greenhills community college is located c. 600 m south of the development. Tymon Park lies 1km south of the proposed development. There are also a number of national schools and communal building within the local environment. The site location map for the proposed development is presented in Figure 6.1 below.



Figure 6.1 Site Location Map

6.3.1.2 Local Topography

The regional topography slopes to the north east towards the South Dublin Bay. The site is relatively level / flat with minor localised undulations and an average elevation of 57.0m above Ordnance Datum (mAOD). Topographical survey of the existing site indicates that the site is gradually sloping from west to east (C+W O'Brien Architects, 2023). The proposed development gradient ranges / varies between 55 m mAOD in the East and 58 mAOD in the West. The western site boundary, abutted to the boundary of the neighbouring development is separated via a retaining wall, with a level difference between the site in question and neighbouring development of approximately 6 meters.

The site was historically used as a gravel quarry, with a large retaining wall structure marking the southwestern boundary of the site. The site has been infilled and is currently occupied by several derelict industrial/commercial buildings.

6.3.1.3 Areas of Geological Interest and Historical Land Use

The GSI (2025) on-line mapping was reviewed to identify sites of geological heritage in the vicinity and wider surrounding area. There are no recorded sites on or within the boundary of the proposed

development, or which could be considered suitable for protection under this programme or recorded in the South Dublin County Development Plan (2022-2028).

The geological heritage site in closest proximity is the Greenhills Esker, which is located c. 1.20 km to the southwest of the site. Due to the distance, nature of the works for the proposed development and the rise in elevation there is a negligible risk to this heritage site.

Details of the site history and previous land use are included in Chapter 13 - Archaeology & Cultural Heritage. The assessment of site history confirms that the site has been in use as a gravel pit since the earliest mapping available (1837 – 1842). There is a gravel pit indicated in the western section of the site and series of buildings with associated gardens in the north eastern section of the site on the 6-inch map, refer to Figures 6.2 and 6.3 below.

On the 1995 and 2000 OSI aerial photos the site is developed with the warehouses that are present with most of the surrounding sites developed for industrial purposes. On the remainder of the OSI photos the surrounding developments remain largely unchanged, refer to Figures 6.4 and 6.5 below.

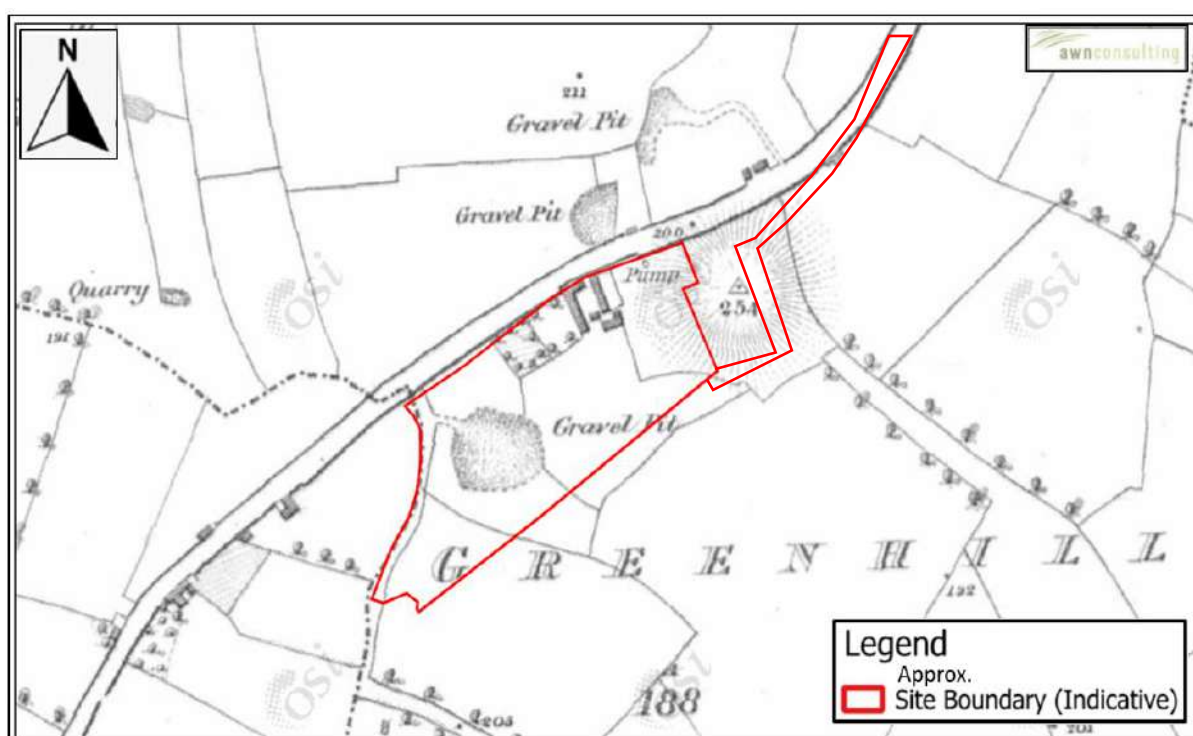


Figure 6.2 Historical 6" Map (1829-1841) (Source: OSI)

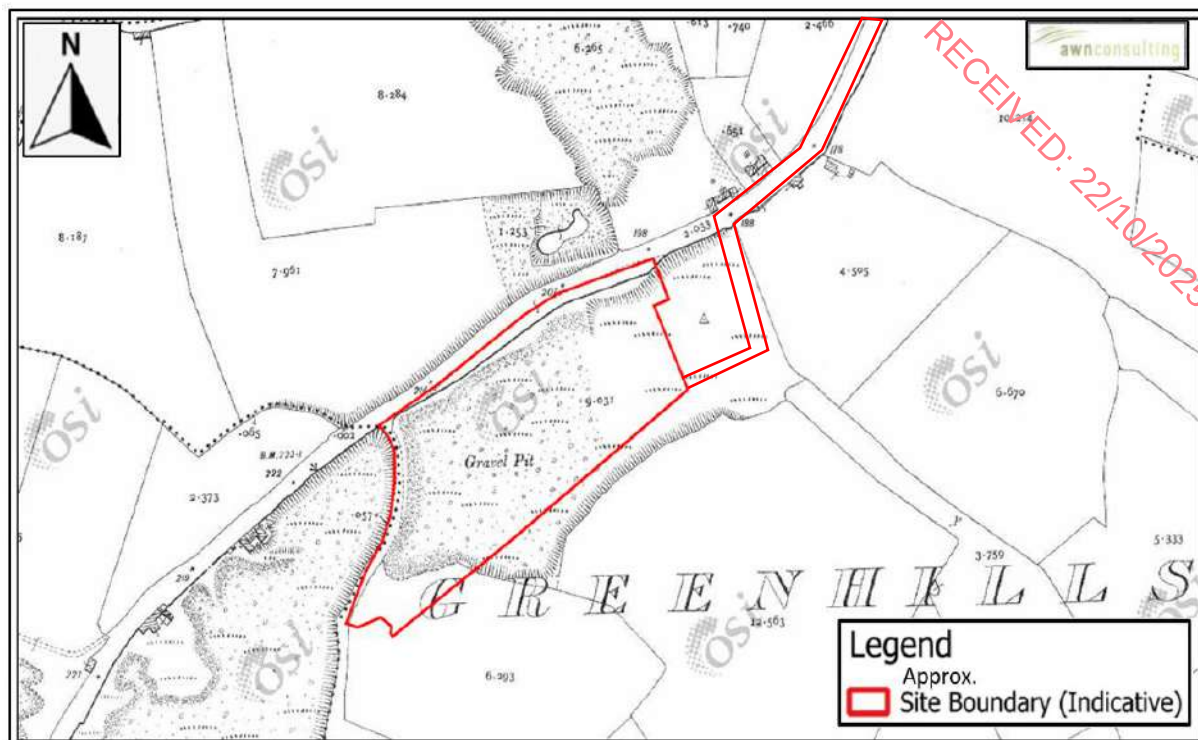


Figure 6.3 Historical 25" Map (1897-1913) (Source: OSi)

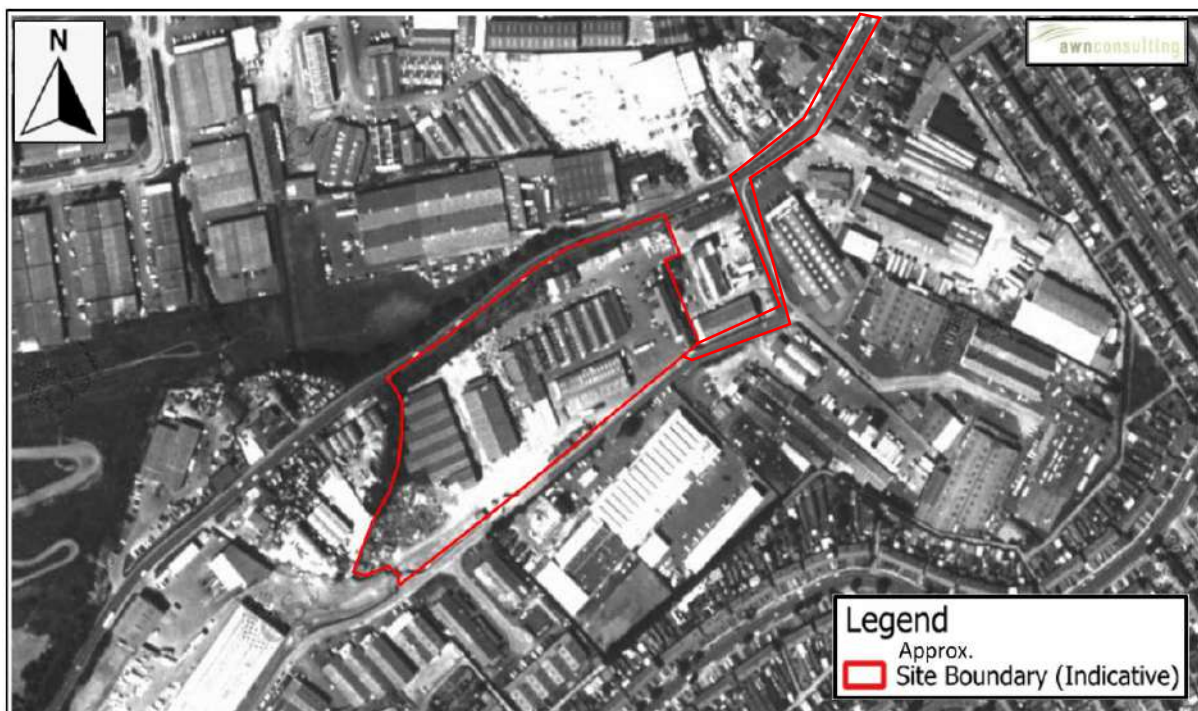


Figure 6.4 Aerial 1995 Map (Source: OSi)



Figure 6.5 Aerial 2000 Map (Source: OSi)

According to the EPA (2025), there are a number of licensed IPPC and IED facilities in the vicinity of the site. The nearest active IPPC licensed facility is registered to Plateco ZN Limited, license number P0277-01 and is located in the Mulcahy Keane Industrial estate, c. 150m northeast of the proposed development.

The nearest active IE licensed facility is registered to Hitech Plating, license number P0276-01 at Unit D3, Ballymount Industrial Estate, Walkinstown, Dublin 12, c. 200m northwest of the proposed development.

These facilities are located upgradient of the proposed development site.

6.3.2 Soils

The GSI/Teagasc (2025) soil mapping indicates that the soils within the site boundary are comprised entirely of made ground. Areas of shallow well drained mineral (BminSW) are located just above the northwest boundary and consist of mainly sands and gravels primarily derived from the limestone bedrock. Figure 6.6 below presents the soils map indicating the soil lithologies discussed above.

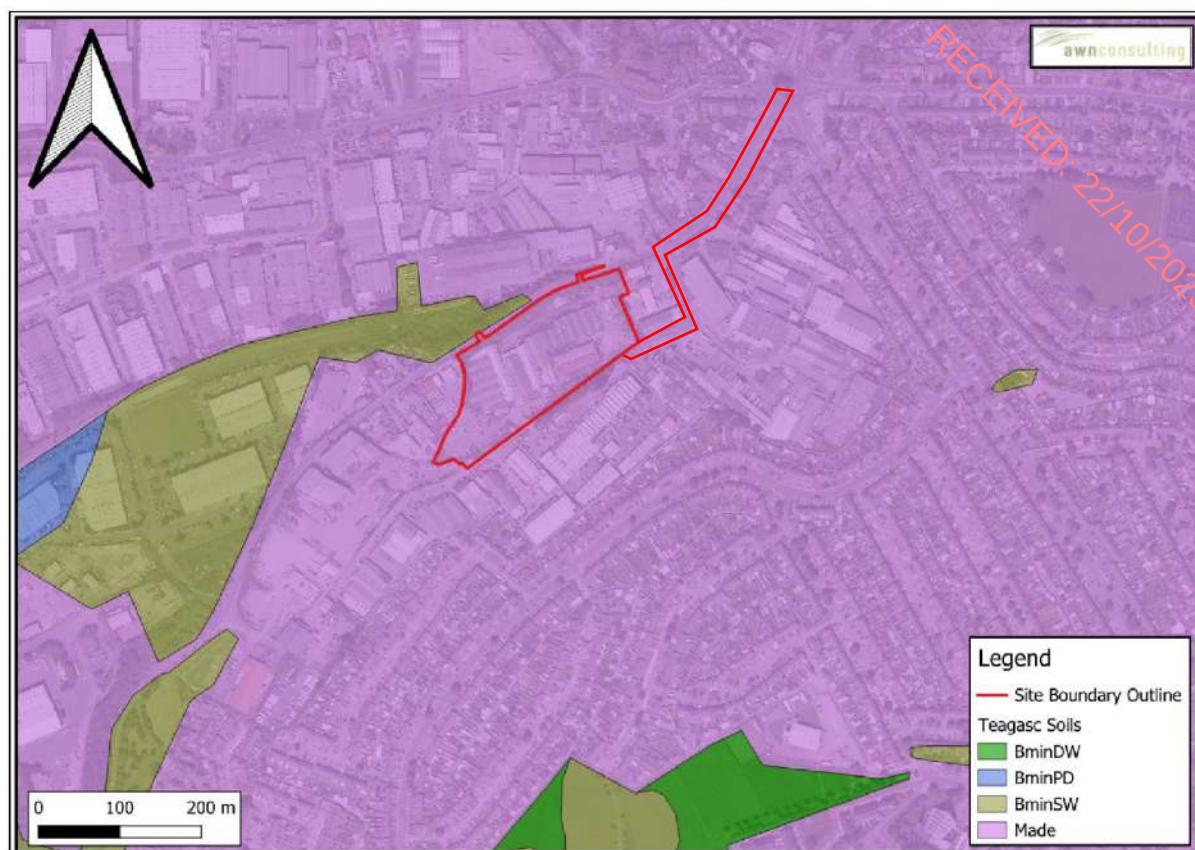


Figure 6.6 Soils Map with the proposed site layout (Source: EPA/ Teagasc, 2025)

6.3.3 Subsoils

The GSI/ Teagasc mapping database of the natural subsoils in the area of the proposed development site indicates the principal soil type as Gravels derived from Limestone (GLs). as shown in Figure 6.7 below. This till is made up of sands and gravels are less permeable than alluvium subsoils but more permeable than tills. However, it is noted that as much of the site was quarried and later infilled with made ground deposits.

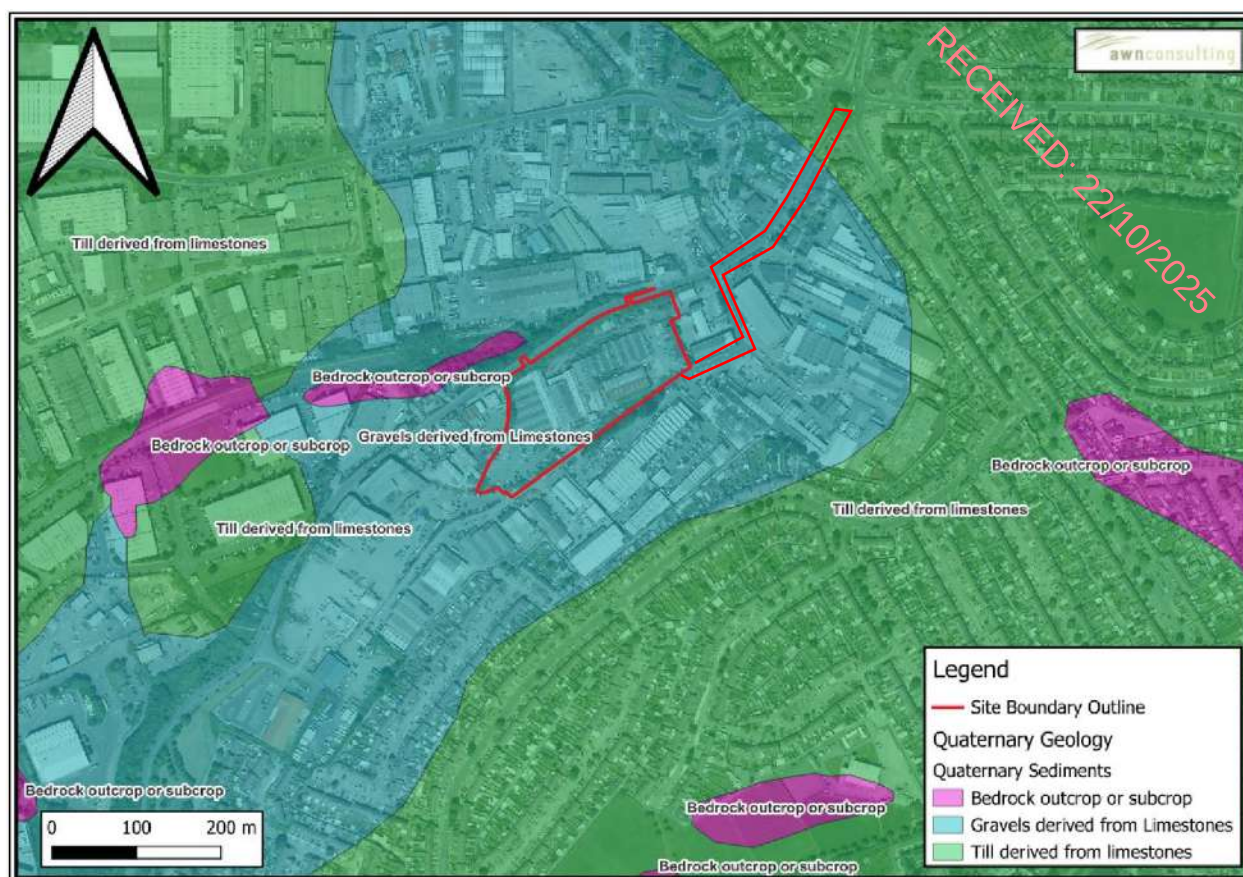


Figure 6.7 Quaternary Subsoils Map with the proposed site layout (Source: GSI Quaternary Sediments, 2025)

Ground Investigations Ireland (GII) carried out an environmental site investigation of the proposed development site in January 2021. The scope of works included observations of existing conditions, borehole drilling, subsoil sampling, interpretation of chemical data and reporting. The sequence of subsoils deposits recorded during the site investigations are shown in Table 6.1 below. Figure 6.8 below also presents the location of the SI points. Site investigation locations are shown in Appendix 6.2. Site investigation works entailed the following:

- 14 No. Window Sample Boreholes to recover soil samples
- 10 No. Cable Percussion boreholes to a maximum depth of 4.50m BGL
- Installation of 3 No. Groundwater monitoring wells
- Geotechnical & Environmental Laboratory testing

Table 6.1 Strata Noted from Onsite Investigations (GII, 2021)

Name	Depths/ Notes
Surfacing	Tarmacadam or Concrete surfacing was present in all exploratory holes and was present to a maximum depth of 0.30 mbgl (meters below ground level).
Made Ground	Made Ground and suspected Made Ground deposits were encountered beneath the surfacing and were present to a depth of between 0.40m and 2.40m BGL, with the full extent of these deposits not determined at BH02, BH02A, BH03, WS02, WS02A, WS02B, WS08, and WS08A. These deposits varied across the site but were generally described as either a <i>brown clayey sandy subangular to subrounded fine to coarse Gravel</i> or a <i>greyish brown sandy gravelly Clay</i> and contained <i>rare fragments of red brick</i> .
Cohesive Deposits	Cohesive deposits were encountered beneath the made ground and/or surfacing at BH03A, BH04, BH05, BH06, WS03, WS04, WS05, WS09, WS10, and WS11. These deposits were described typically as <i>dark brown/grey slightly sandy gravelly CLAY with occasional cobbles</i> . The secondary sand and gravel constituents varied across the site

Name	Depths/ Notes
	and with depth, with granular lenses occasionally present in the glacial till matrix. These deposits had occasional, some or many cobble and boulder content were noted on the exploratory hole logs.
Granular Deposits	Granular deposits were encountered beneath the made ground and/or cohesive deposits at BH01, BH04, BH05, BH06, BH07, BH08, WS01, WS06, and WS07. These deposits were generally described as <i>grey/brown clayey subangular to subrounded fine to coarse GRAVEL with occasional cobbles and brown clayey gravelly fine to coarse SAND</i> . The secondary sand/gravel and silt/clay constituents varied across the site and with depth while occasional, some or many cobble and boulder content also present where noted on the exploratory hole logs. Based on the SPT N values the deposits are typically medium dense and become dense with depth.



Figure 6.8 Site Investigations Points (Source: GII, 2021)

The boreholes drilled encountered bedrock at depths between 3.1-4.5 mbgl with the exception of the south portion of the site where bedrock was found at 0.8-1.8 mbgl (at BH02 and BH03 respectively)

6.3.4 Bedrock Geology

Inspection of the available GSI mapping (GSI, 2024) indicates that the Site is underlain by Lower Carboniferous (Late Chadian to Asbian Stage) Limestones which is referred to as Lucan Formation (Rock Unit code: CDLUCN). This geological formation comprises dark-grey to black, fine-grained, occasionally cherty, micritic limestones that weather paler, usually to pale grey. There are rare dark coarser grained calcarenitic limestones, sometimes graded, and interbedded dark-grey calcar.

In terms of the structural geology of the area, the GSI database shows no structural faults traversing the site or the vicinity or wider surrounding area (Refer to figure 5.7 below).

There is no evidence of karstification in the vicinity of the Site according to the GSI Karst database (2025).

The Bedrock Geology Map is shown in Figure 6.9 below.

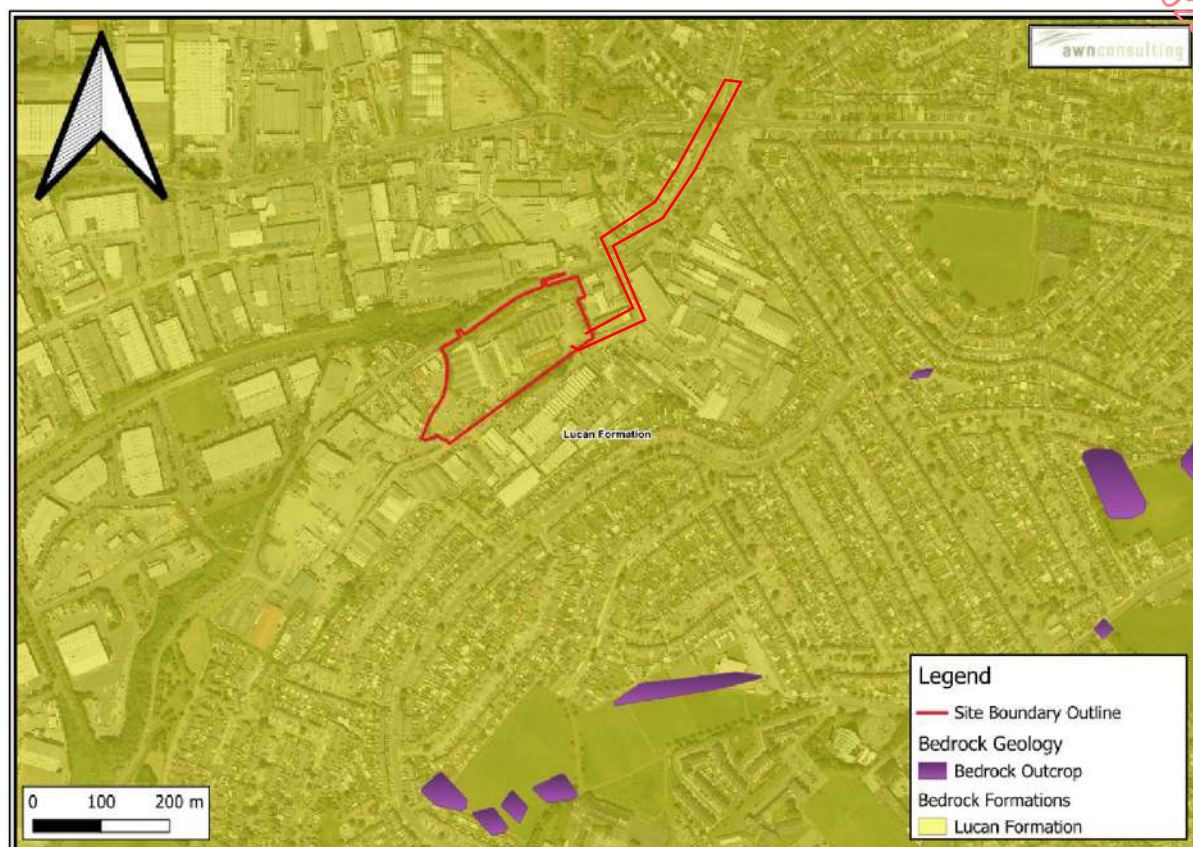


Figure 6.9 Bedrock Geology Map with the proposed site layout (Source: GSI, 2025)

6.3.5 Regional Hydrogeology

The GSI has devised a system for classifying the bedrock aquifers in Ireland. The aquifer classification for bedrock depends on a number of parameters including, the area extent of the aquifer (km^2), well yield (m^3/d), specific capacity ($\text{m}^3/\text{d}/\text{m}$) and groundwater throughput (mm^3/d). There are three main classifications: regionally important, locally important, and poor aquifers. Where an aquifer has been classified as regionally important, it is further subdivided according to the main groundwater flow regime within it. This sub-division includes regionally important fissured aquifers (Rf) and regionally important karstified aquifers (Rk). Locally important aquifers are sub-divided into those that are generally moderately productive (Lm) and those that are generally moderately productive only in local zones (LI). Similarly, poor aquifers are classed as either generally unproductive except for local zones (PI) or generally unproductive (Pu).

The GSI classifies the principal aquifer types as:

Bedrock Aquifer

- Lk - Locally Important Aquifer - Karstified.
- LI - Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones.
- Lm - Locally Important Aquifer - Bedrock which is Generally Moderately Productive. PI - Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones.

- Pu - Poor Aquifer - Bedrock which is Generally Unproductive.
- Rkd - Regionally Important Aquifer (karstified diffuse).

Gravel Aquifer

- Lg - Locally Important Aquifer - Sand & Gravel.
- Rg - Regionally Important Aquifer - Sand & Gravel.

The bedrock aquifer underlying the site according to the GSI (www.gsi.ie/mapping) National Bedrock Aquifer Map is classified as *Locally Important Bedrock Aquifer (LI)*, which is described by the GSI as bedrock being “moderately productive only in local zones”.

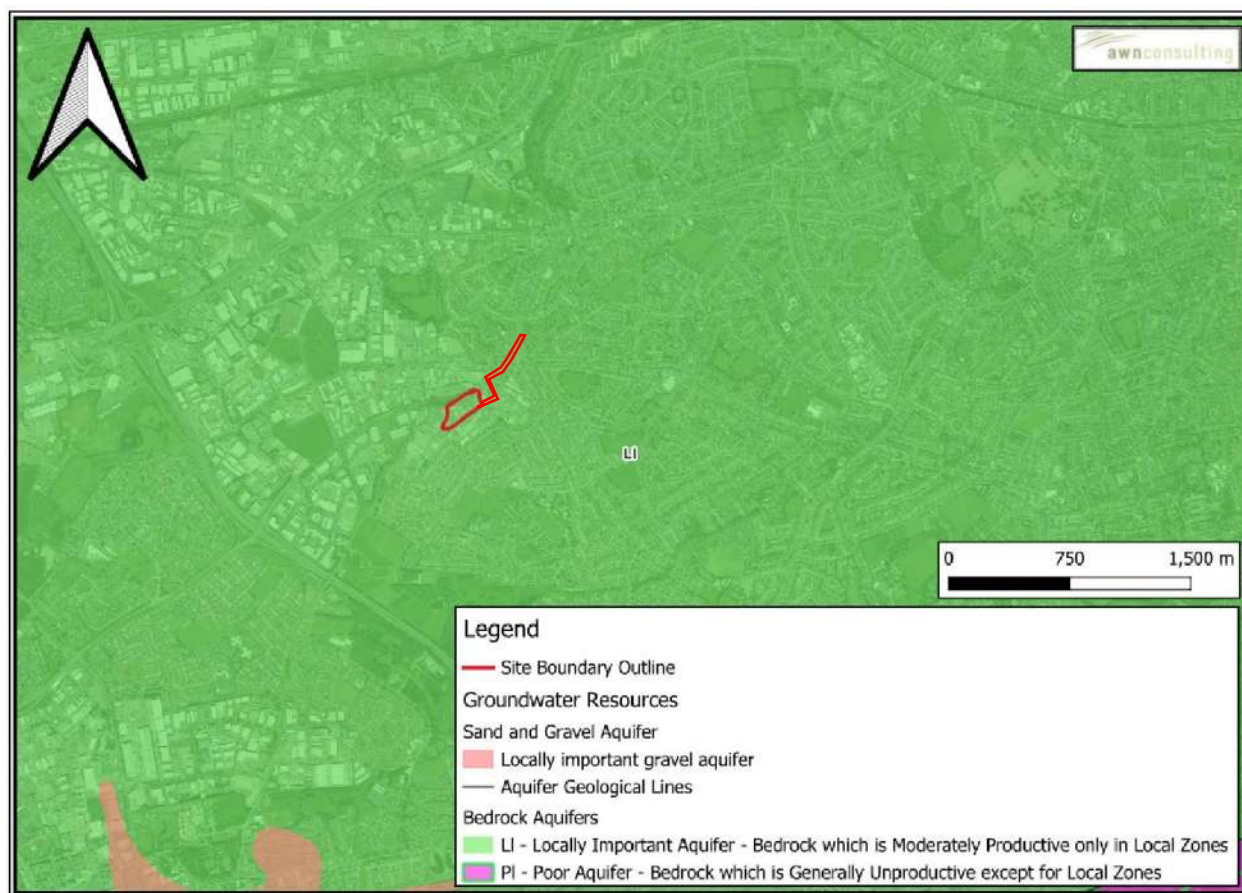


Figure 6.11 Aquifer Classification Map with the proposed site layout (Source: GSI, 2025)

6.3.6 Aquifer Vulnerability

Aquifer vulnerability' is a term used to represent the intrinsic geological and hydrogeological characteristics that determine the ease with which groundwater may be contaminated generally by human activities. Due to the nature of the flow of groundwater through bedrock in Ireland, which is almost completely through fissures / fractures, the main feature that protects groundwater from contamination, and therefore the most important feature in the protection of groundwater, is the subsoil (which can consist solely of or of mixtures of peat, sand, gravel, glacial till, clays or silts).

The GSI presently classifies the aquifer vulnerability in the region of the Site as 'Moderate' (M) to 'High' (H). As can be seen from Table 6.2 below, a Moderate to High vulnerability with clayey subsoil denotes a depth to bedrock of 3-10 m, indicating a moderate protection of the underlying aquifer by low permeability subsoil. It has to be noted that cohesive and granular deposits were encountered across the site during the site investigation works.

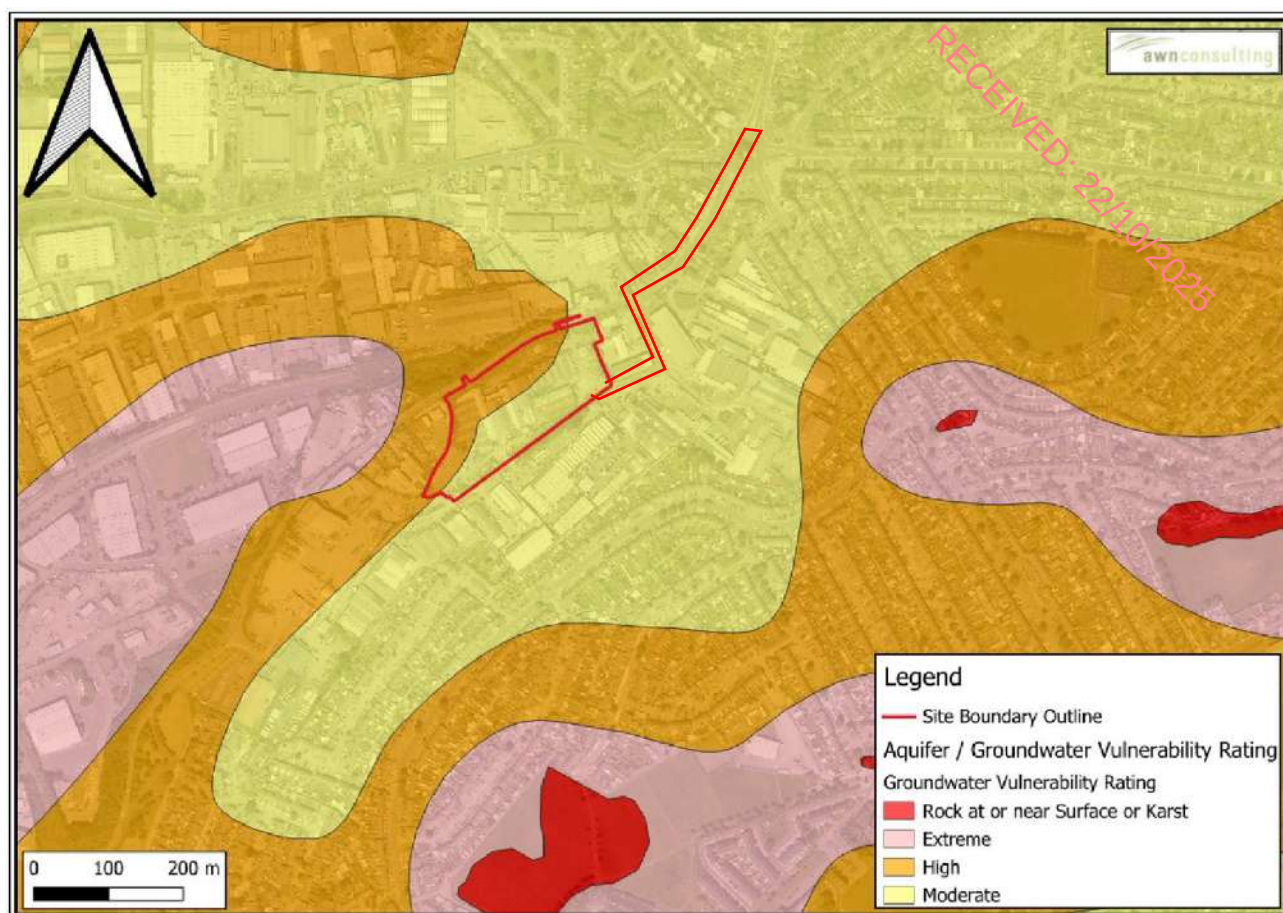


Figure 6.10 Aquifer Vulnerability Map with the proposed site layout (Source: GSI, 2025)

Table 6.2 below presents the GSI vulnerability mapping guidelines with specific reference to subsoil thickness and characteristics.

Table 6.2 Vulnerability Mapping Guidelines (Source: GSI, 2025)

Vulnerability Rating	Hydrogeological Condition				
	Subsoil Permeability (type) and Thickness			Unsaturated Zone	Karst Features
	High Permeability (sand/gravel)	Moderate Permeability (e.g. sandy subsoil)	Low Permeability (e.g. clayey subsoil, clay, peat)	(Sand/ gravel aquifers only)	(<30 m radius)
Extreme (E)	0 - 3 m	0 - 3 m	0 - 3 m	0 - 3 m	-
High (H)	> 3 m	3 - 10 m	3 - 5 m	> 3 m	n/a
Moderate (M)	n/a	> 10 m	5 - 10 m	n/a	n/a
Low (L)	n/a	n/a	> 10 m	n/a	n/a

Notes: (1) n/a: Not applicable

(2) Precise permeability values cannot be given at present

(3) Release point of contaminants is assumed to be 1-2 below ground surface

According to site investigations carried out in the subject site, bedrock was encountered at depths between 3.1-4.5 mbgl with the exception of the south portion of the site where bedrock was found at 0.8-1.8 mbgl. This stratification is representative of a 'High' to 'Extreme' vulnerability classification.

6.3.7 Groundwater Wells and Flow Direction

The GSI Well Card Index is a record of wells drilled in Ireland, water supply and site investigation boreholes. It is noted that this record is not comprehensive as licensing of wells is not currently a requirement in the Republic of Ireland. This current index, however, indicates there are no groundwater wells, boreholes or dug wells within the site boundary. A review of the GSI groundwater well database indicates that the closest groundwater abstraction point is located approximately 230m to the north of the site. The well was drilled in 1989 to a depth of 56.2 mbgl and is recorded as being in industrial use with a good yield of 414m³/day. Refer to Figure 6.11 below.

The flow direction in the overburden generally follows no fixed pattern or trend. Flows of this nature are typical of low permeability clay strata with discontinuous gravel lenses, where often the water level measures represent pore water seepages into the overburden monitoring well (opposed to bedrock wells) or perched groundwater conditions (not bedrock aquifer water). Monitoring wells were not installed in bedrock during the site investigation undertaken, so no accurate groundwater gradient can be derived. However, based on regional groundwater flow the flow direction will be north towards the Walkinstown Stream.

None of the wells listed in the immediate vicinity of the site are categorised as domestic use. The area is serviced by public mains therefore it is unlikely that any wells are used for potable supply. There are no recorded groundwater resource protection zones in the immediate area of the proposed site, i.e., zones surrounding a groundwater abstraction area. There is no risk to any public water supply as the nearest drinking water protection area is located 12.7 km southwest of the Site in Co. Kildare at Kiltel.



Figure 6.11 GSI Well Search Map (Source: GSI, 2025)

6.3.8 Soil Quality

There are no legislated threshold values for soils in Ireland. As such soil samples were compared to a Generic Assessment Criteria (GAC) derived to be protective of human health, water bodies (including groundwater) and also ecology for a resident and commercial/industrial end use.

Generic Assessment Criteria in the UK has been derived using the Contaminated Land Exposure Assessment (CLEA) model to be protective of human health for a number of different land uses. LQM (Land Quality Management) and the CIEH (Chartered Institute of Environmental Health) developed a document in July 2009 detailing their own research and derivation of their own 'LQM GACs'. A total of 82 substances including many organic substances had LQM GACs derived, for the standard land uses of residential, commercial/industrial and allotments. This was updated in 2015 following further research and the derived results are now called LQM/CIEH Suitable 4 Use Level (S4UL). The LQM/CIEH S4ULs are intended for use in assessing the potential risks posed to human health by contaminants in soil and as transparently derived and cautious "trigger values" above which further assessment of the risks or remedial action may be needed. For each contaminant S4ULs have been derived for six land use scenarios based on assessing exposure pathways in each planning scenario. In this instance the commercial scenario has been considered. Soil type and soil organic matter (SOM) has an influence on the behaviour of contaminants. S4ULs have been derived for three SOM contents (1%, 2.5% and 6%) to cover the likely range in soils. A prudent approach has been taken by considering the lower 1% SOM content.

The UK values do not have any legal standing within the Republic of Ireland and no statutory guidance for assessing the significance of soil contamination currently exists. However, the values do provide a means of placing the data within context when considering magnitude of risk and have been used in that capacity for this assessment.

During the 2021 site investigations (February and March), samples were recovered from the on-site borehole locations and sent for analysis. In order to assess materials, which may be excavated and removed from Site, in terms of waste classification, a selection of samples collected were analysed for a suite of parameters which allows for the assessment of the soils in terms of total pollutant content for classification of materials as hazardous or non-hazardous referred to as the 'RILTA Suite'. In total, 17 no. soil samples were collected by GII in 2021 from window samples and boreholes drilled and were analysed throughout the subject site. The suite was selected due to the unknown origin of the material underlying the Site and no evidence of specific contaminants of concern highlighted in the Site history. The laboratory testing was completed by Element Materials Technology (EMT) in the UK; EMT is a UKAS accredited laboratory (BSM, 2021).

Full laboratory result tables for the soil samples are presented in Table 6.3. The soil samples were analysed for the following parameters:

- Metals (Sb, As, Ba, Cd, Cr, Cu, Pb, Hg, Mo, Ni, Se and Zn);
- Polychlorinated Biphenyls (PCB);
- Total Petroleum Hydrocarbons Criteria Working Group (TPH CWG);
- Polycyclic Aromatic Hydrocarbons (PAHs);
- BTEX compounds (benzene, toluene, ethylbenzene and xylenes) and methyl tert-butyl ether (MTBE);
- Total organic carbon (TOC); and
- Leachable component of a range of organic and inorganic parameters.
- Asbestos.

The laboratory analysis did not identify any asbestos containing materials (ACMs) in any of the samples tested. All of the samples collected at the site were categorised as inert Non-hazardous (as per Council Decision annex 2003/33/EC). There was no evidence of waste deposited on-site during site investigation works.

The full analytical laboratory report is presented in Appendix 6.2. Soil results were compared to the Generic Assessment Criteria (GAC) concentrations. GACs are soil concentrations that have been derived for a defined set of generic assumptions and are used as trigger values in determining whether further risk management action is required in cases where detailed quantitative risk assessment is not

being undertaken. There are no published Generic Assessment Criteria for soils in the Republic of Ireland. Instead, reliance is often placed on criteria from the UK and the Netherlands.

As can be seen in Table 6.3 below, all parameter concentrations recorded values below the most conservative threshold value for the LQM/CIEH for HHRA (Human Health Risk Assessment) Residential and Commercial Threshold at 1% SOM.

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Table 6.3 Soil Quality Results

Sample ID Laboratory Report Sample Type Sample Depth Sample Date					WS01	WS03	WS04	WS05	WS06	WS09	WS10	WS11	WS08A
					Element	Element	Element	Element	Element	Element	Element	Element	Element
					21/9/25	21/9/25	21/9/25	21/9/25	21/9/25	21/9/25	21/9/25	21/9/25	21/9/25
					Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
					0.5	1.5	1.3	2.1	1.0	1.7	0.5	2.5	1.0
					18/01/2021	18/01/2021	18/01/2021	19/01/2021	19/01/2021	19/01/2021	20/01/2021	20/01/2021	20/01/2021
Parameters	Units	LOD	LQM/CIEH S4ul for HHRA Residential Threshold (mg/kg)	LQM/CIEH S4ul for HHRA Commercial Threshold (mg/kg)									
Metals													
Antimony	mg/kg	<1	nv	nv	2	1	2	2	2	2	2	2	2
Arsenic	mg/kg	<0.5	40	640	11.7	6.2	8.5	7.4	5.8	9.4	12.1	9.1	4.0
Barium	mg/kg	<1	nv	nv	67	51	49	43	40.0	50.0	66.0	64.0	30.0
Cadmium	mg/kg	<0.1	85	190	2.1	1	1.5	1.6	1.5	1.5	2.2	1.6	1
Chromium	mg/kg	<0.5	910	8,600	51	30.9	37.9	24.6	66.4	67.7	42.6	34.8	71.7
Copper	mg/kg	<1	7,100	68,000	27	14	19	21	15	25	29	22	11
Lead	mg/kg	<5	nv	nv	35	23	13	12	8	13	18	11	11
Mercury	mg/kg	<0.1	1.2	58vap (25.8)	-	-	-	-	-	-	-	-	-
Molybdenum	mg/kg	<0.1	nv	nv	4.8	2.4	3.3	3.1	5.4	5.9	5.1	4.7	5.8
Nickel	mg/kg	<0.7	180	980	34	17.6	20.1	25.6	21.7	44.4	37.9	31.3	13.4
Selenium	mg/kg	<1	430	12,000	-	-	-	5	-	1	1	-	-
Zinc	mg/kg	<5	40,000	730,000	94	47	72	64	62	87	102	83	45
PAH MS													
Naphthalene	mg/kg	<0.04	2.3	190(76.4)sol	-	0.08	-	-	-	-	-	-	-
Acenaphthylene	mg/kg	<0.03	170	83000(86.1)sol	-	0.08	-	-	-	-	-	-	-
Acenaphthene	mg/kg	<0.05	210	84000(57.0)	-	-	-	-	-	-	-	-	-
Fluorene	mg/kg	<0.04	170	63000(30.9)sol	-	0.18	-	-	-	-	-	0.06	-
Phenanthrene	mg/kg	<0.03	95	22,000	-	0.27	-	-	-	-	-	0.06	0.03
Anthracene	mg/kg	<0.04	2,400	520,000	-	-	-	-	-	-	-	-	-
Fluoranthene	mg/kg	<0.03	280	23,000	0.03	0.11	-	-	-	-	-	-	0.05
Pyrene	mg/kg	<0.03	620	54,000	0.03	0.11	-	-	-	-	-	-	0.04
Benzo(a)anthracene	mg/kg	<0.06	7.2	170	-	0.08	-	-	-	-	-	-	-
Chrysene	mg/kg	<0.02	15	350	0.02	0.07	-	-	-	-	-	-	-
Benzo(b)fluoranthene	mg/kg	<0.07	nv	nv	-	0.12	-	-	-	-	-	-	-
Benzo(a)pyrene	mg/kg	<0.04	2.2	35	-	-	-	-	-	-	-	-	-
Indeno(123cd)pyrene	mg/kg	<0.04	nv	500	-	-	-	-	-	-	-	-	-
Dibenzo(ah)anthracene	mg/kg	<0.04	0.24	4	-	-	-	-	-	-	-	-	-
Benzo(ghi)perylene	mg/kg	<0.04	320	3,900	-	-	-	-	-	-	-	-	-
Coronene	mg/kg	<0.04	nv	nv	-	-	-	-	-	-	-	-	-
PAH 16 Total	mg/kg	<0.22	nv	nv	-	0.23	-	-	-	-	-	-	-
PAH 17 Total	mg/kg	<0.64	nv	nv	-	1.1	-	-	-	-	-	-	-
Benzo(b)fluoranthene	mg/kg	<0.05	2.6	44	-	0.09	-	-	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	<0.02	77	1,200	-	0.03	-	-	-	-	-	-	-
Benzo(j)fluoranthene	mg/kg	<1	nv	nv	-	-	-	-	-	-	-	-	-
PAH Surrogate % Recovery	mg/kg	<0	nv	nv	91	95	96	100	97	98	93	108	111
Mineral Oil (C10-C40)	mg/kg	<30	nv	nv	-	116	-	-	-	-	-	225	-
TPH CWG													
Aliphatics													
>C5-C6	mg/kg	<0.1	42	3,200 (304) sol	-	-	-	-	-	-	-	-	-
>C6-C8	mg/kg	<0.1	100	7,800 (144)sol	-	0.5	-	-	-	-	-	-	-
>C8-C10	mg/kg	<0.1	27	2,000 (78)sol	-	9.1	-	-	-	-	-	2.3	-
>C10-C12	mg/kg	<0.2	130	9,700 (48)sol	-	18.2	-	-	-	-	-	21.8	-
>C12-C16	mg/kg	<4	1100	59,000 (24)sol	-	49	-	-	-	-	-	90	-
>C16-C21	mg/kg	<7	85,000 (combined)	1,800,000 (combined)	-	49	-	-	-	-	-	85	-
>C21-C35	mg/kg	<7	85,000	1,800,000	-	-	-	-	-	-	-	28	-
>C35-C40	mg/kg	<7	85,000	1,800,000	-	-	-	-	-	-	-	-	-
Total aliphatics C5-40	mg/kg	<26	nv	nv	-	126	-	-	-	-	-	227	-
Aromatics													
>C5-EC7	mg/kg	<0.1	370	26,000(1220)sol	-	-	-	-	-	-	-	-	-
>EC7-EC8	mg/kg	<0.1	860	56,000(869) vap	-	-	-	-	-	-	-	-	-
>EC8-EC10	mg/kg	<0.1	47	3,500(813) vap	-	0.5	-	-	-	-	-	-	-
>EC10-EC12	mg/kg	<0.2	250	18,000(364) vap	-	14.8	-	-	-	-	-	-	-
>EC12-EC16	mg/kg	<4	1800	38,000(169)sol	-	50	-	-	-	-	-	31	-
>EC16-EC21	mg/kg	<7	1900	28,000	-	49	-	-	-	-	-	52	-
>EC21-EC35	mg/kg	<7	1900	28,000	-	15	-	-	-	-	-	16	-
>EC35-EC40	mg/kg	<7	1900	28,000	-	-	-	-	-	-	-	-	-
Total aromatics C5-40	mg/kg	<26	nv	nv	-	129	-	-	-	-	-	99	-
Total aliphatics and aromatics(C5-40)	mg/kg	<52	nv	nv	-	255	-	-	-	-	-	326	-
Methyl Tertiary Butyl Ether	ug/kg	<5	nv	nv	-	11	-	-	-	-	-	-	-
Benzene	mg/kg	<0.005	0.38	27	-	-	-	-	-	-	-	-	-
Toluene	mg/kg	<0.005	880(869) vap	56,000(869) vap	-	-	-	-	-	-	-	-	-
Ethylbenzene	mg/kg	<0.005	83	5,700(518) vap	-	0.046	-	-	-	-	-	0.015	-
m/p-Xylene	mg/kg	<0.005	m: 820 p: 790	m: 6,200(625) vap p: 5,900(578) sol	-	0.182	-	-	-	-	-	0.042	-
o-Xylene	mg/kg	<0.005	88	6,600(478)sol	-	0.188	-	-	-	-	-	-	-
PCB 28	ug/kg	<5	nv	nv	-	-	-	-	-	-	-	-	-
PCB 52	ug/kg	<5	nv	nv	-	-	-	-	-	-	-	-	-
PCB 101	ug/kg	<5	nv	nv	-	-	-	-	-	-	-	-	-
PCB 118	ug/kg	<5	nv	nv	-	-	-	-	-	-	-	-	-
PCB 138	ug/kg	<5	nv	nv	-	-	-	-	-	-	-	-	-
PCB 153	ug/kg	<5	nv	nv	-	-	-	-	-	-	-	-	-
PCB 180	ug/kg	<5	nv	nv	-	-	-	-	-	-	-	-	-
Total 7 PCBs	ug/kg	<35	nv	nv	-	-	-	-	-	-	-	-	-
Natural Moisture Content	%	<0.1	nv	nv	14.2	18.4	7.2	12.5	11.9	8.7	14.3	13.8	6.6
Moisture Content (% Wet Weight)	%	<0.1	nv	nv	12.4	15.5	6.8	11.1	10.7	8	12.5	12.1	6.2
Hexavalent Chromium	mg/kg	<0.3	6	33	-	-	-	-	-	-	-	-	-
Chromium III	mg/kg	<0.5	910	8,600	51	30.9	37.9	24.6	66.4	67.7	42.6	34.8	71.7
Total Organic Carbon	%	<0.02	nv	nv	0.89	0.61	0.38	0.38	0.36	0.45	0.67	0.35	0.34
pH	pH units	<0.01	nv	nv	8.21	7.73	8.61	8.77	8.27	8.41	8.19	8.18	8.55
Legend													
0.45 Results exceed LQM/CIEH S4ul for HHRA Residential Threshold without homegrown produce at 1% SOM (mg/kg)													
0.45 Results exceed LQM/CIEH S4ul for HHRA Commercial Threshold at 1% SOM (mg/kg)													
- Results below LOD													
nv Guideline threshold value not available													
Notes													
HHRA 2015 - LQM/CIEH Suitable 4 Use Levels based on 'Commercial' and/or 'residential' land use using 1% SOM. Metals are compared against a 6% SOM													
Sol : sol S4UL presented exceed the solubility saturation limit, which is presented in brackets													
Vap: vap S4UL presented exceed the vapour saturation limit which is presented in brackets													

Table 6.3 Soil Quality Results (Part 2)

Sample ID					BH01	BH03	BH07	BH08	BH-02A	BH-04	BH-05	BH-06
Laboratory					Element	Element	Element	Element	Element	Element	Element	Element
Report					21/925	21/925	21/925	21/925	21/1882	21/1882	21/1882	21/1882
Sample Type					Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Depth					0.2	1.0	1.0	2.0	0.00-0.50	0.00-1.70	2.50-2.40	3.00-3.30
Sample Date					27/01/2021	27/01/2021	27/01/2021	27/01/2021	11/02/2021	11/02/2021	11/02/2021	11/02/2021
Parameters	Units	LOD	LQM/CIEH S4ul for HHRA Residential Threshold (mg/kg)	LQM/CIEH S4ul for HHRA Commercial Threshold (mg/kg)								
Metals												
Antimony	mg/kg	<1	nv	nv	1		1	2	-	1	2	
Arsenic	mg/kg	<0.5	40	640	14.0	7.0	6.1	7.4	6.2	11.1	9.7	5.0
Barium	mg/kg	<1	nv	nv	53.0	58.0	58.0	49.0	41.0	52.0	60.0	50.0
Cadmium	mg/kg	<0.1	85	190	1.4	2.1	1.8	2.2	1.5	0.9	1.8	1.2
Chromium	mg/kg	<0.5	910	8,600	37.7	35.8	38.9	39.2	32.6	51.1	35.9	30.1
Copper	mg/kg	<1	7,100	68,000	19	27	48	121	16	17	27	9
Lead	mg/kg	<5		nv	10	11	12	16	12	16	16	7
Mercury	mg/kg	<0.1	1.2	58vap (25.8)	-	-	-	-	-	-	-	-
Molybdenum	mg/kg	<0.1	nv	nv	3.6	4.5	3.8	3.6	3	3.6	3.8	2.7
Nickel	mg/kg	<0.7	180	980	21.7	28.5	27.7	35.7	19.4	22.2	33.6	12.4
Selenium	mg/kg	<1	430	12,000	1	1	1	7	-	-	1	-
Zinc	mg/kg	<5	40,000	730,000	54	84	80	101	50	60	80	61
PAH MS												
Naphthalene	mg/kg	<0.04	2.3	190(76.4)sol	-	-	-	-	-	-	-	-
Acenaphthylene	mg/kg	<0.03	170	83000(86.1)sol	-	-	-	-	-	-	-	-
Acenaphthene	mg/kg	<0.05	210	84000(57.0)	-	-	-	-	-	-	-	-
Fluorene	mg/kg	<0.04	170	63000(30.9)sol	-	-	-	-	-	-	-	-
Phenanthrene	mg/kg	<0.03	95	22,000	-	-	-	-	-	-	-	-
Anthracene	mg/kg	<0.04	2,400	520,000	-	-	-	-	-	-	-	-
Fluoranthene	mg/kg	<0.03	280	23,000	-	-	-	-	-	-	0.11	-
Pyrene	mg/kg	<0.03	620	54,000	-	-	-	-	-	-	0.11	-
Benzo(a)anthracene	mg/kg	<0.06	7.2	170	-	-	-	-	-	-	0.1	-
Chrysene	mg/kg	<0.02	15	350	-	-	-	-	-	-	0.08	-
Benzo(b)fluoranthene	mg/kg	<0.07	nv	nv	-	-	-	-	-	-	0.14	-
Benzo(a)pyrene	mg/kg	<0.04	2.2	35	-	-	-	-	-	-	0.06	-
Indeno(123cd)pyrene	mg/kg	<0.04	nv	500	-	-	-	-	-	-	-	-
Dibenzo(ah)anthracene	mg/kg	<0.04	0.24	4	-	-	-	-	-	-	-	-
Benzo(ghi)perylene	mg/kg	<0.04	320	3,900	-	-	-	-	-	-	-	-
Coronene	mg/kg	<0.04	nv	nv	-	-	-	-	-	-	-	-
PAH 16 Total	mg/kg	<0.22	nv	nv	-	-	-	-	-	-	0.31	-
PAH 17 Total	mg/kg	<0.64	nv	nv	-	-	-	-	-	-	0.67	-
Benzo(b)fluoranthene	mg/kg	<0.05	2.6	44	-	-	-	-	-	-	0.1	-
Benzo(k)fluoranthene	mg/kg	<0.02	77	1,200	-	-	-	-	-	-	0.04	-
Benzo(j)fluoranthene	mg/kg	<1	nv	nv	-	-	-	-	-	-	-	-
PAH Surrogate % Recovery	mg/kg	<0	nv	nv	93	88	93	94	91	90	88	92
Mineral Oil (C10-C40)	mg/kg	<30	nv	nv	73	-	-	-	42	-	-	180
TPH CWG												
Aliphatics												
>C5-C6	mg/kg	<0.1	42	3,200 (304) sol	-	-	-	-	-	-	-	-
>C6-C8	mg/kg	<0.1	100	7,800 (144)sol	-	-	-	-	-	-	-	-
>C8-C10	mg/kg	<0.1	27	2,000 (78)sol	-	-	-	-	-	-	-	0.1
>C10-C12	mg/kg	<0.2	130	9,700 (48)sol	-	-	-	-	-	-	-	10.2
>C12-C16	mg/kg	<4	1100	59,000 (24)sol	-	-	-	-	10	-	-	62
>C16-C21	mg/kg	<7	65,000 (combined)	1,600,000 (combined)	-	-	-	-	20	-	-	65
>C21-C35	mg/kg	<7	65,000	1,600,000	56	-	-	-	12	-	-	23
>C35-C40	mg/kg	<7	65,000	1,600,000	17	-	-	-	-	-	-	-
Total aliphatics C5-40	mg/kg	<26	nv	nv	73	-	-	-	42	-	-	180
Aromatics												
>C5-EC7	mg/kg	<0.1	370	26,000(1220)sol	-	-	-	-	-	-	-	-
>EC7-EC8	mg/kg	<0.1	860	56,000(869)vap	-	-	-	-	-	-	-	-
>EC8-EC10	mg/kg	<0.1	47	3,500(613)vap	-	-	-	-	-	-	-	-
>EC10-EC12	mg/kg	<0.2	250	16,000(364)sol	-	-	-	-	-	-	-	-
>EC12-EC16	mg/kg	<4	1800	36,000(169)sol	-	-	-	-	-	-	-	28
>EC16-EC21	mg/kg	<7	1900	28,000	12	-	-	-	-	-	-	52
>EC21-EC35	mg/kg	<7	1900	28,000	106	-	-	-	-	-	-	15
>EC35-EC40	mg/kg	<7	1900	28,000	40	-	-	-	-	-	-	-
Total aromatics C5-40	mg/kg	<26	nv	nv	158	-	-	-	-	-	-	95
Total aliphatics and aromatics(C5-40)	mg/kg	<52	nv	nv	231	-	-	-	-	-	-	255
Methyl Tertiary Butyl Ether	ug/kg	<5	nv	nv	-	-	-	-	-	-	-	-
Benzene	mg/kg	<0.005	0.38	27	-	-	-	-	-	-	-	-
Toluene	mg/kg	<0.005	880(869)vap	56,000(869)vap	-	-	-	-	0.014	-	-	-
Ethylbenzene	mg/kg	<0.005	83	5,700(518)vap	-	-	-	-	-	-	-	-
m/p-Xylene	mg/kg	<0.005	m: 820 p: 790	m: 6,200(625)vap p: 5,900(578)sol	-	-	-	-	0.01	-	-	-
o-Xylene	mg/kg	<0.005	88	6,600(478)sol	-	-	-	-	-	-	-	-
PCB 28	ug/kg	<5	nv	nv	-	-	-	-	-	-	-	-
PCB 52	ug/kg	<5	nv	nv	-	-	-	-	-	-	-	-
PCB 101	ug/kg	<5	nv	nv	-	-	-	-	-	-	-	-
PCB 118	ug/kg	<5	nv	nv	-	-	-	-	-	-	-	-
PCB 138	ug/kg	<5	nv	nv	-	-	-	-	-	-	-	-
PCB 153	ug/kg	<5	nv	nv	-	-	-	-	-	-	-	-
PCB 180	ug/kg	<5	nv	nv	-	-	-	-	-	-	-	-
Total 7 PCBs	ug/kg	<35	nv	nv	-	-	-	-	-	-	-	-
Natural Moisture Content	%	<0.1	nv	nv	8.5	14.7	13.8	22	13.6	13.7	14.9	4.3
Moisture Content (% Wet Weight)	%	<0.1	nv	nv	7.8	12.8	12.1	18	12	12	13	4.1
Hexavalent Chromium	mg/kg	<0.3	6	33	-	-	-	-	-	-	-	-
Chromium III	mg/kg	<0.5	910	8,600	37.7	35.8	38.9	39.2	32.6	51.1	35.9	30.1
Total Organic Carbon	%	<0.02	nv	nv	0.34	0.32	0.3	0.29	0.38	0.24	0.35	0.34
pH	pH units	<0.01	nv	nv	8.78	8.73	8.6	8.09	8.44	9.17	8.65	8.75
Legend												
0.45 Results exceed LQM/CIEH S4ul for HHRA Residential Threshold without homegrown produce at 1% SOM (mg/kg)												
0.45 Results exceed LQM/CIEH S4ul for HHRA Commercial Threshold at 1% SOM (mg/kg)												
- Results below LOD												
nv Guideline threshold value not available												
Notes												
HHRA 2015 - LQM/CIEH Suitable 4 Use Levels based on 'Commercial' and/or 'residential' land use using 1% SOM. Metals are compared against a 6% SOM												
Sol : sol S4UL presented exceed the solubility saturation limit, which is presented in brackets												
Vap: vap S4UL presented exceed the vapour saturation limit which is presented in brackets												

6.3.9 Groundwater Quality

The European Communities Directive 2000/60/EC established a framework for community action in the field of water policy (commonly known as the Water Framework Directive [WFD]). The WFD required 'Good Water Status' for all European water by 2027, to be achieved through a system of river basin management planning and extensive monitoring. 'Good status' means both 'Good Ecological Status' and 'Good Chemical Status'. The EPA co-ordinates the activities of the River Basin Districts (RBDs), Local Authorities and State agencies in implementing the WFD, and operates a groundwater quality monitoring programme undertaking surveys and studies across the Republic of Ireland (ROI).

The Groundwater Body (GWB) underlying the site is the Dublin GWB (EU Groundwater Body Code: IE_EA_G_008). Currently, the EPA (2024) classifies the Dublin GWB as having 'Good Status', as per the last WFD cycle (2016-2021). Presently, the groundwater body in the region of the site (Dublin GWB) is classified as being under 'Review' as per the WFD Risk Score system (3rd cycle).

Groundwater samples were collected from the wells installed in BH-04, 06 and 08 on 4th February 2021. The laboratory analysis undertaken on the samples collected from the boreholes included dissolved arsenic, boron, cadmium, copper, chromium (III & VI), cyanide, lead, mercury, nickel, manganese and zinc, aliphatic and aromatic petroleum hydrocarbons, polycyclic aromatic hydrocarbons (PAH), methyl tert butyl ether (MTBE), benzene toluene ethylbenzene and toluene (BTEX), total phenols, pH, electrical conductivity, nitrate, nitrite, chloride, sulphate, ammonia, phosphorus and potassium. The parameter range was based on the site history and the need to establish a comprehensive environmental baseline for the groundwater quality for the site.

The analysis utilised Interim Guideline Values (IGV) published by the EPA and the Groundwater Threshold Values (GTV) set out in the European Communities Environmental Objectives (Groundwater) Regulations (S.I. 9 of 2010). The IGVs are based on, but are more conservative than, the Drinking Water quality standards. The GTVs have only been established for core indicator parameters.

All concentrations of PAHs MTBE, BTEX, and total phenols were below detection limit. However TPH concentrations were detected in BH-04 (18,641µg/l) and BH-06 (XXX). Concentrations in BH-04 but were below detection limit in BH-08.

All inorganics and metals were below detection limit apart from...Elevated levels of Nitrite and Dissolved Potassium were detected in BH04. The levels of manganese in BH-04 and BH-08 and the level of potassium and nitrite in BH-04 exceeded the IGV or GTV.

Refer to tables 6.4-6.6 displayed overleaf.

Table 6.4 Groundwater Metals and Inorganics

Parameter	BH-04	BH-06	BH-08	LOD	Unit	SPA ICV ⁹	GTV ¹⁰
Dissolved Arsenic	<2.5	4.2	5.3	<2.5	ug/l	-	7.5
Dissolved Boron	19	25	24	<12	ug/l	-	750
Dissolved Cadmium	<0.5	<0.5	<0.5	<0.5	ug/l	-	3.75
Total Dissolved Chromium	<1.5	<1.5	<1.5	<1.5	ug/l	-	37.5
Hexavalent Chromium	<0.006	<0.006	<0.006	<0.006	mg/l	0.03	-
Dissolved Copper	<7	<7	<7	<7	ug/l	-	1,500
Dissolved Lead	<5	<5	<5	<5	ug/l	-	18.75
Dissolved Manganese	1166	3	714	<2	ug/l	50	ne ¹¹
Dissolved Mercury	<1	<1	<1	<1	ug/l	-	0.75
Dissolved Nickel	9	<2	9	<2	ug/l	-	15
Dissolved Potassium	8.1	1.4	2.5	<0.1	mg/l	5	ne
Dissolved Zinc	<3	<3	<3	<3	ug/l	100	ne
Sulphate	20.6	29	21	<0.5	mg/l	-	187.5
Chloride	7.4	8.3	9.5	<0.3	mg/l	-	187.5
Nitrate as NO ₃	4.9	<0.2	0.4	<0.2	mg/l	-	37.5
Nitrite as NO ₂	0.38	<0.02	<0.02	<0.02	mg/l	0.1	375,000
Total Cyanide	<0.01	<0.01	<0.01	<0.01	mg/l	-	0.0375
Ammoniacal Nitrogen as NH ₃	0.2	<0.03	<0.03	<0.03	mg/l	-	0.175
Electrical Conductivity @25C [#]	592	819	650	<2	µS/cm	1,000	1,875
pH	7.88	7.36	7.65	<0.01	pH units	≥ 6.5 - ≤ 9.5	ne

⁹ EPA Report – Towards Setting Guideline Values for the Protection of Groundwater in Ireland, Interim Report, 2003.¹⁰ Groundwater Threshold Values as set out in S.I. 9 of 2010.¹¹ ne – not established.

Table 6.5 Groundwater PAHs

Parameter	BH-04	BH-06	BH-08	LOD	Unit	EPA 16V	GTV
Naphthalene	<5.0	<0.1	<0.1	<0.013	µg/l	1	ne
Acenaphthylene	<0.650	0.215	0.023	<0.013	µg/l	ne	ne
Acenaphthene	0.975	0.168	0.027	<0.014	µg/l	ne	ne
Fluorene	1.712	0.572	0.091	<0.011	µg/l	ne	ne
Phenanthrene	4.311	1.279	0.034	<0.013	µg/l	ne	ne
Anthracene	<0.650	0.121	<0.013	<0.012	µg/l	10,000	ne
Fluoranthene	0.617	<0.012	<0.012	<0.013	µg/l	1	ne
Pyrene	1.769	0.265	<0.013	<0.015	µg/l	ne	ne
Benzo(a)anthracene	<0.750	<0.015	<0.015	<0.011	µg/l	ne	ne
Chrysene	<0.550	<0.011	<0.011	<0.018	µg/l	ne	ne
Benzo(bk)fluoranthene	<0.900	<0.018	<0.018	<0.016	µg/l	ne	ne
Benzo(a)pyrene	<0.800	<0.016	<0.016	<0.011	µg/l	0.01	0.0075
Indeno(123cd)pyrene	<0.550	<0.011	<0.011	<0.01	µg/l	0.05	ne
Dibenzo(ah)anthracene	<0.50	<0.01	<0.01	<0.011	µg/l	ne	ne
Benzo(ghi)perylene	<0.550	<0.011	<0.011	<0.195	µg/l	0.05	ne
PAH 16 Total	<9.750	2.62	<0.195	<0.01	µg/l	ne	0.075
Benzo(b)fluoranthene	<0.50	<0.01	<0.01	<0.01	µg/l	0.5	ne
Benzo(k)fluoranthene	<0.50	<0.01	<0.01	<0.1	µg/l	0.05	ne

Table 6.6 Groundwater Hydrocarbons

Parameter	BH-04	BH-06	BH-08	LOD	Unit	EPA IGTV	GTV
TPH CWG							
Aliphatics							
>C5-C6	<10	<10	<10	<10	µg/l	ne	ne
>C6-C8	<10	<10	<10	<10	µg/l	ne	ne
>C8-C10	<10	205	<10	<10	µg/l	ne	ne
>C10-C12	883	268	<5	<5	µg/l	ne	ne
>C12-C16	3,880	1230	<10	<10	µg/l	ne	ne
>C16-C21	4,270	1080	<10	<10	µg/l	ne	ne
>C21-C35	2,410	350	<10	<10	µg/l	ne	ne
Total aliphatics C5-35	11,443	3133	<10	<10	µg/l	0.01	ne
Aromatics							
>C5-EC7	<10	<10	<10	<10	µg/l	ne	ne
>EC7-EC8	<10	<10	<10	<10	µg/l	ne	ne
>EC8-EC10	<10	<10	<10	<10	µg/l	ne	ne
>EC10-EC12	98	82	<5	<10	µg/l	ne	ne
>EC12-EC16	1390	630	<10	<10	µg/l	ne	ne
>EC16-EC21	3440	930	<10	<10	µg/l	ne	ne
>EC21-EC35	2270	470	<10	<10	µg/l	ne	ne
Total aromatics C5-35	7198	2112	<10	<10	µg/l	0.01	ne
Total aliphatics and aromatics(C5-35)	18641	5245	<10	<10	µg/l	0.01	ne
Total Phenols HPLC	<0.01	<0.01	<0.01	<0.01	mg/l	0.5	ne
MTBE	<0.1	<0.1	<0.1	<0.1	ug/l	30	ne
Benzene	<0.5	<0.5	<0.5	<0.5	ug/l	ne	0.75
Toluene	<5	<5	<5	<5	ug/l	10	ne
Ethylbenzene	<1	<1	<1	<1	ug/l	10	ne
m/p-Xylene	<2	<2	<2	<2	ug/l	10	ne
o-Xylene	<1	<1	<1	<1	ug/l	10	ne

6.3.10 Ground Gas Quality

To assess the on-site potential for hazardous ground gases, the cable percussion boreholes BH-04, 06 and 08 were installed with ground gas monitoring wells to undertake an in-situ ground gas monitoring. The monitoring and assessment were completed with cognisance of BS8485: 2007: Code of practice for the characterisation and remediation from ground gas affected developments, CIRIA Report C665, November 2007 and the NHBC Document; Guidance on the evaluation of development proposals on site where methane and carbon dioxide are present, March 2007.

Throughout the monitoring rounds completed the atmospheric pressure ranged from 996mb to 1018mb, with a maximum Carbon Dioxide (CO₂) concentration of 5.7%v/v being noted at BH-06. The minimum Oxygen (O₂) concentration was noted in a separate event in BH-06 (10.6%). The maximum concentration of methane of 0.6%v/v was noted in BH-08 on one occasion only, the level of methane detected was 0.5%v/v or lower on all other occasions. The maximum flow rate observed was +0.6 l/h.

In accordance with CIRIA C665 Table 8.5 and 8.6 the site derived GSVs for Carbon Dioxide and Methane are 0.003 and 0.033 l/hr respectively. This equates to a CIRIA R149 Characteristic Situation 1, thereby indicating 'Very Low Risk'.

6.3.11 Economic Geology

The GSI (2021) mineral database was consulted to determine whether there were any mineral sites close to the study area. The Belgard Quarry is located in Tallaght c. 3.7 km to the west of the site and is an active limestone quarry.

6.3.12 Geological Heritage

The Geological Survey of Ireland (GSI) Public Viewer (www.gsi.ie/mapping) was reviewed to identify sites of geological heritage in the context of the subject development / surrounding area. As previously mentioned, the nearest Geological Heritage Site is the Greenhills Esker (Site Code SD005) which is located c. 1.2 km to the southwest of the site. This site includes a large accumulation of sands and gravels. Due to the distance and the rise in elevation there is a negligible risk to this heritage site.

6.3.13 Radon

According to the EPA (now incorporating the Radiological Protection Institute of Ireland) the site location is a Low Radon Area where it is estimated that less than 1-5% of dwellings will exceed the Reference Level of 200 Bq/m³.

6.3.14 Geohazards

Much of the Earth's surface is covered by unconsolidated sediments which can be especially prone to instability. Water often plays a key role in lubricating slope failure. Instability is often significantly increased by man's activities in building houses, roads, drainage and agricultural changes. Landslides, mud flows, bog bursts (in Ireland) and debris flows are a result. In general, Ireland suffers few landslides. Landslides are more common in unconsolidated material than in bedrock, and where the sea constantly erodes the material at the base of a cliff and leads to recession of the cliffs. Landslides have also occurred in Ireland in recent years in upland peat areas due to disturbance of peat associated with construction activities. The GSI landslide database was consulted and the nearest landslide to the proposed development was 5.7 km to the south of the site, referred to as the Bohernabreena River valley which occurred in 2016. There have been no recorded landslide events at the site. Due to the local topography and the underlying strata there is a negligible risk of a landslide event occurring at the site.

In Ireland, seismic activity is recorded by the Irish National Seismic Network. The Geophysics Section of the School of Cosmic Physics at the Dublin Institute for Advanced Studies (DIAS) has been recording seismic events in Ireland since 1978. The station configuration has varied over the years. Currently there are five permanent broadband seismic recording stations in Ireland and operated by DIAS. The seismic data from the stations comes into DIAS in real-time and are studied for local and regional events. Records since 1980 show that the nearest seismic activity to the proposed location was in the Irish sea (1.0 – 2.0 MI magnitude) and ~50 km to the south in the Wicklow Mountains. There is a very low risk of seismic activity to the proposed development site.

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

6.3.15 Areas of Conservation

According to the NPWS (2024) on-line database there are no special protected areas (SPA's) or special areas of conservation (SACS's) on or within the boundary of the site. The lands in which the development is located have no formal designations. The nearest designated land to the site is the Grand Canal pNHA (Site Code: 002104) at 1.1km to the north of the northern boundary of the site. As the canal is a contained feature (fully lined) there is no potential for a source pathway linkage. The closest Natura 2000 European sites are the South Dublin Bay Special Area of Conservation (SAC) and Proposed Natural Heritage Area (pNHA) and the South Dublin Bay and River Tolka Estuary Special Protection Area (SPA) which are located c. 9 Km to the east-northeast of the subject site. The nearest designated lands to the site are as follows:

- North Dublin Bay SAC (Site Code: IE000206) c. 9.1 km to the east of the site.
- South Dublin Bay and River Tolka SPA (Site Code: IE004024) c. 9.0 km to the northeast of the site.

- South Dublin Bay SAC (Site Code: IE000210) c. 9.0 km to the east of the site.
- North Bull Island SPA (Site Code: IE004006) c. 10.2 km to the northeast of the site.
- North-West Irish Sea SPA (Site Code: IE004236) c. 11.1 km to the east of the site.
- North Dublin Bay pNHA c. 9.1 km to the northeast of the site.
- South Dublin Bay pNHA c.9.0 km to the east of the site.

The site has no direct or indirect hydrogeological connection / pathway to any of the above listed designated conservation / protected areas.

At present, there is an indirect hydrological connection/linkage to these protected areas via the current stormwater and foul (wastewater) drainage systems (this will be further discussed in Hydrology Chapter 7 of this EIAR).

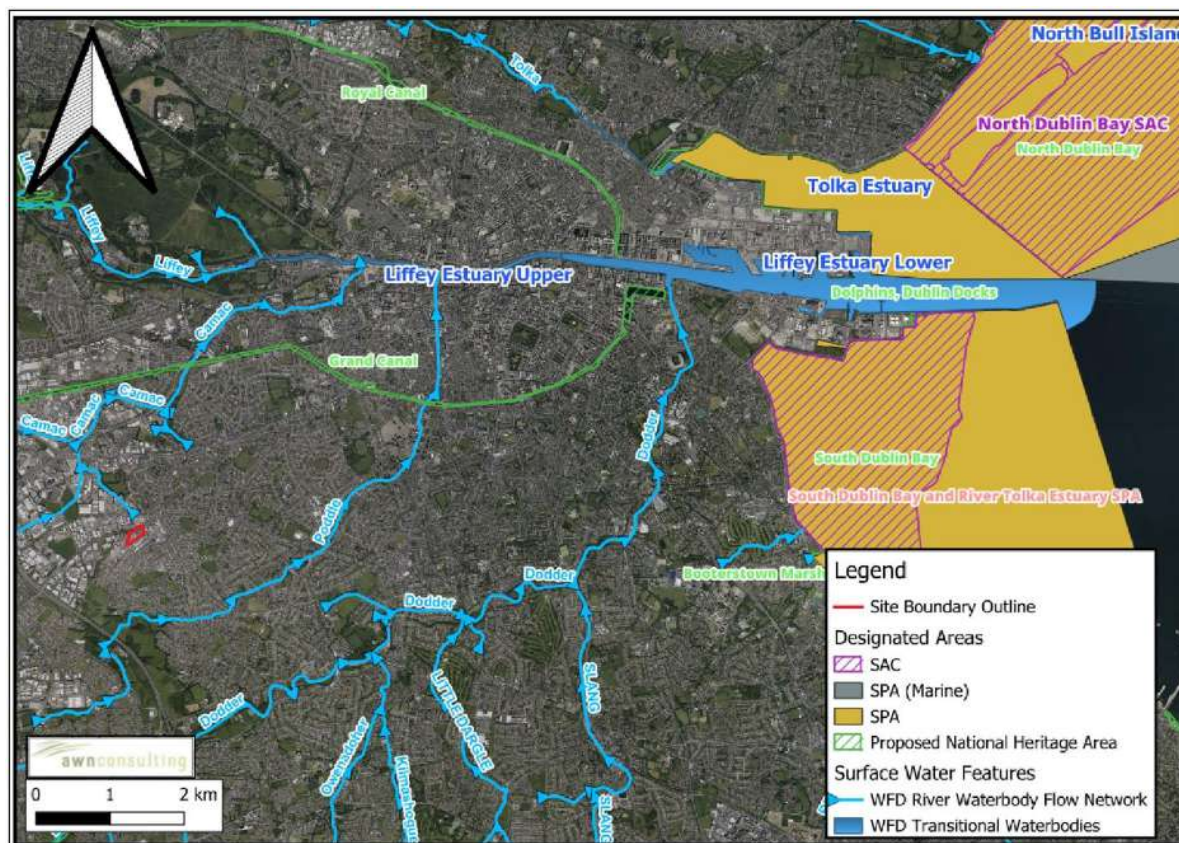


Figure 6.12 Natura 2000 and Conservation Areas Map (Source: EPA, 2025)

6.3.16 Conceptual Site Model

A local cross section of the Site is presented below in Figure 6.13 (A-A' south-west to north-east) and a regional cross section is presented in Figure 6.14 (B-B' north to south). These cross sections and the description below present the Conceptual Site Model (CSM). The CSM was developed in order to identify any likely Source-Pathway-Receptor linkages relating to the site and the proposed development.

- The site is mostly flat at 57.0 m AOD and is gradually sloping down from west to east. The regional gradient falls from south to north;
- During the site investigations undertaken by GII in 2021, bedrock was encountered at depths between 3.1-4.5 mbgl with the exception of the south portion of the site where bedrock was found at 0.8-1.8 mbgl;
- Bedrock comprises dark-grey to black, fine-grained, occasionally cherty, micritic limestones as per the GSI mapping. The limestone is classified by the GSI as a Locally Important Bedrock Aquifer (LI), which is described as 'moderately productive only in local zones'.

- The bedrock aquifer is protected by made ground (infill) underlain by low permeability cohesive deposits (Clay) which in turn overlie granular deposits. Site investigations confirmed that the aquifer would have 'High' to 'Extreme' vulnerability.
- Groundwater flow within the bedrock unit is expected to be northward in line with the regional gradient. There is no continuous perched groundwater table on-site.
- The groundwater body in the region of the site (Dublin GWB) is classified under the WFD Risk Score system as currently 'Under Review'. Previously (2013-2018) the Dublin GWB was given 'Good Status'.

Review of the hydrogeology and geology in the surrounding region indicates that there are no sensitive receptors such as groundwater-fed wetlands, Council Water Supplies/ Group Water Schemes or geological heritage sites which could be impacted by this development. No evidence of disposal of waste material was identified in the subject area. Collection and analysis of representative soil samples for a wide range of parameters shows no evidence of extensive soil or water contamination.

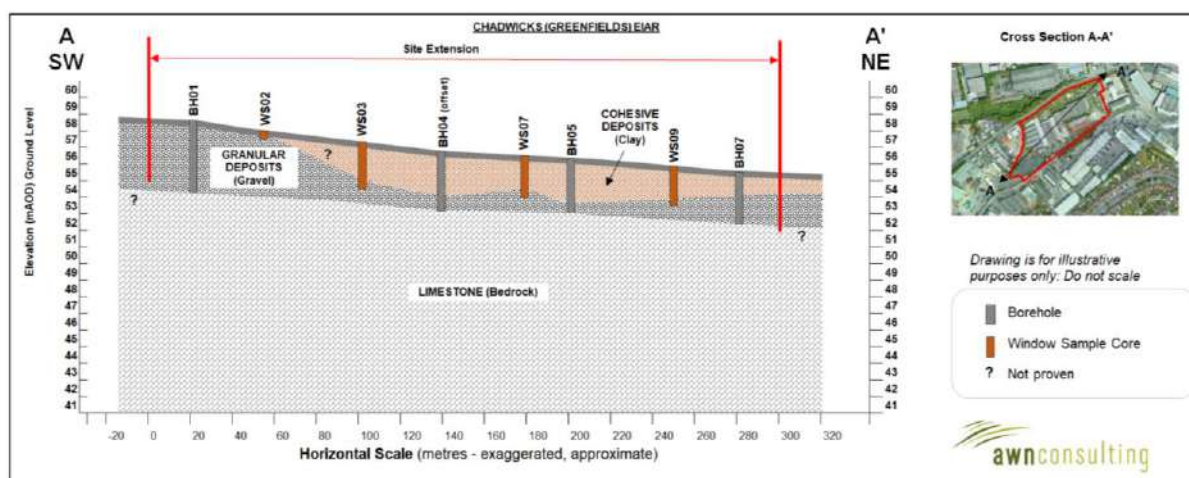


Figure 6.13 Local Cross Section A-A'

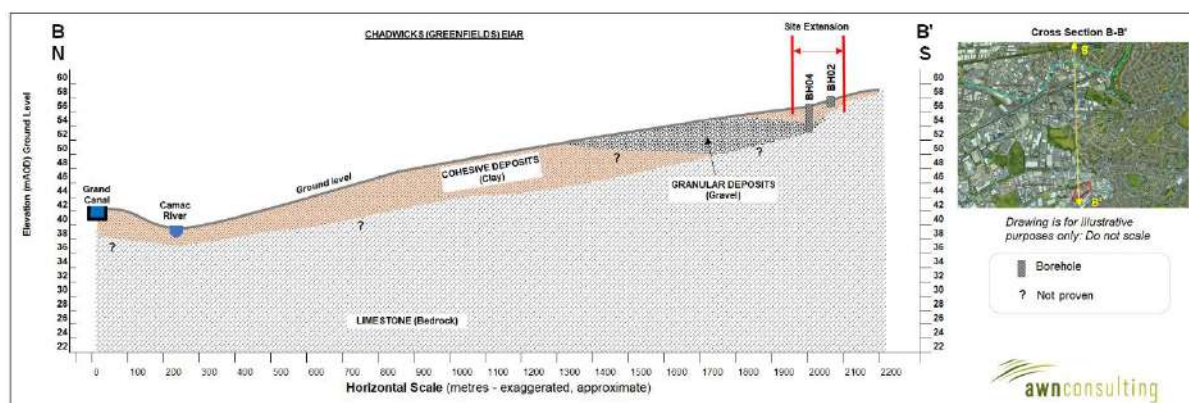


Figure 6.14 Regional Cross Section B-B'

6.3.17 Rating of Importance of Geological and Hydrogeological Attributes

Based on the TII methodology (2009) (See Appendix 6.1), criteria for rating site importance of geological features, the importance of the bedrock and soil features at this site is rated as '*Low Importance*' with low quality, significance or value on a local scale.

Based on the TII methodology (2009) (See Appendix 6.1) the importance of the hydrogeological features at this site is rated as '*Medium Importance*' based on the assessment that the attribute has a medium quality significance or value on a local scale. The aquifer is a Locally Important aquifer but is not widely used for public water supply, or generally for potable use. In addition, there would not be direct or indirect hydrogeological connection between the site and any protected sites (SAC, SPA, NHA).

6.4 Characteristics of the Proposed Development

The proposed development comprises the following:

- The demolition of the former Chadwicks Builders Merchant development comprising 1 no. two storey office building and 9 no. storage/warehouse buildings ranging in height from 3m – 9.9m as follows: Building A (8,764 sq.m.), Building B (1,293 sq.m.), Building C (two-storey office building) (527 sq.m.), Building D (47 sq.m.), Building E (29 sq.m.), Building F (207 sq.m.), Building G (101 sq.m.), Building H (80 sq.m.), Building I (28 sq.m.), and Building J (44 sq.m.), in total comprising 11,120 sq.m.;
- The construction of a mixed-use residential and commercial development comprising 588 no. residential apartment units (291 no. one-beds, 238 no. two-beds and 59 no. three-beds), 1 no. 570.91sqm (443sqm indoor space) childcare facility and 6 no. commercial/retail units in 4 no. blocks (A-D) ranging in height from 5 to 12 storeys as follows:
 - Block A comprises 170 no. apartments (103 no. 1 bed-units, 59 no. 2 bed-units and 8 no. 3- bed units) measuring 8 storeys in height.
 - Block B comprises 197 no. apartments (89 no. 1 bed-units, 92 no. 2 bed-units and 16 no. 3 bed-units) measuring 10 storeys in height.
 - Block C comprises 81 no. apartments (44 no. 1-bed units, 16 no. 2-bed units and 21 no. 3-bed units) measuring 12 storeys in height.
 - Block D comprises 140 no. apartments (55 no. 1 bed-units, 71 no. 2 bed-units and 14 no. 3 bed-units) measuring 8 storeys in height.

All apartments will be provided with private balconies/terraces;

- Provision of indoor communal residential amenity (614.14 sq.m) at ground and first floors of Block A, B C;
- The construction of 1 no. childcare facility with dedicated outdoor play area located at ground floor of Block B;
- The construction of 6 no. commercial units at ground floor level of Blocks A, B and D, and 1 no. commercial unit at first floor level of Block A as follows: Block A has 1 no. unit at ground floor comprising 455.8 sq.m. and 1 no. unit at first floor level comprising 160.79 sq.m., Block B has 1 no. unit at ground floor comprising 190.96 . and Block D has 4 no. units at ground floor comprising 361.6, 232.3, 238 and 174.9 sq.m.;
- The construction of 4 no. vehicular entrances; a primary entrance via vehicular ramp from the north (access from Greenhills Road) and 3 no. secondary entrances from the south for access, emergency access and services (access from existing road to the south of the site) with additional pedestrian accesses proposed along Greenhills Road;

- Provision of 270 no. car parking spaces comprising 240 no. standard spaces (including 6 no. car club spaces) and 13 no. mobility spaces located at surface level and within undercroft car parks within Blocks A, B, C and D, 17 no. commercial/ unloading/ drop-off parking spaces at ground level.
- Provision of 1,269 no. bicycle parking spaces comprising 952 no. residents' bicycle spaces, 10 no. cargo/accessible bicycle spaces in 14 no. bicycle storerooms in surface and undercroft parking areas and 307 no. visitors' bicycle spaces located externally at ground floor level throughout the development;
- Provision of outdoor communal amenity space (3,130.3 sq.m) comprising landscaped courtyards that include play areas, seating areas, grass areas, planting and scented gardens located on podiums at first floor level; provision of communal amenity roof gardens in Block A & B with seating area and planting (746.1 sq.m.) and inclusion of centrally located public open space (6,6650 sq.m.) adjacent to Blocks A, B, C and D comprising grassed areas, planting, seating areas, play areas, water feature, flexible use space and incidental open space/public realm;
- Provision of toucan crossing and all associated road markings and signage from the subject site to a new footpath on northern side of Greenhills Road;
- Development also includes landscaping and infrastructural works, foul and surface water drainage, bin storage, ESB substations, plant rooms, pv panels, boundary treatments, internal roads, cycle paths and footpaths and all associated site works to facilitate the development.

The proposed site plan and layout is depicted in figure 6.15 below.



As outlined below, the activities required for the construction phase of the proposed project represents the greatest risk of potential impact on the geological environment. These activities primarily pertain to the site enabling works, preparation, excavation, levelling and infilling activities required to facilitate construction of the proposed project, and ancillary services.

6.4.1 Construction Phase

The key civil engineering works which relate to the land, soil geology, and Hydrogeological environment during construction of the proposed development are summarised below:

- During the construction phase, excavated topsoil and subsoil and stones (c. 22,808 m³) will be removed off site at a fully authorised soil recovery facility.
- Storage of aggregate materials such as sands and gravels will be stored in clearly marked receptacles in a secure compound area within the contractors' compound on site. Temporary storage of spoil will be managed to prevent accidental release of dust and uncontrolled surface water run-off which may contain sediment and solid matter. Any excavated material temporarily stockpiled onsite for re-use during reinstatement will be managed to prevent accidental release of dust and uncontrolled surface water run-off which may contain sediment etc;
- Temporary storage of fuel required for on site for construction traffic. Liquid materials i.e., fuel storage will be located within temporary bunded areas, doubled skinned tanks or bunded containers (all bunds will conform to standard bunding specifications - BS8007-1987) to prevent spillage;
- There will be a requirement for deliveries of imported aggregates, engineering fill (sands and gravels), and other construction materials include, steel structure, concrete, cladding, ducting and piping. Construction materials will be brought to site by road. Soil requiring removal offsite will be removed from site regularly to ensure there is minimal need for stockpiling. Some of the topsoil will be re-used on site for backfill (levels in some areas need to be raised) and landscaping with some export required. Any surplus topsoil material will be transported off site and disposed of at a fully authorised soil recovery facility / site.
- Construction activities will necessitate storage of cement and concrete materials, temporary oils, and fuels on site. Small localised accidental releases of contaminating substances including hydrocarbons have the potential to occur from construction traffic and vehicles operating on site; and
- No significant dewatering is anticipated during the construction phase which would result in the localised lowering of the water table.

6.4.2 Operational Phase

Altering of local recharge (percolation to ground) only due to the modification in hard standing area. During operation measures there is no requirement for bulk fuels or chemical storage, no requirement for discharge to ground and no requirement for abstraction of groundwater.

6.5 Potential Impact of the Proposed Development

This section details the potential impacts to land, soil and groundwater associated with the proposed development. As outlined below the activities required for the construction phase of the proposed development represents the greatest risk of potential impact on the geological and hydrogeological environment. These activities primarily pertain to the site preparation, excavation and infilling activities required to facilitate construction of the proposed development.

6.5.1 Construction Phase

In the absence of mitigation, the following potential effects to land, soil and groundwater (hydrogeology) have been considered

6.5.1.1 Potential Impacts on Land, Soil, Geology, and Hydrogeology

The primary impact during construction in relation to land soils and geology are:

There is potential for groundwater to become contaminated with pollutants associated with construction activity. Contaminated groundwater which arises from construction sites can pose a significant short-

term risk to the underlying Dublin GWB quality for the duration of the construction if contaminated water is allowed percolate to the aquifer. The potential main contaminants include:

- Pollution due to accidental discharges or spillages during the construction phase;
 - Suspended solids (muddy water with increase turbidity) – arising from excavation and ground disturbance;
 - Cement/concrete (increase turbidity and pH) – arising from construction materials;
 - Hydrocarbons (ecotoxic) – accidental spillages from construction plant or on-site storage. Soils contaminated by petroleum hydrocarbons can affect soil health. They can harm soil microorganisms, reducing their number and activity;
 - Wastewater (nutrient and microbial rich) – arising from accidental discharge from on-site toilets and washrooms.
- Excavation of soil and near-surface rock head will be required for levelling of the site to render it suitable for building the building platform. Local removal and reinstatement (including infilling) of the 'protective' topsoil and subsoil cover across the development area at the site will not change the overall vulnerability category for the site which is already 'extreme'. Capping of significant areas of the site by hardstand/ building following construction and installation of drainage will minimize the potential for contamination of the aquifers beneath the site.
- During the construction phase, excavated topsoil and subsoil and stones (c. 22,808 m³) will be removed off site at a fully authorised soil recovery facility. Where material must be taken off-site, it will be taken for reuse or recovery, where practical, with disposal as a last resort.
- Excavated and stripped soil can be disturbed and eroded by site vehicles during the construction. Rainfall and wind can also impact on non-vegetated/uncovered areas within the excavation or where soil is stockpiled. This can lead to run-off with high suspended solid content which can impact on water bodies. The potential risk from this indirect impact to water bodies and/or habitats from contaminated water would depend on the magnitude and duration of any water quality impact.
- The S.I undertaken by GII (2021) and the laboratory chemistry environmental testing which followed confirmed no evidence of extensive soil contamination. As with all construction projects there is potential for water (rainfall and/or groundwater) to become contaminated with pollutants associated with construction activity. Contaminated water which arises from construction sites can pose a significant short-term risk to groundwater quality for the duration of the construction if contaminated water is allowed to percolate to the aquifer.
- Accidental discharges can also occur from welfare facilities during construction activities. Wastewater can contain high levels of bacteria, chemicals, and organic matter, which could contaminate nearby water sources if discharged incorrectly. The establishment and use of welfare facilities and connection to the existing combined foul sewer, ensures that there are no potential significant impacts; therefore, no additional mitigation is required.

In addition to the unintentional spillages of the primary sources of contaminants mentioned above, there is also a risk that rainfall run-off excavation activities becoming contaminated by these sources. If not appropriately mitigated through containment, management, and monitoring, this could result in the mobilisation of these contaminants, leading to more widespread impacts on the surrounding environment.

6.5.1.2 Potential Impacts on Human Health and Population

There are no recorded groundwater resource protection zones in the immediate area and site is not located near any public groundwater supplies or group schemes i.e., zones surrounding a groundwater abstraction area. There is no risk to any public water supply as the nearest drinking water protection area is located 12.7 km southwest of the Site in Co. Kildare at Killeel and the proposed site is outside of the zone of contribution of this supply. As the site is not within the zone of influence of a public or known water supply there is no potential for any human health impact during construction or operation.

No source pathway linkage to an open water source used for bathing or recreation exists downstream from the site as outlined in the Chapter 7 – Water and Hydrology.

Furthermore, humans can also be exposed to petroleum hydrocarbons or other contaminants by inhaling the fumes / dust from contaminated soil. Depending on the type of contaminant and the level

of exposure, soil contamination can have serious health implications. As no contamination was detected in the site-specific ground investigation report there is no source pathway linkage to humans.

There are no potential impacts during the construction or operation phase on human health and populations

6.5.1.3 Potential Impacts on Water Framework Directive Status

There is a potential of accidental discharges during the construction phase, however these are temporary short-lived events that will not impact on the water status of the underlying bedrock aquifer long-term and as such will not impact on trends in water quality and over all status assessment or programme of measures to improve the water body status.

The potential impact on Water Framework Status during the construction phase is considered to be **negative, imperceptible-not significant**, and **short-term**. With mitigation, the impact will be **neutral, imperceptible**, and **short-term**.

6.5.2 Operational Phase

The proposed development site includes car parking area at the site. Leakage of petrol/ diesel fuel may occur from these areas; run-off may contain a worst-case scenario of 70 litres for example. However, in the event of an accidental leakage of oil from the parking areas, this will be intercepted by the drainage infrastructure proposed and any releases to drainage will be mitigated through hydrocarbon interceptors.

There will be no direct discharges to the ground or abstractions from the bedrock aquifer during the operation of the development. The potential impacts of the development post development in relation to land soils and environment have been assessed under the following headings:

- Localised and Minor Accidental Emissions to Ground from a car leak/delivery truck;
- Modification of land on the site will result in a localised reduction in local recharge to the aquifer.

This provides protection to the underlying aquifer but also reduces local recharge in this area of the aquifer. As the area of aquifer is large this reduction in local recharge will have no significant change in the natural hydrogeological regime. The use of modular permeable pavement (porous surfacing) in the parking areas will allow some percentage of recharge to the underlying bedrock aquifer.

With or without mitigation, the impact of the proposed development on land soils and groundwater post construction is considered to be **neutral, imperceptible**, and **long-term**.

The Site of the proposed Project is zoned for mixed use, general development, opportunity/proposals. As the site was already brownfield development there will be no local loss of agricultural soil, and no impact to mineral resources in the area as a result of the proposed Project.

6.5.2.1 Potential Impacts on Water Framework Directive Status

There is a potential of accidental discharges during the construction phase, however these are temporary short-lived events that will not impact on the water status of the underlying bedrock aquifer long-term and as such will not impact on trends in water quality and over all status assessment or programme of measures to improve the water body status.

The potential impact on Water Framework Status during the construction phase is considered to be **negative, imperceptible-not significant**, and **short-term**. With mitigation, the impact will be **neutral, imperceptible**, and **short-term**.

6.6 Mitigation Measures

This section outlines the measures that will be employed in order to minimise the impact on land, soils, and groundwater of the proposed development.

6.6.1 Construction Phase

A Construction Environmental Management Plan (CEMP) (2025) is included with the application documentation and contained in this EIAR. This outlines the best practice construction techniques and methodologies which will be implemented during construction of the proposed development.

The CEMP and the mitigation measures contained in this EIAR, as well as any relevant conditions of a grant of permission, will be implemented and adhered to by the construction contractor and will be overseen and updated as required if site conditions change by the Project Manager, Environmental Manager and Ecological Clerk of Works where relevant. All personnel working on the Site will be trained in the implementation of the procedures.

The CEMP sets out the proposed procedures and operations to be utilised on the proposed construction site to protect soil and water quality. All mitigation measures outlined here, and within the CEMP will be implemented during the construction phase, as well as any additional measures required pursuant to planning conditions which may be imposed.

As a minimum, the CEMP will be formulated in accordance with best international practice including but not limited to:

- CIRIA, (2001), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors, (C532) Construction Industry Research and Information Association;
- CIRIA (2002) Control of water pollution from construction sites: guidance for consultants and contractors (SPI56) Construction Industry Research and Information Association
- CIRIA (2005), Environmental Good Practice on Site (C650); Construction Industry Research and Information Association
- BPGCS005, Oil Storage Guidelines;
- Eastern Regional Fisheries Board, (2006), Fisheries Protection Guidelines: Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites;
- CIRIA 697, The SUDS Manual, 2007; and
- UK Pollution Prevention Guidelines (PPG) UK Environment Agency, 2004.

In order to reduce impacts on the soils and geology environment, a number of mitigation measures will be adopted as part of the construction works on site. The measures will address the main activities of potential impact which include:

- Control of soil excavation/ infill and export from site;
- Fuel and chemical handling, transport and storage; and
- Control of water during construction.

6.6.1.1 Soil Management

Stockpiles have the potential to cause negative impacts on air and water quality. The effects of soil stripping and stockpiling will be mitigated against through the implementation of appropriate earthworks handling protocol during construction. It is anticipated that any stockpiles will be formed within the boundary of the site and there will be no direct link or pathway from this area to any surface water body. Overburden material will be protected from exposure to wind by storing the material in sheltered parts of the site, where possible.

The strategy for controlling and mitigating potential adverse environmental issues related to soil and contamination during construction will include the following, as appropriate:

- Identification and assessment of the potential for residual ground contamination to be presented prior to the start of any excavation works.
- Minimisation of potential risks to site workers as required by the Safety, Health and Welfare (Construction Regulations) 2013.
- Testing and sampling of excavated soils in order to assess the suitability of materials for re-use on site.

- Dust suppression (e.g., damping down during dry periods) from any contaminated soils by the regular use of water spray during any dry conditions, sheeting of haulage vehicle loads vehicle wheel washes, road sweeping,.
- Stockpiling of contaminated materials will be avoided where possible.
- Stockpiles will be treated to prevent windblown dust.
- The handling and storage of any potentially hazardous liquids on site, e.g. fuels and chemicals, will be controlled and best practice guidelines. Storage tanks/container facilities will have appropriate bunding within the designated area.
- If hazardous liquids escape, remedial action will be taken as soon as possible.
- Where unforeseen contamination is identified during the course of the work, specific investigations will be carried out in the areas in question and appropriate health and safety procedures will be implemented during the removal of the material. A strategy will be prepared to identify, analyse, segregate and control existing contaminated materials on site. In addition to the measures above, all excavated materials will be visually assessed by suitably qualified persons for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of potential contaminants to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted/licensed waste disposal contractor.

6.6.1.2 Run Off Suspended Solids

- During construction, any surfaces which are intended to enable infiltration must be protected from compaction. This includes protecting from heavy traffic or storage materials.
- Silt deposited during construction will be removed.
- Soils will be stabilised and protected from erosion whilst planting becomes established.
- Hydrocarbons or any hazardous chemicals will be stored in specific bunded areas. Refuelling of plant and machinery will also be carried out in bunded areas to minimise risk of any potential pollutants being discharged from the site.
- Pollution control measures will be implemented to control run-off from the site and prevent run-off which is potentially contaminated with sediments or hazardous chemicals entering the drainage network.
- Foul drainage from site offices and compound, where not directed to the existing wastewater network, will be contained and disposed of off-site in an appropriate manner and in accordance with the relevant statutory regulations to prevent the pollution of watercourses.
- A response procedure will be put in place to deal with any accidental pollution events and spillage kits will be available on site. Construction staff will be familiar with the emergency procedures and use of the equipment.
- During earthworks and excavation works care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts;
- Silt reduction measures on site and settlement measures (e.g. silt traps and settlement tanks/ponds or equivalent);
- Any hard surface site roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only;
- A power washing facility or wheel cleaning facility will be installed near to the site compound for use by vehicles exiting the site when appropriate;
- Aggregate will be established at the site entrance points from the construction site boundary extending for at least 10 m;
- The temporary storage of soil will be carefully managed. Stockpiles will be tightly compacted to reduce runoff and graded to aid in runoff collection;
- Construction materials, including aggregates etc. will be stored a minimum of 20-meter buffer distance from any surface water bodies and surface water drainage points;
- Aggregate materials such as sands and gravels will be stored in clearly marked receptacles within a secure compound area to prevent contamination;
- Movement of material will be minimised to reduce the degradation of soil structure and generation of dust;
- Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise the potential for water ingress into excavations;

- Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the site.

6.6.1.3 Sources of Fill and Aggregates

- All fill and aggregate for the proposed development will be sourced from reputable suppliers per the project Contract and Procurement Procedures. All suppliers will be vetted for;
- Aggregate compliance certificates/declarations of conformity for the classes of material specified for the proposed development;
- Environmental Management status; and
- Regulatory and Legal Compliance status of the Company.

6.6.1.4 Cement /concrete works

Where feasible all ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to the underlying subsoil.

No wash-down or wash-out of ready-mix concrete vehicles during the construction works will be carried out at the site within 10 meters of an existing surface water drainage point. Washouts will only be allowed to take place in designated areas with an impervious surface where all wash water is contained and removed from site by road tanker or discharged to foul sewer submit to agreement with Irish Water / FCC.

Pouring of cement-based materials for works will only be carried out in dry conditions. Pumped concrete will be monitored to ensure there is no accidental discharge. Mixer washings and excess concrete will not be discharged directly into the drainage network. Concrete washout areas will be created to avoid any accidental discharge from the proposed development site.

The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.

6.6.1.5 Hydrocarbons and other construction chemicals

The following mitigation measures will be implemented during the construction phase to prevent any spillages to ground of fuels and other construction chemicals and prevent any spillages resulting to surface water and groundwater systems:

- Designation of bunded refuelling areas on the Site;
- Provision of spill kit facilities across the Site;
- Where mobile fuel bowers are used, the following measures will be taken:
 - Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use;
 - The pump or valve will be fitted with a lock and will be secured when not in use;
 - All bowers to carry a spill kit and operatives must have spill response training;
 - Portable generators or similar fuel containing equipment will be placed on suitable drip trays.

In the case of drummed fuel or other potentially polluting substances which may be used during the construction phase, the following measures will be adopted:

- Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded area;
- Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be stored within temporary bunded areas, doubled skinned tanks or bunded containers to a volume of 110% of the capacity of the largest tank/container. Drainage from the bunded area(s) shall be diverted for collection and safe disposal.
- Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage;
- All drums to be quality approved and manufactured to a recognised standard;

- If drums are to be moved around the Site, they will be secured and on spill pallets; and
- Drums will be loaded and unloaded by competent and trained personnel using appropriate equipment.

Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area or within the construction compound (or where possible off the site). In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area. All relevant personnel will be fully trained in the use of this equipment. Guidelines such as *"Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors"* (CIRIA 532, 2001) will be complied with.

The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.

6.6.1.6 Control of Water during Construction

Care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts.

There may be localised pumping of surface run-off from the excavations during and after heavy rainfall events to ensure that the trenches are kept relatively dry. Any minor ingress of groundwater and collected rainfall in the excavation will be pumped out during construction. It is estimated that the inflow rate of groundwater will be low and limited to localised perched water. Due to the very low permeability of the Dublin Boulder Clay and the relative shallow nature for excavations, infiltration to the underlying aquifer is not anticipated.

There shall not be discharge of silty water from the works to any watercourse, should any discharge of construction water be required during the construction phase, discharge will be to foul sewer following agreement with SDCC/ Irish Water. Pre-treatment and silt reduction measures on site will include a combination of silt fencing, settlement measures (silt traps, 20 m buffer zone between machinery and watercourses, refuelling of machinery off site) and hydrocarbon interceptors. The use of slit traps and an oil interceptor (if required) will be adopted if the monitoring indicates the requirements for the same with no silt or contaminated water permitted to discharge to water. Extensive monitoring will be adopted to ensure that the water is of sufficient quality to discharge to water or sewer.

In order to minimise the risk of contamination, any stockpiled material designated for removal will be removed off-site as soon as possible. Surface water drain gratings in areas near or close to where stockpiles are located will be covered by appropriate durable polyurethane covers or similar. Active treatment systems such as silt busters / traps or similar / equivalent may will be adopted, depending on turbidity levels and discharge limits.

6.6.2 Operational Phase

The proposed development design includes hardstand cover across the site and the proposed surface water drainage system for this development has been designed as a sustainable urban drainage system. The surface water design has been designed in accordance with the Greater Dublin Regional Code of Practice for Drainage Works and Sewers for adoption. Any localised car leaks will therefore discharge to the stormwater drainage and be intercepted by petrol / hydrocarbon / oil interceptors. Therefore, the risk of accidental discharge has been adequately addressed through design.

There are no discharges to ground included in the design and no abstractions from the aquifer.

6.7 Residual Impacts

6.7.1 Construction Phase

6.7.1.1 Land, soils, Geology, Hydrogeology

The implementation of the mitigation measures outlined in Section 6.6 of this chapter will ensure that targeted rates of impact to land, soils and ground water are achieved at the site of the Proposed Development during construction and operational phases. When mitigation measures are implemented throughout construction the predicted impact on the environment will be **short-term, imperceptible, and neutral**. With the measures outlined in the EIAR and CEMP, the predicted impact will be **long-term, imperceptible, and neutral**.

6.7.1.2 Human Health and Population

The implementation of the mitigation measures outlined in Section 6.6 of this chapter will ensure that the potential impacts on human health and populations during the construction phase are adequately mitigated. The residual effect on during the construction phase is considered to be **neutral, imperceptible, and short-term**.

6.7.1.3 Water Framework Directive

Even in the absence of the mitigation and monitoring measures detailed in Section 6.6, there will be no predicted degradation of the current Balbriggan (GWB) groundwater body (chemically, ecological and quantity) or any impact on its potential to meet the requirements and/or objectives in the second RBMP 2018-2021 (River Basin Management Plan) and draft third RBMP 2022-2027.

There are appropriately designed mitigation measures which will be implemented during the construction phase to protect the hydrogeological environment. There is a potential of accidental discharges during the construction phase, however these are temporary short-lived events that will not impact on the water status of groundwater bodies long-term and as such will not impact on trends in water quality and over all status assessment.

The residual effect on human health and populations during the construction phase is considered to be **neutral, imperceptible and short-term**.

6.7.2 Operational Phase

6.7.2.1 Land, Soils, Geology, and Hydrogeology

The implementation of the mitigation measures detailed in Section 6.6, will ensure that the potential impacts on land, soils, geology, hydrogeology once the proposed development is constructed and operational are adequately mitigated. The residual effect on surface water quality during the operational phase is considered to be **neutral, imperceptible, and long-term**.

Following the TII criteria (refer to **Appendix 6.1**) for rating the magnitude and significance of impacts on the geological and hydrogeological related attributes, the magnitude of impact is considered **negligible**.

6.7.2.2 Human Health and Population

The implementation of the mitigation measures detailed in Section 6.6, will ensure that the potential impacts on human health and populations once the proposed development is constructed and operational are adequately mitigated. The residual effect on human health and populations during the operational phase is considered to be **neutral, imperceptible, and long-term**.

6.7.2.3 Water Framework Directive Status

There is no potential for adverse or minor temporary or localised effects on the Dublin groundwater body (GWB) as a result of the Proposed Development. Therefore, it has been assessed that it is unlikely that the proposed development will cause any significant deterioration or change on its water body status or prevent attainment, or potential to achieve the WFD objectives or to meet the requirements and/or objectives in the draft third RBMP 2022-2027.

Even in the absence of the mitigation measures detailed in Section 6.6, there will be no predicted degradation of the current water body (chemically, ecological and quantity) or any impact on its potential to meet the requirements and/or objectives in the draft third RBMP 2022-2027.

There are appropriately designed mitigation and design measures which will be implemented during the construction and operation phase to protect the hydrogeological environment. There is a potential of accidental discharges during the construction and operational phases, however these are temporary short-lived events that will not impact on the water status of underlying aquifer long-term and as such will not impact on trends in water quality and over all status assessment.

6.8 Monitoring or Reinstatement

The management of land, soils and ground water during the construction phase will be monitored by the Contractor to ensure compliance with above-listed mitigation measures, and relevant waste management legislation and local authority requirements.

6.8.1 Construction Phase

During construction phase the following monitoring measures will be implemented:

- Soil sampling to confirm disposal options for excavated soils in order to avoid contaminated run-off; and
- Regular inspection and auditing of construction / mitigation measures will be undertaken (e.g., concrete pouring, refuelling, etc). Pouring of cement-based materials for works will only be carried out in dry conditions.
- Weekly checks will be carried out to ensure surface water drains are not blocked by silt, or other items, and that all storage is located at least 10 m from surface water receptors. Regular inspection of surface water run-off and any sediment control measures (e.g. silt traps) will be carried out during the construction phase.

6.8.2 Operational Phase

There will be no requirement for groundwater monitoring as there is no likely discharge to ground and no bulk chemical storage on site.

Petrol / Hydrocarbon interceptors will be maintained and cleaned out in accordance with the manufacturer's instructions. Maintenance of the surface water drainage system and foul sewers as per normal urban developments is recommended to minimise any accidental discharges to ground.

6.9 Interactions

This section discusses interactions between this Chapter and other specialist environmental topics considered in this EIAR. The main interactions of importance to land, soils, geology, and hydrogeology relate to Biodiversity, Hydrology / Water, and Air Quality as follows.

6.9.1 Biodiversity

The proposed development may have temporary negative impacts on biodiversity at site level during construction due to excavation and removal of soil with resultant impact on local biodiversity. It will not impose any significant impact on European Designated sites.

6.9.2 Hydrology

During construction of the proposed development, there will be soil excavation that could impact surface water quality if not adequately mitigated.

6.9.3 Air Quality

During construction of the proposed development, there will be a proportion of dust created that could impact air quality if not adequately mitigated.

6.9.4 Traffic and Transportation

Local Traffic and transportation will be implemented by the additional vehicle movements generated by the volume of excavated soil that will have to be transported off site, resulting in an increase of heavy

good vehicles (HGVs) during construction. The increase in vehicle movements as a result of excavated soil removal during the construction phase will be temporary in duration.

6.10 Cumulative Impacts

All cumulative developments that are already built and in operation contribute to our characterisation of the baseline environment. As such, any further environmental impacts that the proposed development may have in addition to these already constructed and operational cumulative developments has been assessed in the preceding sections of this chapter.

6.10.1 Construction Phase

There are existing residential and commercial developments close by, along with the multiple permissions in the area. This chapter has been prepared with reference to the list of other developments in the locality as outlined in chapter 1 of this EIAR.

In relation to the potential cumulative impact on land, soils, geology, and hydrogeology during the construction phases, the construction works which would have potential cumulative impacts are as follows:

- soil and groundwater contamination due to accidental hydrocarbon/cement leakage to ground.

A Construction Environmental Management Plan (CEMP) (2024) is included with the application documentation. This together with Sections 6.6 and 6.8 outline the best practice construction techniques and methodologies which will be implemented during construction of the proposed development to minimise potential for contamination.

The CEMP will be implemented and adhered to by the construction Contractor and will be overseen and updated as required if site conditions change by the Project Manager, Environmental Manager and Ecological Clerk of Works where relevant. All personnel working on the Site will be trained in the implementation of the procedures.

The works contractors for other planned or permitted developments will also be obliged to ensure that measures are in place to protect soil and water quality in compliance with legislative standards for receiving water quality (European Communities Environmental Objectives (Groundwater) Regulations (S.I. 9 of 2010, S.I. 366 of 2016 and S.I. 287 of 2022).

The implementation of mitigation and monitoring measures detailed in Sections 6.6 and 6.8 as well as the compliance of the above permitted development with their respective planning conditions, will ensure there will be minimal cumulative potential for change to the land, soils, geology, hydrogeological environment during the construction phase of the proposed development. The residual cumulative impact of the proposed development in combination with other planned or permitted developments can therefore be considered to be **neutral, imperceptible, and short-term**.

6.10.2 Operational Phase

In relation to the potential cumulative impact on hydrogeology during the operational phases, the operational activities which would have potential cumulative impacts are as follows:

Increased hard standing areas will reduce local recharge to ground and increase surface water run-off potential if not limited to the green field run-off rate from the Site. Cumulatively this development and others in the area will result in localised reduced recharge to ground and increase in surface run-off; Increased risk of minor accidental discharge of hydrocarbons from car parking areas and along roads is possible unless diverted to surface water system with petrol interceptor;

There will be no loss of greenfield or agricultural land area locally as part of the proposed Project.

The proposed development and the other permitted development listed in in close proximity will result in an increase in hard standing which will result in localised reduced recharge to ground. The aquifer underlying the site is mostly "Locally Important – Bedrock which is Generally Moderately Productive

only in Local Zones". The implementation of SuDs measures on site will mitigate against and reduce the recharge rate to ground.

All nearby developments will also be obliged to ensure that measures are in place to protect soil and water quality in compliance with legislative standards for receiving water quality (European Communities Environmental Objectives (Groundwater) Regulations (S.I. 9 of 2010, S.I. 366 of 2016 and S.I. 287 of 2022).

The implementation of mitigation measures detailed in Section 6.6 as well as the compliance of the above permitted development with their respective planning conditions, will ensure there will be minimal cumulative potential for change to the land, soils, geology, hydrogeological environment during the operational phase of the proposed development. The residual cumulative impact of the proposed development in combination with other planned or permitted developments can therefore be considered to be **neutral, imperceptible, and long-term**.

6.11 Difficulties Encountered

There were no significant difficulties encountered in compiling the specified information for this EIA Chapter.

6.12 Summary

There will be **no long-term residual impact** on land soil geology and hydrogeological receptors, either within or in the vicinity of the proposed development as a result of the proposed development.

6.13 References

- Engineering Services Report- Residential Development at Greenhills Road, Walkinstown, Dublin 12; Lohan & Donnelly Consulting Engineers Limited (2024).
- Construction Environmental Management Plan- development at GREENHILLS ROAD, WALKINSTOWN, DUBLIN 12 AWN Consulting (2025).
- Ground Investigations Ireland Ltd (GII). "Ground Investigations Ireland, Greenhills Road Ground Investigation Report March 2021, Rev A"
- Ground Investigations Ireland Ltd (GII). "Ground Investigations Ireland, Greenhills Road Ground Investigation Report February 2021, Rev A".
- Environmental Protection Agency Act 1992 as amended.
- European Commission, Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (2017).
- Environmental Protection Agency (EPA) 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' (2022).
- South Dublin County Council (SDCC) Development Plan 2022-2028.
- BS 5906:2005 Waste Management in Buildings – Code of Practice.
- Planning and Development Act 2000 (No. 30 of 2000) as amended.
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- CIRIA (2007). CIRIA 697: The SUDS Manual.
- Enterprise Ireland (n.d.). Best Practice Guide BPGCS005: Oil Storage Guidelines.
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- EPA (2025). EPA Maps.
- GSI (2025). GSI Map Viewer.
- Institute of Geologists of Ireland (2013). Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements.
- NPWS (2025). Designations Viewer.
- NRA (2009). Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes.
- Institute of Geologists of Ireland (2013). Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements.
- Teagasc (2025). Teagasc Map Viewer.
- National Roads Authority (NRA) (2009). Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes.

7.0 WATER AND HYDROLOGY

7.1 Introduction

AWN Consulting Ltd. (AWN) has carried out this chapter which assesses and evaluates the potential impacts of the proposed development on the hydrological aspects of the site and surrounding area. In assessing likely potential and predicted effects, account is taken of both the importance of the attributes and the predicted scale and duration of the likely effects.

This Chapter has been written and prepared by Luke Maguire Environmental Consultant and Geoscientist (BSc) at AWN Consulting and Teri Hayes Senior Hydrogeologist and director at AWN Consulting.

Luke Maguire; is an environmental consultant at AWN with over 4 years of experience in environmental consulting and water resources. Luke holds a B.Sc. in Geoscience from Trinity College University of Dublin and has worked on a range of developments including pharmaceutical plants, medical device facilities, ICT facilities and energy projects. Luke has experience in EIA assessment, contaminated soil assessment, flood assessment, basement impact assessment, bulk excavations and largescale dewatering projects.

Teri (BSc MSc PGeol EurGeol) is a hydrogeologist with over 40 years of experience in water resource management and impact assessment. She has a Masters in Hydrogeology and is a former President of the Irish Group of the Association of Hydrogeologists (IAH) and has provided advisory services on water related environmental and planning issues to both public and private sector bodies. She is qualified as a competent person as recognised by the EPA in relation to contaminated land assessment (IGI Register of competent persons www.igi.ie). Her specialist area of expertise is water resource management eco-hydrogeology, and environmental impact assessment.

7.2 Research Methodology

This chapter evaluates the effects, if any, which the proposed development has had or will have on Hydrology as defined in the Environmental Protection Agency (EPA) 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (EPA, 2022). In addition, the document entitled 'Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' by the Transport Infrastructure Ireland (TII, 2009, previously NRA) is referenced where the methodology for assessment of impact is appropriate.

The rating of potential environmental effects on the hydrological environment is based on the standard EIAR impact predictions table included in Chapter 1 which takes account of the quality, significance, duration and type of effect characteristic identified (in accordance with impact assessment criteria provided in the EPA Guidelines (2022) publication).

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

The TII criteria for rating the magnitude and significance of impacts and the importance of hydrological attributes at the site during the EIA stage are also relevant in assessing the impact and are presented in Tables 1-3 in Appendix 5.1.

The principal attributes (and effects) to be assessed include the following:

- River and stream water quality in the vicinity of the site (where available);
- Surface watercourses near the site and potential impact on surface water quality arising from proposed development related works including any discharge of surface water run-off;
- Localised flooding (potential increase or reduction) and floodplains including benefitting lands and drainage districts (if any); and

- Surface water features within the area of the site.

Relevant legislation/Guidelines

- The EU Water Framework Directive, 2000/60/EC;
- The Groundwater Directive, 2006/118/EC;
- The EU Floods Directive, 2007/60/EC; and
- Water Services Acts (2007 – 2014).
- European Communities (Water Policy) Regulations, 2003 (S.I. No. 722 of 2003);
- European Communities (Drinking Water) Regulations 2014 (S.I. 122 of 2014);
- European Communities Environmental Objectives (Surface Waters); Regulations, 2009 and amendments (S.I. No. 272 of 2009 as amended SI No. 77 of 2019);
- European Communities (Good Agricultural Practice for Protection of Waters) Regulations, 2010 (S.I. No. 610 of 2010); and
- European Communities (Technical Specifications for the Chemical Analysis and Monitoring of Water Status) Regulations, 2011 (S.I. No. 489 of 2011);
- Statutory Instrument (SI) No. 293 of 1988 European Communities (Quality of Salmonid Waters) Regulations 1988
- Local Government (Water Pollution) Acts 1977-1990;
- SI No. 258 of 1988 Water Quality Standards for Phosphorus Regulations 1998;
- Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites (Eastern Regional Fisheries Board);
- Central Fisheries Board Channels and Challenges – The enhancement of Salmonid Rivers;
- CIRIA C532 Control of Water Pollution from Construction Sites Guidance for Consultants and Contractors;
- CIRIA C648 Control of Water Pollution from Constructional Sites;
- Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes (NRA/TII, 2006);
- OPW 2009 The planning System and flood Risk management- Guidelines for Planning Authorities.

7.2.1 Sources of Information

Desk-based hydrological information in the vicinity of the site was obtained through accessing databases and other archives where available. Data was sourced from the following:

- Environmental Protection Agency (EPA) – website mapping and database information. Envision water quality monitoring data for watercourses in the area;
- River Basin Management Plan for Ireland 2022-2027.
- South Dublin County Council Development Plan 2022-2028.
- Uisce Éireann- Ringsend WWTP (D0034-01) AER 2022.
- The Planning System and Flood Risk Management, Guidelines for Planning Authorities (Department of the Environment, Heritage and Local Government (DoEHLG) and the Office of Public Works (OPW));
- Office of Public Works (OPW) flood mapping data (www.floodmaps.ie)
- Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors' (CIRIA 532, 2001); and
- National Parks and Wildlife Services (NPWS) – Protected Site Register.

Site-specific data was derived from the following sources:

- Engineering Services Report- Residential Development at Greenhills Road, Walkinstown, Dublin 12; Lohan & Donnelly Consulting Engineers Limited (2024).
- Construction Environmental Management Plan- development at Greenhills Road, Walkinstown, Dublin 12 AWN Consulting (2025).
- Ground Investigations Ireland Ltd (GII). "Ground Investigations Ireland, Greenhills Road Ground Investigation Report March 2021, Rev A"
- Ground Investigations Ireland Ltd (GII). "Ground Investigations Ireland, Greenhills Road Ground Investigation Report February 2021, Rev A".

- Flood Risk Assessment (FRA). Development at Greenhills Road, Walkinstown, Dublin 12; Lohan & Donnelly Consulting Engineers Limited (2023).
- Various design site plans and drawings; and
- Consultation with site engineers/ planners/ architects.

7.3 Receiving Environment

7.3.1 Site Area Description

The site is located near the Walkinstown Roundabout on the southern side of Greenhills Road (R913), Dublin 12. The site is approximately 2.79 hectares in area, located within an industrially surrounded zone and comprises of existing low-rise disused industrial units which are to be demolished as part of the subject proposal. The site currently has 3 vehicular accesses all of which are located along the southern part of the site boundary. The existing development does not have any SuDS measures in place.

The site slopes from the west to the east. The regional topography slopes to the north east towards the South Dublin Bay. Topographical survey of the existing site indicates that the site is gradually sloping from west to east (C+W O'Brien Architects, 2023).

The site is relatively level / flat with minor localised undulations and an average elevation of 57.0m above Ordnance Datum (mAOD). The proposed project gradient ranges / varies between 55 m mAOD in the East and 58 mAOD in the West. The site was historically used as a gravel quarry, with a large retaining wall structure marking the southwestern boundary of the site. The western site boundary, abutted to the boundary of the neighbouring development is separated via a retaining wall, with a level difference between the proposed development site and the neighbouring development of approximately 6 meters.

The site has been mostly infilled following quarrying and is currently occupied by several derelict industrial/commercial buildings and is situated near the Walkinstown Roundabout.

The surrounding environment can be described as predominantly industrial in the immediate environs but mostly to the northwest. Residential, parkland and community uses occupy the majority of land to the south, east and northeast. The Greenhills community college is located c. 600 m south of the development. Tymon Park lies 1km south of the proposed development. There are also a number of national schools and communal building within the local environment. The site location map for the proposed development is presented in presented in Figure 7.1 below.



Figure 7.1 Site Location Map (Google Earth, 2025)

7.3.2 Hydrology

The proposed development site is located within the former ERBD (now the Irish River Basin District), as defined under the European Communities Directive 2000/60/EC, establishing a framework for community action in the field of water policy – this is commonly known as the Water Framework Directive (WFD). The proposed development site is located in the Eastern River Basin District (ERBD).

According to the EPA maps, the proposed development site lies within the Liffey and Dublin Bay Catchment (Hydrometric Area 09) and Camac River sub-catchment (WFD name: Liffey_SC_090, Id 09_15) (EPA, 2025). The current EPA watercourse mapping shows no watercourses within, traversing or bounding the proposed development site boundary.

There is no stream on the site or immediately adjacent to the site boundary. The Walkinstown Stream is located approx. 230m north of the subject development site and joins the Robinhood Stream which in turn discharges into the Ballymount Stream c. 1.1 Km northwest of the site. The Ballymount Stream discharges into the Camac River c. 1.4 Km northwest of the subject site (refer to Figure 7.2 below). The Camac outfalls into the River Liffey c. 4.6Km from the site. The River Liffey outfalls into the Dublin Bay approximately 11 Km from the site. There is no open water connection between the site and the Camac River sub-catchment.

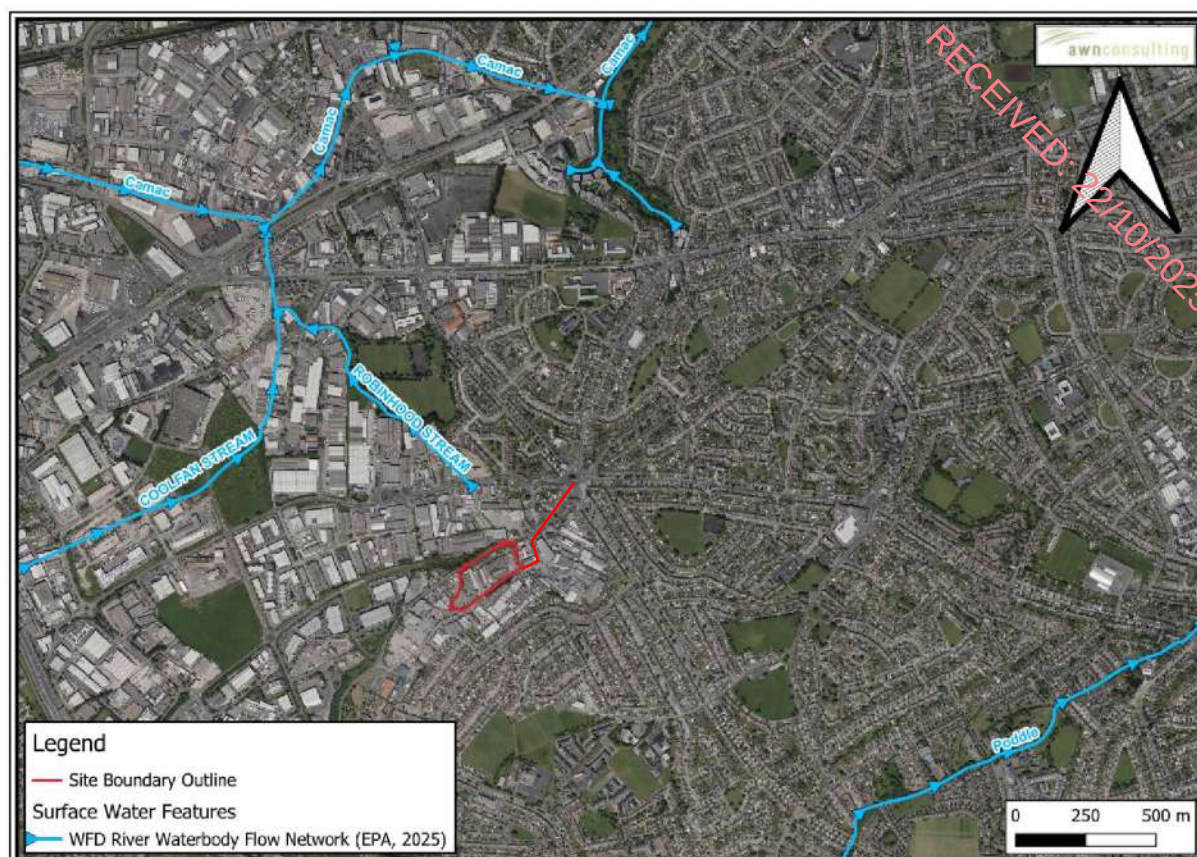


Figure 7.2 Site Location and Hydrological Environment / River Waterbodies (EPA, 2025)

With regard to the local drainage, there is an existing 225mm diameter surface water sewer located on the access road east of the development, parallel to the Chadwicks Plumb Centre. The sewer commences near the junction of the access road and Greenhills Road and continuous towards the south-east direction where it runs to Landsdowne Valley Park and discharges / outfalls to the River Poddle located c. 1.1 Km to the south of the subject site. Therefore, there would be an indirect hydrological connection between the site and this open watercourse through the local surface water drainage. The site has an indirect hydrological connection to the Dublin Bay via the local surface water / stormwater sewer, the River Poddle and the Liffey Estuary.

7.3.3 Existing Foul Water Service

There is an existing 225mm diameter foul water sewer located in close vicinity to the proposed development. The sewer originates from south-eastern direction, wraps around the outside of the southern and eastern site boundary and turns north-east, continuing towards the Walkinstown roundabout. This sewer eventually discharges into Ringsend WWTP. Refer to the Engineering Services Report for further details.

7.3.4 Surface Water Quality

The Water Framework Directive (WFD) requires 'Good Water Status' for all European waters to be achieved through a system of river basin management planning and extensive monitoring by 2015 or, at the least, by 2027. 'Good status' means both 'Good Ecological Status' and 'Good Chemical Status'. The third cycle Management Plan (2022-2027) is currently being undertaken by the Water Framework Directive.

The EPA identified water bodies either 'At Risk' of not achieving their objectives or 'Under Review'. The draft 3rd cycle River Basin management plan (RBMP) has been reviewed in the context of ensuring mitigation measures comply with current and expected future measures required to be implemented for protection of water body status within the context of the proposed development.

The proposed development is located within the Irish River Basin District, as defined under the European Communities Directive 2000/60/EC, establishing a framework for community action in the field of water policy – this is commonly known as the Water Framework Directive (WFD).

During the development of this 3rd cycle RBMP Plan, a prioritisation exercise was undertaken by the local authorities, the EPA and other stakeholders to identify those water bodies that require immediate action within this plan cycle to 2021. During the catchment characterisation, the EPA identified those water bodies either 'At Risk' of not achieving their objectives or 'Under Review'. The outcome of this prioritisation process was the selection of 190 Areas for Action across the 5 Local Authority regions. Within these 190 areas, a total of 726 water bodies were selected for initial actions during this RBMP cycle. There are 832 water bodies identified as being 'At Risk' of not achieving their environmental objectives under this Plan that have not been included in the Areas for Action. For most of these water bodies, targeted actions will be undertaken in the third cycle RBMP from 2022-2027. The draft 3rd cycle RBMP has been reviewed in the context of ensuring mitigation measures comply with current and expected future measures required to be implemented for protection of water body status within the context of the Proposed Project.

Surface water quality is monitored periodically by the EPA at various regional locations along with principal and other smaller watercourses. The EPA assess the water quality of rivers and streams across Ireland using a biological assessment method, which is regarded as a representative indicator of the status of such waters and reflects the overall trend in conditions of the watercourse. The biological indicators range from Q5 - Q1. Level Q5 denotes a watercourse with good water quality and high community diversity, whereas Level Q1 denotes very low community diversity and bad water quality.

The local hydrological network (Walkinstown, Robinhood and Ballymount streams; and Camac River) is associated with the WFD surface waterbody Camac_040 (EPA Code: IE_EA_09C020500). The most recent published status (www.epa.ie – River Waterbody WFD Status 2018-2021) of this waterbody is 'Poor' and its environmental risk is qualified by the WFD as 'At Risk of not achieving good status'. This condition is due to a poor ecological and biological status (invertebrate status or potential).

In addition, the River Poddle to the south is associated to the Poddle_010 (EPA Code: IE_EA_09P030800). The most recent published status (www.epa.ie – River Waterbody WFD Status 2018-2021) of this waterbody is 'Poor' and its environmental risk is qualified by the WFD as 'At Risk of not achieving good status'. This condition is due to a poor ecological status or potential.

The Camac River and River Poddle discharge into the Liffey Estuary Upper (EPA Code: IE_EA_090_0400) which has a WFD status (2018-2021) of 'Good'. The Liffey Estuary Upper waterbody has a WFD risk score of under 'Review'.

Q Values are used by the EPA to express biological water quality, based on changes in the macro invertebrate communities of riffle areas brought about by organic pollution. See Table 7.1 below for an explanation of the ratings. Q1 indicates a seriously polluted water body; Q5 indicates unpolluted water of high quality.

Table 7.1 EPA Biological Q Ratings

Quality ratings (Q)	Status	Water quality
Q5, Q4-5	High	Unpolluted
Q4	Good	Unpolluted
Q3-4	Moderate	Slightly polluted
Q3, Q2-3	Poor	Moderately polluted
Q2, Q1-2, Q1	Bad	Seriously polluted

The active quality monitoring station in closest proximity to the site is the 'Camac Close Emmet Rd' (Station Code: RS09C020500) which is located at Inchicore, along the Camac River circa 3.1km to the northeast (downstream). The latest Q score recorded at this station is Q '3' which denotes 'Poor' 'Moderately Polluted' conditions (2022). These Values are based primarily on the relative proportions

of pollution sensitive to tolerant macroinvertebrates (the young stages of insects primarily but also snails, worms, shrimps etc.) resident at a river site (Refer to Figure 7.3 and Table 7.1).



Figure 7.3 EPA Water Quality Stations near of the Subject Site (Source: EPA, 2025)

7.3.5 Bathing Waters and Recreational Waterbodies

A review of Environmental Sensitivity Mapping online maps that includes the Register of Protected Areas (RPA) under the Water Framework Directive (WFD) has shown that there are no Recreational Waters, Bathing Waterbodies, or Surface Water Drinking RPA, located downstream in the Camac River, River Poddle or this section of the Liffey Estuary.

7.3.6 Areas of Conservation

According to the NPWS (2024) on-line database there are no special protected areas (SPA's) or special areas of conservation (SACS's) on or within the boundary of the site. The lands in which the development is located have no formal designations. The nearest designated land to the site is the Grand Canal pNHA (Site Code: 002104) at 1.1km to the north of the northern boundary of the site. As the canal is a contained feature (fully lined) there is no potential for a source pathway linkage. The closest Natura 2000 European sites are the South Dublin Bay Special Area of Conservation (SAC) and Proposed Natural Heritage Area (pNHA) and the South Dublin Bay and River Tolka Estuary Special Protection Area (SPA) which are located c. 9 Km to the east-northeast of the subject site. The nearest designated lands to the site are as follows:

- North Dublin Bay SAC (Site Code: IE000206) c. 9.1 km to the east of the site.
- South Dublin Bay and River Tolka SPA (Site Code: IE004024) c. 9.0 km to the northeast of the site.
- South Dublin Bay SAC (Site Code: IE000210) c. 9.0 km to the east of the site.
- North Bull Island SPA (Site Code: IE004006) c. 10.2 km to the northeast of the site.

- North-West Irish Sea SPA (Site Code: IE004236) c. 11.1 km to the east of the site.
- North Dublin Bay pNHA c. 9.1 km to the northeast of the site.
- South Dublin Bay pNHA c.9.0 km to the east of the site.

The site has no direct connection / pathway to any of the above listed designated conservation / protected areas.

At present, the site has an indirect hydrological connection / linkage to the Dublin Bay Natura 2000 conservation sites via the local surface water / stormwater sewer, the River Poddle and the Liffey Estuary, albeit over a large distance and a significant dilution factor.

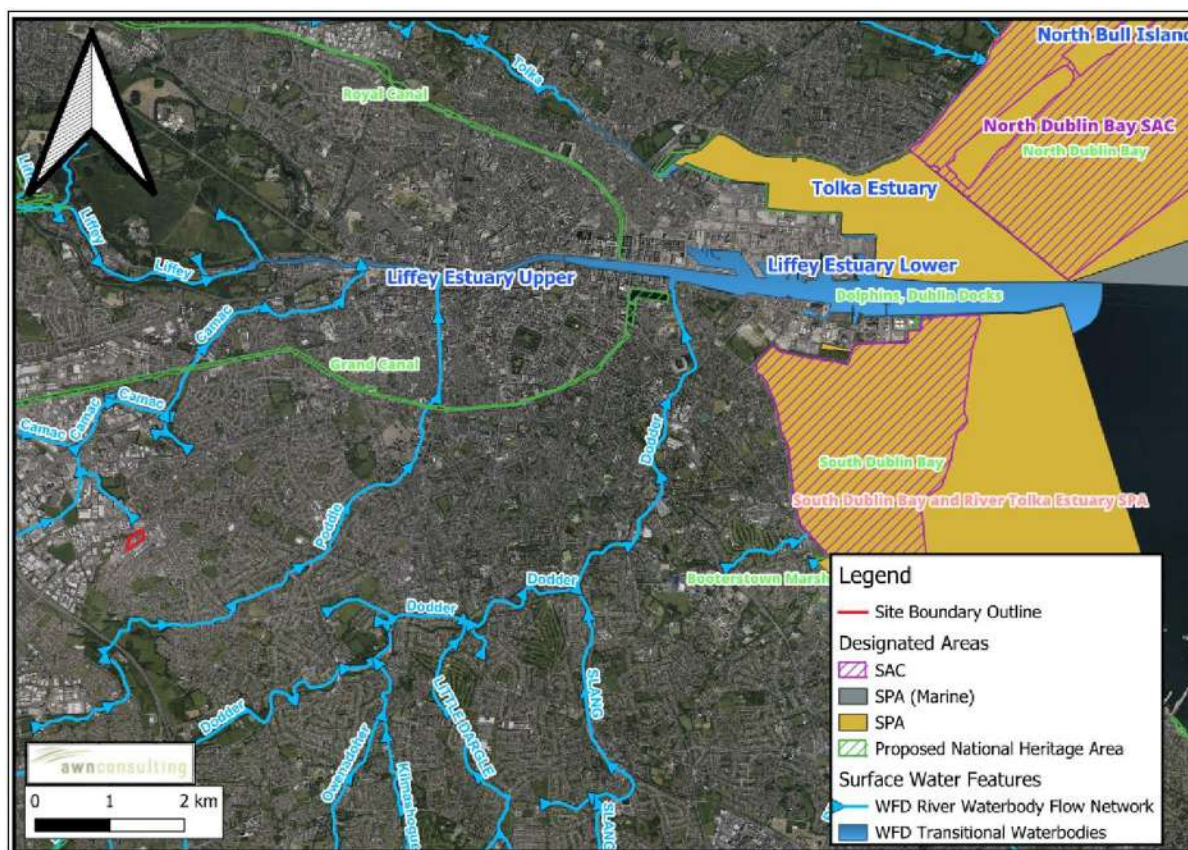


Figure 7.3 Natura 2000 and Conservation Areas Map (Source: EPA, 2025)

7.3.7 Flooding

7.3.7.1 Stage 1

According to the site-specific Flood Risk Assessment carried out by Lohan & Donnelly Consulting Engineers (2023), the developed site is shown not to be at a significant risk from flooding and to not create a significant risk to adjoining areas or downstream. The site is not subjected to incur either tidal or fluvial flooding or the combination of both, at any capacity, as can be seen in Stage 1 of this Site-Specific Flood Risk Assessment.

The site is located within Flood Zone C (i.e., where the probability of flooding from rivers is less than 0.1% or 1 in 1000 years – probability of fluvial flooding is low risk).

Inspection of the pluvial flooding probability maps contained on and accessible through floodinfo.ie show that the proposed site is vulnerable to pluvial flooding in any scenario (i.e., 10%, 0.5% or 0.1% AEP).

Historically, with reference to OPW's past flooding's, the site has never experienced flooding of any kind or capacity. There are no reported incidents of flooding from the Walkinstown Stream or the local

drainage network above mentioned in the site area. Upon inspecting of past flood events in the areas surrounding the site, three recorded flood events have been found. None of the three had any impact on the land mass enclosed within the current site boundary.

7.3.7.2 Stage 2

The only source of pluvial flooding identified would be the combination of a surcharge heavy rainfall event and blockage of the surface water sewer serving the development. Upon further inspection of the pluvial flood depth maps for the 10% (1 in 10-year flood event) and 1% (1 in 100-year flood event) AEP (Annual Exceedance Probability) flood events, it was determined that the site, without any flood alleviation measures would incur pluvial flooding of up to a maximum depth of 1.5m. The site is primarily predicted to flood along the western side in both 10% and 1% AEP flood event scenarios. The site is predicted to flood as a result of pluvial flooding however, this is only true if flood prevention measures are not implemented. As the site will be designed to cater for a 1 in 100-year flood event, the risk of any potential pluvial flooding will be mitigated.

7.3.7.3 Stage 3

The strategy for managing surface water and mitigating the risk of pluvial flooding for the development is through the use of appropriate SuDS measures. The measures include permeable paving, blue roof, tree pits, rain gardens, and a flow control device. These proposed SuDS measures along with proper implementation of operation and maintenance of the drainage system in accordance with CIRIA 753 and The SuDS Manual will significantly reduce the risk of pluvial flooding as a result of human, mechanical failure or a heavy rainfall event. By designing the surface water drainage infrastructure to withstand a 1 in 100-year storm event the risk of pluvial flooding is deemed to be within acceptable limits.

While the development is considered "highly vulnerable", given the site is not subjected to incur either tidal or fluvial flooding or the combination of both, at any capacity, the development is deemed to be located in a Flood Zone C category, and therefore the development is considered appropriate and does not require a justification test.

7.3.8 Rating of Importance of Hydrological Attributes

Based on the TII methodology (2009) (See Appendix 7.1), the importance of the hydrological features at this site is rated as 'Low Importance'. The attribute has a low quality or value on a local scale.

7.4 Characteristics of the Proposed Development

The proposed development comprises the following:

- (i) *The demolition of the former Chadwicks Builders Merchant development comprising 1 no. two storey office building and 9 no. storage/warehouse buildings ranging in height from 3m – 9.9m as follows: Building A (8,764 sq.m.), Building B (1,293 sq.m.), Building C (two-storey office building) (527 sq.m.), Building D (47 sq.m.), Building E (29 sq.m.), Building F (207 sq.m.), Building G (101 sq.m.), Building H (80 sq.m.), Building I (28 sq.m.), and Building J (44 sq.m.), in total comprising 11,120 sq.m.;*
- (ii) *the construction of a mixed-use residential and commercial development comprising 588 no. residential apartment units (291 no. one-beds, 238 no. two-beds and 59 no. three-beds), 1 no. 570.91 sq.m. (443 sq.m. indoor space) childcare facility and 6 no. commercial/retail units in 4 no. blocks (A-D) ranging in height from 5 to 12 storeys as follows:*
 - a. *Block A comprises 170 no. apartments (103 no. 1 bed-units, 59 no. 2 bed-units and 8 no. 3- bed units) measuring 8 storeys in height.*
 - b. *Block B comprises 197 no. apartments (89 no. 1 bed-units, 92 no. 2 bed-units and 16 no. 3 bed-units) measuring 10 storeys in height.*
 - c. *Block C comprises 81 no. apartments (44 no. 1-bed units, 16 no. 2-bed units and 21 no. 3-bed units) measuring 12 storeys in height.*
 - d. *Block D comprises 140 no. apartments (55 no. 1 bed-units, 71 no. 2 bed-units and 14 no. 3 bed-units) measuring 8 storeys in height.*

All apartments will be provided with private balconies/terraces;

- (iii) provision of indoor communal residential amenity (614.14 sq.m.) at ground and first floors of Block A, B & C,;*
- (iv) the construction of 1 no. childcare facility comprising 443 sq.m. with dedicated outdoor play area (128 sq.m.) located at ground floor of Block B;*
- (v) the construction of 6 no. commercial units at ground floor level of Blocks A, B and D, and 1 no. commercial unit at first floor level of Block A as follows: Block A has 1 no. unit at ground floor comprising 455.8 sq.m. and 1 no. unit at first floor level comprising 160.79 sq.m., Block B has 1 no. unit at ground floor comprising 190.96 sq.m. and Block D has 4 no. units at ground floor comprising 361.6 sq.m., 232.3 sq.m., 238 sq.m. and 174.9 sq.m.;*
- (vi) the construction of 4 no. vehicular entrances; a primary entrance via vehicular ramp from the north (access from Greenhills Road) and 3 no. secondary entrances from the south for access, emergency access and services (access from the existing road to the south of the site) with additional pedestrian accesses proposed along Greenhills Road;*
- (vii) provision of 270 no. car parking spaces comprising 240 no. standard spaces (including 6 no. car club spaces) and 13 no. mobility spaces located at surface level and within undercroft car parks within Blocks A, B, C and D, 17 no. commercial/ unloading/ drop-off parking spaces at ground level;*
- (viii) provision of 1,269 no. bicycle parking spaces comprising 952 no. residents' bicycle spaces, 10 no. cargo/accessible bicycle spaces in 14 no. bicycle storerooms in surface and undercroft parking areas and 307 no. visitors' bicycle spaces located externally at ground floor level throughout the development;*
- (ix) provision of outdoor communal amenity space (3,130.3 sq.m) comprising landscaped courtyards that include play areas, seating areas, grass areas, planting and scented gardens located on podiums at first floor level; provision of communal amenity roof garden s in Block A & B with seating area and planting (746.1 sq.m.) and inclusion of centrally located public open space (6,650 sq.m.) adjacent to Blocks A, B, C and D comprising grassed areas, planting, seating areas, play areas, water feature, flexible use space and incidental open space/public realm;*
- (x) provision of toucan crossing and all associated road markings and signage from the subject site to a new footpath on northern side of Greenhills Road;*
- (xi) development also includes landscaping and infrastructural works, foul and surface water drainage, bin storage, ESB substations, plant rooms, pv panels, boundary treatments, internal roads, cycle paths and footpaths and all associated site works to facilitate the development.*

This application is accompanied by an Environmental Impact Assessment Report (EIAR).

The proposed site plan and layout is depicted in Figure 7.4 below.

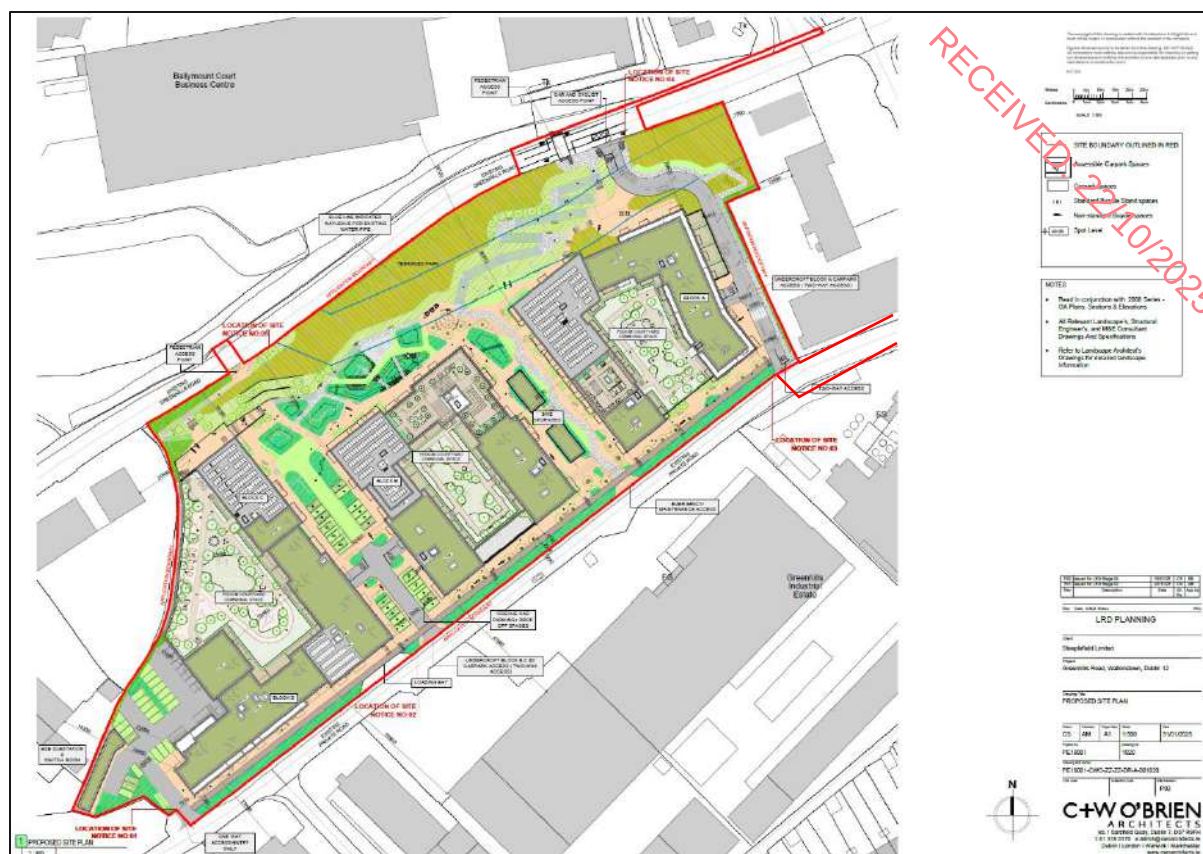


Figure 7.4 Proposed Site Plan (Source: C+W O'Brien Architects, 2025)

The activities required for the construction phase of the proposed project represents the greatest risk of potential impact on the hydrological environment. These activities primarily pertain to the site enabling works, preparation, excavation, levelling and infilling activities required to facilitate construction of the proposed project, and ancillary services.

The principal aspects related to the hydrological environment are presented in the following sections.

7.4.1 Construction Phase

It is of note that there are no streams/rivers on or adjacent to the site therefore run-off during construction will be to the existing stormwater drainage system and to ground.

The key civil engineering works which relate to the hydrological environment during construction of the proposed development are summarised below:

- During the construction phase, excavated topsoil and subsoil and stones (c. 22,808 m³) will be removed off site at a fully authorised soil recovery facility.
- Storage of aggregate materials such as sands and gravels will be stored in clearly marked receptacles in a secure compound area within the contractors' compound on site. Temporary storage of spoil will be managed to prevent accidental release of dust and uncontrolled surface water run-off which may contain sediment and solid matter. Any excavated material temporarily stockpiled onsite for re-use during reinstatement will be managed to prevent accidental release of dust and uncontrolled surface water run-off which may contain sediment etc; There will be a requirement for deliveries of imported engineering fill (sands and gravels), and other construction materials include, steel structure, concrete, cladding, ducting and piping. Construction materials will be brought to site by road. Soil requiring removal offsite will be removed from site regularly to ensure there is minimal need for stockpiling. Some of the topsoil will be re-used on site for backfill (levels in some areas need to be raised) and landscaping with

some export required. Any surplus topsoil material will be transported off site and disposed of at a fully authorised soil recovery facility / site.

- Temporary storage of fuel required for on site for construction traffic. Liquid materials i.e., fuel storage will be located within temporary bunded areas, doubled skinned tanks or bunded containers (all bunds will conform to standard bunding specifications - BS8007-1987) to prevent spillage;
- Construction activities will necessitate storage of cement and concrete materials, temporary oils, and fuels on site. Small localised accidental releases of contaminating substances including hydrocarbons have the potential to occur from construction traffic and vehicles operating on site; and

7.4.2 Operational Phase

During operation, there is no requirement for bulk fuels or chemical storage and therefore no significant hazards on site to waterways. Run-off from carpark areas will discharge through oil interceptors insuring no indirect discharge of contaminated water to storm drainage.

The proposed development characteristics which relate to the water and hydrological environment during operation of the proposed development are summarised below:

7.4.2.1 Proposed Surface Water Drainage

The surface water drainage infrastructure for the proposed development has been designed and is to be constructed in accordance with “Greater Dublin Strategic Drainage Study (GDSDS) Regional Drainage Policies Technical Document – Volume 2, New Developments, 2005, “Greater Dublin Regional Code of Practice Works” and the Building Regulation requirements.

It is proposed to provide a 225 mm diameter surface water pipe to service the development. Surface water collected from within the site boundary will flow into the last manhole on site “SW03”, from there the surface water will flow into intermediate manholes “SW02 & SW01” located on the eastern access road. Finally, the surface water will discharge into the existing 225mm surface water sewer located on the access road parallel to Chadwicks Plumb Centre, south-east of the proposed development via a saddle connection.

The proposed surface water drainage system designed for these developments includes a number of Sustainable Urban Drainage Systems (SuDS) measures which will be incorporated to reduce run-off volumes and improve run-off water quality. The SuDs mechanisms will comprise a blue roof system, permeable paving (asphalt), grass areas, swales (dry swale), petrol interceptors, rain gardens, and tree pits and Hydrobrake flow control. These features will be provided to cater for up to a 1-in-100-year rainfall event plus 20% allowance for climate change characteristics. Drainage from parking areas will be through oil interceptors.

For further details, refer to the Engineering Services Report Assessment, prepared by Lohan & Donnelly Consulting Engineers (2024), included as part of this Application.

7.4.2.2 Proposed Foul (wastewater) and Stormwater Infrastructure

Strict separation of surface water and wastewater will be implemented within the development.

The foul water drainage infrastructure for the proposed development has been designed in accordance with Irish Water’s “Code of Practice for Wastewater Infrastructure (Document IW-CDS-5030-03)”, “Wastewater Infrastructure Standard Details (Document IW-CDS-5030-01)” and the Building Regulation requirements.

To service the development, a 300mm diameter foul water pipe will be provided, commencing from the south-west corner of the site, extending to the last foul water manhole on site ‘FW04’, located on the north-east corner of the site. The foul water will then flow towards the existing foul water manhole ‘EX. FW06’ located north-east of the site, on Greenhills Road, discharging all the foul water generated from the proposed development.

For further details, refer to the Engineering Services Report Assessment, prepared by Lohan & Donnelly Consulting Engineers (2024), included as part of this Application.

7.5 Predicted Impacts of the Proposed Development

7.5.1 Do-nothing Impact

If the proposed development were not to go ahead (i.e., in the Do-Nothing scenario) there would be no excavation or construction or operational impact at this site. There would, therefore, be a neutral effect on the environment. The site is zoned for residential development, and it is likely that in the absence of this subject proposal, that a development of a similar nature would be progressed on the site that accords with national and regional policies and, therefore, the likely effects would be similar to this proposal, as described in the following sections.

7.5.2 Construction Phase

7.5.2.1 Potential Impacts on Surface Water Quality

As there is no stream/river on or adjacent to the proposed development site, the potential for impact to the receiving catchment from construction impacts is low.

During land clearing, earthworks and excavations for foundations and services there is potential for run-off water to become contaminated with pollutants/silt released during construction activity. If not mitigated, contaminated water can pose a temporary risk to the existing local surface water drainage and stormwater drains.

During construction of the development, there is a low potential for contamination through existing site drainage to the River Poddle from the following sources:

- Suspended solids (muddy water with increased turbidity (measure of the degree to which the water loses its transparency due to the presence of suspended particulates)) – arising from excavation and ground disturbance;
- Cement/concrete (increase turbidity and pH) – arising from construction materials;
- Hydrocarbons and other construction chemicals (ecotoxic) – accidental spillages from construction plant or onsite storage;
- Wastewater (nutrient and microbial rich) – arising from accidental discharge from on-site toilets and washrooms. Construction phase sewerage will be taken by tanker off site for disposal at a licensed waste management facility.

Based on the distance to Natura sites there is no likelihood of an impact on the surface water quality in the Camac River and River Poddle Waterbodies or Natura sites associated with Dublin Bay.

In the absence of mitigation measures the potential impacts during the construction phase on surface water quality are **negative**, imperceptible/**not significant** and **temporary**.

7.5.3 Potential Impacts on Surface Water Flow and Quantity

As the site is already mostly in hardstand there is potential from a slight increase in run-off volume during construction. The compaction of soils across the construction site as a result of the land clearing and earthworks will reduce the infiltration capacity and increase the rate and volume of direct surface run-off. The potential impact of this is a possible increase in surface water run-off which could potentially impact local drainage if not adequately attenuated.

Based on the distance to Natura sites there is no likelihood of an impact on the surface water flow in the Camac River and River Poddle Waterbodies or Natura 2000 sites associated with Dublin Bay.

In the absence of mitigation measures the potential impacts during the construction phase on surface water quality and flow are **negative**, imperceptible/ **not significant** and **short term**.

7.5.3.1 Potential Impacts on Human Health and Population

There is no potential for human health impact as no river/stream on or adjacent to the site and no recorded recreational waters, bathing waterbodies, or surface water drinking RPA, located downstream in the Camac River, River Poddle or Liffey Estuary.

7.5.4 Operational Phase

7.5.4.1 Surface Water Drainage

Potential Impacts on Surface Water Quality

The proposed development incorporates a sustainable drainage system that is to be integrated with the developments landscaping features and comprises a combination of multiple measures (SuDS) in relation to flow control, interception storage and catchment conveyance features. In addition, petrol interceptors are included within the network to treat any localised spill prior to discharge off site. Refer to Proposed Drainage Layout drawings included with this Application for details of the proposed stormwater network.

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

There is no requirement for bulk oil / fuel storage onsite. Surface water runoff from roads, car parking areas can potentially contain slightly elevated levels of contaminants such as hydrocarbons which will be collected within on-site drainage and treated in petrol / hydrocarbon interceptors with no resultant impact on the local surface water drainage network.

Potential Impacts on Surface Water Quantity and flow

The proposed project is located within Flood Zone C, which indicates low flood risk. The design of the development and drainage infrastructure will ensure that the run-off rate is similar to greenfield run-off.

The surface water drainage from the proposed development site has been designed ensure that there is no increase in flow rates and volumes, from the development site, being discharged to the receiving infrastructure and waterbodies; thus, causing no adverse impact on adjoining and other downstream properties.

Surface water runoff from the development will be attenuated in accordance with the recommendations of the GDSDS. Surface water run-off from each surface water catchment will be attenuated using a Hydrobrake on the surface water outlet. Surface water runoff exceeding the allowable outflow rate for the catchment will be stored for rainfall events up to a 1 in 100-year return period. with an allowance for climate change of 20%.

A review of the Ringsend Annual Environmental report (2022) confirmed that there is adequate capacity for foul water. This AER report states that the annual maximum hydraulic loading is less than the peak Treatment Plant Capacity and the capacity will not be exceeded in the next 3 years (from 2022). The peak effluent discharge (Design Flow as constructed), for the Proposed Development is 20.064 l/s (6 DWF) which would equate to 0.18% of the peak hydraulic capacity licensed discharge at Ringsend WWTP [peak hydraulic capacity]. The stormwater and foul water will be separated on site and stormwater will be attenuated the Proposed Development will not contribute any additional stormwater drainage to the WWTP. The Wastewater Treatment Capacity Register (Uisce Éireann, December 2024) shows that the Ringsend WWTP (D0034) has been given 'Green' Status as an indication of availability capacity, which denotes 'spare capacity available'. This register also indicates that a WWTP Project Plan is underway.

With design measures in place, the impact on surface water flow and quality are **neutral, imperceptible, long-term**.

7.6 Mitigation Measures

The design has taken account of the potential impacts of the development on the hydrological environment local to the area where construction is taking place and containment of contaminant sources during operation. Measures have been incorporated in the design to mitigate the potential effects on the surrounding water bodies.

7.6.1 Construction Phase

A Construction Environmental Management Plan (CEMP) (2025) is included with the application documentation of this EIAR. This outlines the best practice construction techniques and methodologies which will be implemented during construction of the proposed development including measures to protect waters bodies. The CEMP sets out the proposed procedures and operations to be utilised on the proposed construction site to protect water quality. The mitigation and control measures outlined in the CEMP and this EIAR will be employed on site during the construction phase.

The CEMP and mitigation measures set out in this EIAR will be implemented and adhered to by the construction Contractor and will be overseen and updated as required if site conditions change by the Project Manager, Environmental Manager and Ecological Clerk of Works where relevant. All personnel working on the site will be trained in the implementation of the procedures.

All mitigation measures outlined in this chapter, and within the CEMP will be implemented during the construction phase, as well as any additional measures required pursuant to planning conditions which may be imposed.

The CEMP and this EIAR contains best practice measures and protocols to be implemented during the construction phase of the proposed development to avoid / minimise environmental impacts.

Construction works and the proposed mitigation measures are informed by best practice guidance on the prevention of pollution during development projects including but not limited to:

- Construction Industry Research and Information Association (CIRIA), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (C532);
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (2016);
- Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (4th edition), (C741); and
- Enterprise Ireland Best Practice Guide, Oil Storage Guidelines (BPGCS005).

The CEMP provides actions and measures which will be undertaken for the purpose of environmental management and pollution prevention during the construction phase. As there is potential for run-off to indirectly discharge to the local drainage network in the vicinity of the site and in order to manage the potential impact associated with sediment and sediment runoff the following mitigation measures will be implemented during the construction phase:

- SuDS will be constructed in line with manufacturer's guidelines / best practice methods.
- This development includes an attenuation system stormtech underground to cater for the 100-year return period and a detention basin to cater for the 1-100 year were designed for this site. The design of the attenuation is in accordance with CIRIA SuDS Manual C753 2015. Please refer to the accompanying drawings for further information.
- During construction, any surfaces which are intended to enable infiltration must be protected from compaction. This includes protecting from heavy traffic or storage materials.
- Any surface water run-off collecting in excavations will likely contain a high sediment load. This will not be allowed to directly discharge directly to the stormwater drains / site drainage or the River Poddle.
- Water contaminated with silt will not be allowed to enter a drain as it can cause pollution. All parts of the drainage system will be protected from construction runoff to prevent silt clogging

the system and causing pollution downstream. Silt reduction measures to prevent this include, early construction of sediment management basins, channelling runoff away from watercourses and surface water drains and erosion prevention measures. Following construction, subsoil that has been compacted during construction should be broken up prior to the re-application of topsoil to reinstate the natural infiltration performance of the ground.

- Pipe systems and orifices will be checked for blockages or partial blockages.
- Soils will be stabilised and protected from erosion whilst planting becomes established. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts.
- The temporary storage of soil will be carefully managed. Stockpiles will be tightly compacted to reduce runoff and graded to aid in runoff collection.
- Pollution control measures will be implemented to control run-off from the site and prevent run-off which is potentially contaminated with sediments or hazardous chemicals entering the drainage network.
- A response procedure will be put in place to deal with any accidental pollution events and spillage kits will be available on site. Construction staff will be familiar
- Any hard surface site roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only.
- A power washing facility or wheel cleaning facility will be installed near to the site compound for use by vehicles exiting the site when appropriate,
- Aggregate materials such as sands and gravels will be stored in clearly marked receptacles within a secure compound area to prevent contamination.
- Movement of material will be minimised to reduce the degradation of soil structure and generation of dust.
- Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise the potential for water ingress into excavations.
- Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the site.
- All excavated materials will be visually assessed by suitably qualified persons for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of potential contaminants to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted/licensed waste disposal contractor.
- Surface water discharge from the site will be managed and controlled for the duration of the construction works until the permanently attenuated surface water drainage system of the proposed site is complete.

7.6.1.1 Cement/Concrete Works

Where feasible all ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to the underlying subsoil.

Pouring of cement-based materials for works will only be carried out in dry conditions. Pumped concrete will be monitored to ensure there is no accidental discharge. Mixer washings and excess concrete will not be discharged directly into the drainage network. Concrete washout areas will be created to avoid any accidental discharge from the proposed development site.

No wash-down or wash-out of ready-mix concrete vehicles during the construction works will be carried out at the site within 10 meters of an existing surface water drainage point. Washouts will only be allowed to take place in designated areas with an impervious surface where all wash water is contained and removed from site by road tanker or discharged to foul sewer submit to agreement with Uisce Éireann / SDCC.

The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the site will be suitably trained in the implementation of the procedures.

7.6.1.2 Hydrocarbons and other construction chemicals

The following mitigation measures will be implemented during the construction phase in order to prevent any spillages to ground of fuels and other construction chemicals and prevent any resulting to surface water and groundwater systems:

- Designation of bunded refuelling areas on the site;
- Provision of spill kit facilities across the site;
- Where mobile fuel bowzers are used, the following measures will be taken:
 - Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use;
 - The pump or valve will be fitted with a lock and will be secured when not in use;
 - All bowzers to carry a spill kit and operatives must have spill response training;
 - Portable generators or similar fuel containing equipment will be placed on suitable drip trays.
- In the case of drummed fuel or other potentially polluting substances which may be used during the construction phase, the following measures will be adopted:
 - Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded area;
 - Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be stored within temporary bunded areas, double skinned tanks or bunded containers to a volume of 110% of the capacity of the largest tank/container. Drainage from the bunded area(s) shall be diverted for collection and safe disposal.
- Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage;
- All drums to be quality approved and manufactured to a recognised standard;
- If drums are to be moved around the Site, they will be secured and on spill pallets; and Drums will be loaded and unloaded by competent and trained personnel using appropriate equipment.
- Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area or within the construction compound (or where possible off the site). In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area. All relevant personnel will be fully trained in the use of this equipment.
- The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.

7.6.1.3 Rainwater Run-off

Rainfall at the construction site will be managed and controlled for the duration of the construction works.

7.6.1.4 Wastewater Management

Foul drainage from site offices and compound, where not directed to the existing wastewater network, will be contained and disposed of off-site in an appropriate manner and in accordance with the relevant statutory regulations to prevent the pollution of watercourses.

7.6.1.5 Surface Water Flow and Quantity

During construction a site drainage and protection system will be built to reduce the flow of run-off from the site, prevent soil erosion, and protect water quality in the local surface water drainage network and River Poddle. Temporary excavated channels, bunds, or ridges or a combination of the three, may be constructed to divert sediment-laden water to an appropriate sediment retention structure. These will be installed to provide permanent diversion of clean stormwater away from erosion exposed soil areas, or to provide a barrier between exposed areas and unexposed areas of the construction site. Runoff diversion channels/bunds need regular maintenance to keep functioning throughout their life.

7.6.1.6 Human Health and Population

It has been established (Section 7.3.5) that there are no recorded Recreational Waters, Bathing Waterbodies, or Surface Water Drinking RPA, located downstream in the Camac River, River Poddle or the Liffey Estuary. As such there is no potential for impact on human health and populations. And no mitigation measures required.

7.6.1.7 Potential Impacts on Water Framework Directive

It has been established that while, there is a potential of accidental discharges during the construction phase there is a very low potential for even a temporary change in water quality in receiving waters. As such there is no likely impact on trends in water quality and overall WFD status assessment. On a precautionary basis, the mitigation measures previously set out in Section 7.6 above, will be implemented during the construction works for the protection of surface water status and achievement of the programme of measures.

7.6.2 Operational Phase

7.6.2.1 Surface Water Quality

The design has taken account of the potential impacts of the development on surface water quality; measures have been incorporated in the design to mitigate these potential impacts.

The proposed development stormwater drainage network design includes sustainable drainage systems (SuDS). These measures by design ensure the stormwater leaving the site is to be attenuated and treated within the new development site boundary to ensure suitable quality, before discharging to the local surface water drainage network, which subsequently outfalls to the nearby River Poddle. SuDS are drainage systems that are environmentally beneficial, causing minimal or no long-term detrimental damage. The SuDS design is set out in the Engineering Services Report (2024) and uses rain gardens, blue roofs, flow control devices (Hydrobrake), grass swales, tree pits, permeable paving (porous surfacing), and petrol interceptors.

The purpose of the SuDS design is to:

- Treat runoff and remove pollutants to improve quality;
- Restrict outflow and to control quantity;
- Increase amenity value.

The layout of the proposed surface water drainage network is displayed on Lohan & Donnelly Consulting Engineers Ltd (2024) Drawing Set included with this Application. It is proposed to strictly separate the surface water and wastewater drainage networks, which will serve the proposed development, and provide independent connections to the surface water and wastewater sewer networks respectively.

7.6.2.2 Surface Water Flow and Quantity

The design has taken account of the potential impacts of the development on surface water flow; measures have been incorporated in the design to mitigate these potential impacts.

As set out in the Engineering Services Report (2024), flow restriction is achieved by means of a hydro-brake installed at the outfall point from the development, with the excess storm water stored on site for the duration of the storm periods of up to 1 in 100 years. The surface water network has been designed to provide sufficient capacity to contain and convey all surface water run-off associated with the 1-in-100-year event to the detention basins for attenuation without any overland flooding.

Surface water runoff exceeding the allowable outflow rate for the catchment will be stored in detention basins for rainfall events up to a 1 in 100-year return period with an allowance for climate change of 20%. The proposed development includes a new surface water network which will mitigate any pluvial risk to the site in line with SuDS measures.

7.7 Residual Impacts

7.7.1 Construction Phase

7.7.1.1 Surface Water Quality

The implementation of the mitigation measures detailed in Section 7.6, will ensure that the potential impacts on surface water quality during the construction phase are adequately mitigated. The residual effect on surface water quality during the construction phase is considered to be **neutral, imperceptible** and **short-term**.

7.7.1.2 Surface Water Flow and Quantity

The implementation of the mitigation measures detailed in Section 7.6, will ensure that the potential impacts on surface water flow and quantity during the construction phase are adequately mitigated. The residual effect on surface water flow and quantity during the construction phase is considered to be **neutral, imperceptible** and **short-term**.

7.7.1.3 Human Health and Population

There is no potential for impact on water quality during human health. The residual effect on human health and populations during the construction phase is considered to be **neutral, imperceptible** and **short-term**.

7.7.1.4 Water Framework Directive Status

Even in the absence of the mitigation measures detailed in Section 7.6, there will be no predicted degradation of the current water body (chemically, ecological and quantity) or any impact on its potential to meet the requirements and/or objectives in the second RBMP 2018-2021 (River Basin Management Plan) and draft third RBMP 2022-2027.

There are appropriately designed mitigation measures which will be implemented during the construction phase to protect the hydrological environment. There is a potential of accidental discharges during the construction phase, however these are temporary short-lived events that will not impact on the water status of waterbodies short term or long-term and as such will not impact on trends in water quality and over all status assessment.

The residual effect on the WFD status during the construction phase is considered to be **neutral, imperceptible** and **short-term**.

7.7.2 Operational Phase

7.7.2.1 Surface Water

The implementation of the mitigation measures detailed in Section 7.6, will ensure that the potential impacts on surface water quality once the proposed development is constructed and operational are adequately mitigated. The residual effect on surface water quality during the operational phase is considered to be **neutral, imperceptible** and **long-term**.

There will be no impact to the quality of downstream designated sites due to the lack of direct hydraulic / hydrological connectivity, the significant distance between the subject development and designated areas, and the mitigation measures cited. In addition, the SuDS for the project and installation of petrol / hydrocarbon interceptors / separators will improve habitat requirements in the local watercourses, flood management and water quality.

7.7.2.2 Human Health and Populations

The implementation of the mitigation measures detailed in Section 7.6, will ensure that the potential impacts on human health and populations (and material assets) once the proposed development is constructed and operational are adequately mitigated. The residual effect on human health and populations during the operational phase is considered to be **neutral, imperceptible** and **long-term**.

7.7.2.3 Water Framework Assessment

Even in the absence of the mitigation measures detailed in Section 7.6, there will be no predicted degradation of the current water body (chemically, ecological and quantity) or any impact on its potential to meet the requirements and/or objectives in the second RBMP 2018-2021 (River Basin Management Plan) and draft third RBMP 2022-2027.

There are appropriately designed mitigation measures which will be implemented during the operational phase to protect the hydrological environment. There is a potential of accidental discharges during the operational phase, however these are temporary short-lived events that will not impact on the water status of waterbodies long-term and as such will not impact on trends in water quality and over all status assessment.

There are no untreated discharges of wastewater during the operational phase to any surface water / stormwater sewers, open waterbody / watercourse. The discharge to surface water sewer will be adequately treated via SuDS measures, hydro-brake (or equivalent) and petrol (hydrocarbon) interceptor to ensure there is no long-term negative impact to the WFD water quality status of the receiving watercourse. The SuDS and proposed measures have been designed in detail with the ultimate aim of protecting the hydrological (& hydrogeological) environment. The SuDS and project design measures will be maintained correctly as per specifications to ensure long-term / on-going integrity of same.

The residual effect on human health and populations during the operation phase is considered to be **neutral, imperceptible** and **short-term**.

7.8 Worst Case Scenario

Worst case scenarios envisioned are extreme occurrences of the potential effects identified above in conjunction with failure of mitigation measures including:

- Significant contamination event during construction phase.
- Flooding due to extreme event or unsuitable drainage measures.

Given the scale of the site, low risk flood zoning, absence of a stream, river on or adjacent to the site and relatively standard nature of the works involved the likelihood of a “worst case” event is extremely low.

7.9 Monitoring or Reinstatement

The management of hydrology during the construction phase will be monitored by the Contractor to ensure compliance with the CEMP including above-listed mitigation measures, and relevant water legislation and local authority requirements.

7.9.1 Construction Phase

During construction phase the following monitoring measures will be considered:

- Contractors will carry out regular inspections to confirm compliance with the CEMP. Daily inspections by contractors will address potential environmental impacts including dust, litter, waste management and general housekeeping.
- Regular inspection of surface water run-off and sediments controls (e.g., silt remediation treatment e.g. silt traps for site drainage where required).
- Regular inspection or auditing of construction / mitigation measures (e.g., concrete pouring, refuelling, etc).

7.9.2 Operational Phase

No future surface water monitoring is proposed for the proposed development due to the low hazard potential at the site.

Petrol / hydrocarbon interceptors will be maintained and cleaned out in accordance with the manufacturer's instructions.

Maintenance of the surface water drainage system and foul sewers as per normal urban developments is recommended to minimise any accidental discharges to surface water.

7.10 Interactions

Due to the inter-relationship between land, soils, geology, hydrogeology and hydrology, the assessed impacts and mitigation measures discussed will be considered applicable to both chapters.

This section discusses interactions between this Chapter and other specialist environmental topics considered in this EIAR. The main interactions of importance to land, soils, geology and hydrogeology relate to Biodiversity (Chapter 5), Land, Soil, Geology, Hydrogeology (Chapter 6), and Air Quality (Chapter 9) as follows;

7.10.1 Biodiversity

The proposed development may have temporary negative impacts on biodiversity at site level however introduction of grass cover and green areas during operational phase may have a positive impact on local biodiversity. There is no potential for impacts on water quality within European Designated sites.

7.10.2 Climate and Flood Risk

The proposed development will not have negative impact on flood risk as a result of climate change. The proposed development is located within Flood Zone C. The proposed drainage plan incorporates adequate attenuation taking consideration of a climate safety factor (20% allowance for climate change)

7.10.3 Land, Soil, Geology, and Hydrogeology

There will be a slight reduced recharge to the underlying aquifer due to modification onsite and installation of an advanced drainage system.

7.11 Cumulative Impacts

The cumulative impact of the proposed development with any/all relevant other planned or permitted developments are discussed below.

Existing developments that are already built and in operation contribute to the characterisation of the baseline environment. As such any further environmental impacts that the proposed development may have in addition to these already constructed and operational developments has been assessed in the preceding sections of this chapter.

Neither the proposed development nor any other developments will give rise to any significant impacts on surface water receptors and there are no predicted cumulative impacts in relation to surface water receptors in terms of water quality and flow, as a result of the proposed development in combination with existing / proposed plans or projects.

7.11.1 Construction Phase

In relation to the potential cumulative impact on hydrology during the construction phases, the construction works which would have potential cumulative impacts are as follows:

- Surface water run-off during the construction phase may contain increased silt levels or become polluted from construction activities. Run-off containing large amounts of silt can cause damage to surface water systems and receiving watercourses. It is of note that there is no surface water receptor on or adjacent to the proposed development site;

The works contractors for other planned or permitted developments will be obliged to ensure that measures are in place to protect soil and water quality in compliance with legislative standards for receiving water quality (European Communities Environmental Objectives (Surface Water) Regulations (S.I. 272 of 2009 and S.I. 77 of 2019).

The implementation of mitigation and monitoring measures detailed here as well as the compliance of the above permitted development with their respective planning conditions, will ensure there will be minimal cumulative potential for change to the hydrological environment during the construction phase of the proposed development. The residual cumulative impact of the proposed development in combination with other planned or permitted developments can therefore be considered to be **neutral, imperceptible, and short-term**.

7.11.2 Operational Phase

In relation to the potential cumulative impact on hydrology during the operational phases, the operational activities which would have potential cumulative impacts are as follows:

Modification of hardstanding onsite will reduce local recharge to ground and increase surface water run-off potential if not limited or restricted from the site. Cumulatively this development and others in the area will result in localised reduced recharge to ground and increase in surface run-off. Increase in wastewater loading and water supply requirement is an impact of all development. Each development will require approval from the Uisce Eireann (formerly IW, Irish Water) confirming available capacity in the water and wastewater infrastructure. The surface water and foul drainage infrastructure and water supply requirements for the proposed development have been designed to accommodate the proposed development and a confirmation of feasibility received.

Each permitted development is required by the Local Authority and Uisce Eireann to comply with the Local Authority and Uisce Eireann requirements by providing suitable attenuation on-site and ensure that there is no increase in off-site flooding as a result of the development in question.

All developments are required to operate in compliance with relevant legislation - Water Framework Directive and Surface water Regulations. All developments are required to ensure they do not have an impact on the receiving water environment in accordance with the relevant legislation (Water Framework Directive and associated legislation, (European Communities Environmental Objectives (Surface Water) Regulations (S.I. 272 of 2009 and S.I. 77 of 2019)) such that they would be required to manage run-off quality.

The implementation of design and mitigation measures detailed in Section 7.6 as well as the compliance of the above permitted development with their respective planning conditions, will ensure there will be minimal cumulative potential for change in surface water during the operational phase of the proposed development. The residual cumulative impact of the proposed development in combination with other planned or permitted developments can therefore be considered to be **neutral, imperceptible and long-term**.

7.12 Difficulties Encountered

There were no difficulties encountered during the preparation of this report.

7.13 Summary

There will be **no long-term residual impact** on hydrological receptors, either within or in the vicinity of the proposed development as a result of the proposed development.

7.14 References

- Engineering Services Report- Residential Development at Greenhills Road, Walkinstown, Dublin 12; Lohan & Donnelly Consulting Engineers Limited (2024).
- Flood Risk Assessment (FRA) Report- Residential Development at Greenhills Road, Walkinstown, Dublin 12; Lohan & Donnelly Consulting Engineers Limited (2023).
- Construction Environmental Management Plan- development at GREENHILLS ROAD, WALKINSTOWN, DUBLIN 12 AWN Consulting (2025).
- Ground Investigations Ireland Ltd (GII). "Ground Investigations Ireland, Greenhills Road Ground Investigation Report March 2021, Rev A"
- Ground Investigations Ireland Ltd (GII). "Ground Investigations Ireland, Greenhills Road Ground Investigation Report February 2021, Rev A".

- Environmental Protection Agency Act 1992 as amended.
- European Commission, Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (2017).
- Environmental Protection Agency (EPA) 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' (2022).
- CIRIA (2001). Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors.
- CIRIA (2005). Environmental Good Practice on Site (C650).
- CIRIA (2007). CIRIA 697: The SUDS Manual.
- Department of Housing, Planning & Local Government (2018). River Basin Management Plan for Ireland 2018 – 2021.
- Department of Housing, Planning & Local Government (2022). 3rd Cycle Draft River Basement Management Plan 2022-2027
- Uisce Éireann- Ringsend WWTP (D0034-01) AER 2022.
- South Dublin County Council (SDCC) Development Plan 2022-2028.
- Eastern Regional Fisheries Board (2006). Fisheries Protection Guidelines: Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites.
- Enterprise Ireland (n.d.). Best Practice Guide BPGCS005: Oil Storage Guidelines.
- EPA (2025). Guidelines on the Information to be Contained in Environmental Impact Assessment Reports.
- EPA (2025). EPA Maps.
- GSI (2025). GSI Map Viewer.
- NPWS (2025). Designations Viewer.
- NRA (2009). Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes.
- OPW (2025). Flood Maps.
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8.0 NOISE AND VIBRATION

8.1 Introduction

This EIAR Chapter has been prepared by AWN Consulting Ltd (AWN) to assess the potential noise and vibration effects of the proposed residential development at the former Chadwick's Builders Merchant site. This assessment has been conducted in the context of current relevant standards and guidance, as detailed in the relevant sections below.

This assessment includes a description of the receiving ambient noise climate in the vicinity of the subject site and an assessment of the potential during both the short-term construction phase and the long-term operational phase on its surrounding environment. The assessment of direct, indirect and cumulative noise and vibration impacts on the surrounding environment have been considered as part of the assessment. An assessment of noise from existing sources inward on the development has also been completed.

Mitigation and monitoring measures are included, where relevant, to ensure the proposed enabling works are completed and operated in an environmentally sustainable manner to ensure minimal impact on the receiving environment.

The assessment has been undertaken with reference to the most appropriate guidance documents relating to environmental noise and vibration which are set out in the following sections. In addition to specific noise and vibration guidance documents, the following Environmental Protection Agency (EPA) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA 2022) were considered and consulted in the preparation of this chapter.

8.2 Expertise and Qualifications

This chapter of the EIAR has been prepared collaboratively by Leo Williams BAI MAI PgDip AMIOA and Dominic Wright AMIOA.

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

Dominic Wright AMIOA is an Acoustic Consultant at AWN who holds the Institute of Acoustics Diploma in Acoustics and Noise Control, along with a Diploma in Music Technology. With a background in audio engineering, he has over 3 years' experience working in the field of acoustics, contributing to various residential, industrial and infrastructure projects. He also has experience in both environmental noise surveying and modelling.

8.3 Research Methodology

The following methodology has been prepared based on the requirements of the Environmental Protection Agency (EPA) Guidelines the Information to be Contained in Environmental Impact Assessment Reports (EPA 2022) and on AWN's experience of preparing the noise and vibration chapters for similar developments. The following approach has been used for this assessment:

- Baseline noise monitoring has been undertaken at the development site in order to characterise the existing noise environment.
- A review of relevant standards and guidelines has been carried out in order to set a range of acceptable noise and vibration criteria for the construction and operational phases of the proposed development.
- Predictive calculations have been performed to estimate the likely noise emissions during the construction phase of the proposed development at the nearest Noise Sensitive Locations (NSLs) to the site.

- Predictive calculations have been performed to assess the potential effects associated with the operation of the proposed development at NSLs surrounding the site.
- An assessment has been completed of potential cumulative effects that may arise as a result of the proposed development and other existing or proposed plans and projects.
- A schedule of mitigation measures has been proposed, where relevant, to control the noise and vibration emissions associated with both the construction and operational phases of the proposed development.
- An inward noise impact assessment from the existing noise sources on the proposed development.

8.3.1 Construction Phase Noise Impacts

Local Authorities typically control construction activities by imposing limits on the hours of construction and consider noise limits at their discretion. Construction noise sources include construction plant and machinery, and construction related traffic on surrounding roads. Reference is made to the following guidelines and standards to inform the most appropriate construction noise and vibration significance thresholds and assessment methodologies:

- British Standard Institute (BSI) British Standard (BS) 5228-1:2009 +A1 2014 Code of Practice for noise and vibration control of construction and open sites - Part 1: Noise (hereafter referred to as BS 5228-1) (BSI 2014a);
- BS 5228-2:2009+A1:2014 Code of Practice for noise and vibration control of construction and open sites - Part 2: Vibration (hereafter referred to as BS 5228 – 2) (BSI 2014b);
- BS 7385: 1993 Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration (hereafter referred to as BS 7385-2). (BSI 1993);
- BS 6472-1: 2008 Guide to evaluation of human exposure to vibration in buildings, Part 1 Vibration sources other than blasting (hereafter referred to as BS 6472-1) (BSI 2008);
- UK Highways England (now National Highways) (UKHE) Design Manual for Roads and Bridges (DMRB) LA 111 Sustainability and Environmental Appraisal LA 111 Noise and Vibration Revision 2 (hereafter referred to as DMRB Noise and Vibration) (UKHE 2020)

8.3.1.1 British Standard BS 5228 – 1: 2009+A1:2014

British Standard BS 5228 – 1: 2009+A1:2014: Code of practice for noise and vibration control on construction and open sites – Noise (hereinafter referred to as BS 5228-1:2009+A1:2014) is referred to as appropriate criteria relating to permissible construction noise threshold levels for a development of this scale.

Potential noise impacts during the construction stage of a project are often assessed in accordance with BS 5228-1:2009+A1:2014. Various mechanisms are presented as examples of determining if an impact is occurring, these are discussed in the following paragraphs.

ABC Method

The approach adopted here calls for the designation of a noise sensitive location into a specific category (A, B or C) based on existing ambient noise levels in the absence of construction noise. This then sets a threshold noise value that, if exceeded at this location, indicates a significant noise impact is associated with the construction activities, depending on context.

BS 5228-1:2009+A1:2014 sets out guidance on permissible noise levels relative to the existing noise environment. Table 8.1 sets out the values which, when exceeded, signify a significant effect at the facades of residential receptors

Table 8.1 Threshold of Potential Significant Effect at Dwellings

Assessment category and threshold value period (L_{Aeq})	Threshold value, in decibels (dB)		
	Category A ^A	Category B ^B	Category C ^C
Daytime (07:00 – 19:00) and Saturdays (07:00 – 13:00)	65	70	75
Evenings and weekends D	55	60	65
Night-time (23:00 to 07:00hrs)	45	50	55

- A. Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values.
- B. Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as category A values.
- C. Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are higher than category A values.
- D. 19:00 – 23:00 weekdays, 13:00 – 23:00 Saturdays and 07:00 – 23:00 Sundays.

For the appropriate assessment period (i.e. daytime in this instance) the ambient noise level is determined and rounded to the nearest 5 dB. If the construction noise exceeds the appropriate category value, then a significant effect is deemed to occur. It should be noted that this assessment method is only valid for residential properties and if applied to commercial premises without consideration of other factors may result in excessively onerous thresholds being set.

The closest neighbouring noise sensitive properties to the proposed development include dwellings approximately 90m to the south of the proposed development site. The closest commercial receptors are located adjacent to the eastern boundary with others located some 25m to 40m from the development site.

Fixed Limits

Several commercial units are located 20-30m to the west of the subject site.

When considering non-residential receptors, reference is made to BS 5228-1:2009+A1:2014, which gives several examples of acceptable limits for construction noise, the most simplistic being based upon the exceedance of fixed noise limits. For example, paragraph E.2 states: -

“Noise from construction and demolition sites should not exceed the level at which conversation in the nearest building would be difficult with the windows shut.”

Paragraph E.2 goes on to state: -

“Noise levels, between say 07.00 and 19.00 hours, outside the nearest window of the occupied room closest to the site boundary should not exceed: -

*70 decibels (dBA) in rural, suburban areas away from main road traffic and industrial noise;
75 decibels (dBA) in urban areas near main roads in heavy industrial areas”.*

Proposed Threshold Noise Levels

Considering the criteria outlined above and making reference to the baseline noise environment monitored around the development site (see Section 8.3), BS 5228-1:2009+A1:2014 has been used to inform the assessment approach for construction noise at Noise Sensitive Locations (NSLs).

The following Construction Noise Threshold (CNT) levels are proposed for the construction stage of this development: -

- For residential NSLs it is considered appropriate to adopt 65 dB(A) CNT depending on location. Given the baseline monitoring carried out, it would indicate that Category A and C values are appropriate using the ABC method.
- For commercial NSLs it is considered appropriate to adopt the 75 dB(A) CNT, given the urban, industrial environment in which the closest commercial properties reside, in line with BS 5228-1:2009+A1:2014.

Interpretation of the CNT

In order to assist with interpretation of significance relating a calculated construction noise level (CNT), Table 8.2 includes guidance as to the likely magnitude of impact associated with construction noise, relative to the CNT. This guidance is derived from DMRB: Noise and Vibration (UKHE 2020) and adapted to include the EPA EIAR Guidelines.

Table 8.2 Construction Noise Significance Ratings

Construction Noise Level Per Period	Guidelines for Noise Impact Assessment Significance (DMRB)	EPA EIAR Significance of Effects	Determination
Below or equal to baseline noise level	Negligible	Not Significant	Depending on CNT, duration & baseline noise level
Above baseline noise level and below or equal to CNT	Minor	Slight to Moderate	
Above CNT and below or equal to CNT +5 dB	Moderate	Moderate to Significant	
Above CNT +5 dB	Major	Significant, to Very Significant	

The adapted DMRB guidance outlined will be used to assess the predicted construction noise levels at NSLs and comment on the likely effects during the construction stage.

In accordance with the DMRB Noise and Vibration Guidance, construction noise and construction traffic noise effects shall constitute a significant effect where it is determined that a major or moderate magnitude of effect will occur for a duration exceeding:

- Ten or more days or night in any 15 consecutive day or nights, or
- A total number of days exceeding 40 in any six consecutive months.

8.3.1.2 Construction Traffic

Vehicular movement to and from the construction site for the proposed development will make use of the existing road network. In order to assess the potential impact of additional traffic on the human perception of noise, the following two guidelines are referenced: DMRB Noise and Vibration (UKHE 2020) and the EPA Guidelines (EPA, 2022). For construction traffic, due to the short-term period over which this impact occurs, the magnitude of impacts is assessed against the 'short term' period in accordance with the DMRB Noise and Vibration (UKHE 2020) document.

Table 8.3 sets out the classification of changes in noise level to impact on human perception based on the guidance contained in these documents.

Table 8.3 Likely Effect Associated with Change in Traffic Noise Level – Construction

Change in Sound Level (dB)	Subjective Reaction	DMRB Magnitude of Impact (Short-term)	EPA Significance of Effect
Less than 1 dB	Inaudible	Negligible	Imperceptible
1 – 2.9	Barely Perceptible	Minor	Not Significant to Slight
3 – 4.9	Perceptible	Moderate	Moderate
≥ 5	Up to a doubling of loudness	Major	Significant

8.3.1.3 Construction Vibration

Vibration standards address two aspects: those dealing with cosmetic or structural damage to buildings and those with human comfort. For the purpose of this scheme, the range of relevant criteria used for surface construction works for both building protection and human comfort are expressed in terms of Peak Particle Velocity (PPV) in mm/s.

Building Response

There is no published statutory Irish guidance relating to the maximum permissible vibration level. The following standards are the most widely accepted in this context and are referenced here in relation to cosmetic or structural damage to buildings:

- British Standard BS 5228-2 (BSI 2014b); and
- British Standard BS 7385-2 (BSI 1993)

BS7385-2 (BSI 1993) and BS5228-2 (BSI 2014b) advise that, for soundly constructed residential properties and similar light-framed structures that are generally in good repair, a threshold for minor or cosmetic (i.e. non-structural) damage should be taken as a peak component particle velocity (in frequency range of predominant pulse) of 15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz and 50 mm/s at 40 Hz and above for transient vibration. Where the dynamic loading caused by continuous vibration is such as to give rise to dynamic magnification due to resonance, especially at the lower frequencies where lower guide values apply, then the guide values in Table B.2 of BS5228-2 (BSI 2014b) might need to be reduced by up to 50%. On a cautious basis, therefore, continuous vibration limits are set as 50% of those for transient vibration across all frequency ranges. For buildings or structures that are structurally unsound, lower vibration magnitudes will apply, typically 50% of those for structurally sound buildings. Protected or historic buildings are not automatically assumed to be more vulnerable to vibration unless they have existing structural defects. The recommended transient vibration thresholds from BS5228-2 (BSI 2014b) for the avoidance of cosmetic damage to light framed and residential buildings are summarised in Table 8.4.

Table 8.4 Recommended Vibration Criteria During Construction Phase

Allowable vibration (in terms of peak particle velocity) at the closest part of sensitive property to the source of vibration, at a frequency of:		
Less than 15Hz	15 to 40Hz	40Hz and above
15 mm/s	20 mm/s	50 mm/s

Expected vibration levels from the construction works will be discussed further in 8.6.1.3.

Human Perception

Human response to vibration stimuli occurs at orders of magnitude below those associated with any form of building damage, hence vibration levels lower than those indicated in Table 8.4 can lead to concern. Table 8.5 presents the significance table relating to potential effects to building occupants during construction based on guidance from BS5228-2 (BSI 2014b), the DMRB Noise and Vibration (UKHE 2020) document and the associated EPA significant ratings.

Table 8.5 Guidance on Effects of Human Response to PPV Magnitudes

PPV range	BS 5228-2 (Note A, B, C)	DMRB Impact Magnitude	EPA Significance Ratings
≥10 mm/s PPV	Vibration is likely to be intolerable for any more than a very brief exposure to this level in most building environments.	Very High	Very Significant
≥1 mm/s PPV	It is likely that vibration of this level in residential environments will cause complaint, but can be	High	Moderate to Significant

PPV range	BS 5228-2 (Note A, B, C)	DMRB Impact Magnitude	EPA Significance Ratings
	tolerated if prior warning and explanation has been given to residents		
≥0.3 mm/s PPV	Vibration might be just perceptible in residential environments.	Medium	Slight to Moderate
≥0.14 mm/s PPV	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration.	Low	Not significant to Slight
<0.14 mm/s PPV	Not perceptible	Very Low	Imperceptible to Not significant

- Note A) The magnitudes of the values presented apply to a measurement position that is representative of the point of entry into the recipient.
- Note B) A transfer function (which relates an external level to an internal level) needs to be applied if only external measurements are available.
- Note C) Single or infrequent occurrences of these levels do not necessarily correspond to the stated effect in every case. The values are provided to give an initial indication of potential effects, and where these values are routinely measured or expected then an assessment in accordance with BS 6472 (BS1 2008), and/or other available guidance, might be appropriate to determine whether the time varying exposure is likely to give rise to any degree of adverse comment.

8.3.2 Operational Phase Noise Impacts

The main potential source of outward noise from the proposed development will be limited to traffic flows to and from the development site onto the public roads. There may also be an element of mechanical and electrical plant required to service the apartment buildings. The relevant guidance documents used to assess potential operational noise, and vibration impacts on the surrounding environment are summarised below.

- BS 8233:2014 Guidance on sound insulation and noise reduction for buildings (hereafter referred to as BS 8233) (BSI 2014c);
- BS 4142: 2014 +A1 2019 Methods for Rating and Assessing Industrial and Commercial Sound (hereafter referred to as BS 4142) (BSI 2019);
- ISO 1996-1:2016 Acoustics - Description, measurement and assessment of environmental noise. Part 1: Basic quantities and assessment procedures (hereafter referred to as ISO 1996 – 1) (ISO 2016);
- The UK Department of Transport Calculation of Road Traffic Noise (hereafter referred to as the CRTN) (UK Department of Transport 1988).
- UK Highways England (UKHE) Design Manual for Roads and Bridges (DMRB) LA 111 Sustainability and Environmental Appraisal LA 111 Noise and Vibration Revision 2 (UKHE 2020);
- International Organization for Standardization (ISO) 9613-2:1996 Acoustics – Attenuation of sound during propagation outdoors - Part 2: General method of calculation (hereafter referred to as ISO 9613 – 2) (ISO 1996);

8.3.2.1 Mechanical Plant

Receptors Outside the Proposed Development

The most appropriate standard used to assess the impact of a new continuous source (i.e. plant items) to a residential environment is BS 4142 *Methods for rating and assessing industrial and commercial sound* (2014). This standard describes a method for assessing the impact of a specific noise source at a specific location with respect to the increase in “background” noise level that the specific noise source generates. The standard provides the following definitions that are pertinent to this application:

- “*Specific sound level, L_{Aeq, T_r}* ” is equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over a given reference time interval, T . This level has been determined with reference to manufacturers information for specific plant items.
- “*Rating level*” L_{A_r, T_r} is the specific noise level plus adjustments for the character features of the sound (if any), and;
- “*Background noise level*” is the A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T . This level is expressed using the L_{A90} parameter. These levels were measured as part of the baseline survey.

The assessment procedure in BS4142: 2014 is outlined as follows:

1. determine the specific noise level;
2. determine the rating level as appropriate;
3. determine the background noise level, and;
4. subtract the background noise level from the rating level in order to calculate the assessment level.

The lower the rating level is relative to the measured background sound level, the less likely it is that the specific source will have an adverse impact or a significant adverse impact. A difference of +10 dB or more is likely to be an indication of a significant adverse impact. A difference of around +5 dB is likely to be an indication of an adverse impact, dependent on the context. Where the rated plant noise level is equivalent to the background noise level, noise impacts are typically considered to be neutral.

Receptors Inside the Proposed Development

In order to determine an appropriate noise criterion for residential receptors within the proposed development that will be built in future, guidance is taken from BS 8233. Recommended internal noise levels for residential settings are set out in the standard as follows:

Table 8.6 BS 8233 Recommended Internal Noise Levels

Activity	Location	Day (07:00 to 23:00hrs) dB $L_{Aeq, 16hr}$	Night (23:00 to 07:00hrs) dB $L_{Aeq, 8hr}$
Resting	Living room	35 dB $L_{Aeq, 16hr}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq, 16hr}$	30 dB $L_{Aeq, 8hr}$

For the purposes of this assessment, it is appropriate to derive external limits based on the internal criteria noted in the above. This is done by factoring in the degree of noise reduction afforded by a partially open window and typical 15 dB attenuation is noted in this British Standard. Using this correction value across an open window, the following external noise levels would achieve the internal noise levels noted in Table 8.6 above.

- Daytime (07:00 to 23:00 hours) 50 dB $L_{Aeq, 1hr}$
- Night-time (23:00 to 07:00 hours) 45 dB $L_{Aeq, 15min}$

8.3.2.2 Additional Vehicular Traffic on Roads

Vehicular movement to and from the proposed development will make use of the existing road network and new junction arrangement. Given that traffic from the development will make use of existing roads already carrying traffic volumes, it is appropriate to consider the increase in traffic noise level that arises as a result of any additional vehicular movements associated with the development.

In order to assess the potential impact of additional traffic on the human perception of noise, the following two guidelines are referenced DMRB Noise and Vibration (UKHE 2020) and the EPA EAR Guidelines (EPA, 2022) which categorise the magnitude of effect relating to changes in road traffic. For the operational phase, traffic noise impacts are assessed against the 'long term' magnitude ratings from the DMRB. These are discussed in Table 8.7.

Table 8.7 Significance In Change of Noise Level

Change in Sound Level (dB)	Subjective Reaction	DMRB Magnitude of Impact (Long-term)	EPA Significance of Effect
0	Inaudible	No impact	Imperceptible
0.1 – 2.9	Barely Perceptible	Negligible	Not significant
3 – 4.9	Perceptible	Minor	Slight, Moderate
5 – 9.9	Up to a doubling of loudness	Moderate	Moderate to Significant
10+	Doubling of loudness and above	Major	Significant to Very significant

8.3.2.3 Vibration

The development is residential in nature; therefore, it is not anticipated that there will be any impact associated with vibration during the operational phase.

8.3.2.4 Inward Noise – ProPG Planning & Noise

The Professional Practice Guidance on Planning & Noise (ProPG) document was published in May 2017. The document was prepared by a working group comprising members of the Association of Noise Consultants (ANC), the Institute of Acoustics (IOA) and the Chartered Institute of Environmental Health (CIEH). Although not a government document, since its adoption it has been generally considered as a best practice guidance and has been widely adopted in the absence of equivalent Irish guidance.

The ProPG outlines a systematic risk-based 2-stage approach for evaluating noise exposure on prospective sites for residential development. The two primary stages of the approach can be summarised as follows:

- Stage 1 - Comprises a high-level initial noise risk assessment of the proposed site considering either measured and or predicted noise levels; and,
- Stage 2 – Involves a full detailed appraisal of the proposed development covering four “key elements” that include:
 - Element 1 - Good Acoustic Design Process;
 - Element 2 - Noise Level Guidelines;
 - Element 3 - External Amenity Area Noise Assessment
 - Element 4 - Other Relevant Issues

The initial noise risk assessment is intended to provide an early indication of any acoustic issues that may be encountered. It calls for the categorisation of the site as a negligible, low, medium or high risk based on the pre-existing noise environment. Figure 8.1 presents the basis of the initial noise risk assessment; it provides appropriate risk categories for a range of continuous noise levels either measured and/or predicted on site.

It should be noted that a site should not be considered a negligible risk if more than 10 L_{AFmax} events exceed 60 dB during the night period and the site should be considered a high risk if the L_{AFmax} events exceed 80 dB more than 20 times a night.

Element 2 of the ProPG document sets out recommended internal noise targets derived from BS 8233 (2014). The recommended indoor ambient noise levels are set out in Table 8.8 and are based on annual average data, that is to say they omit occasional events where higher intermittent noisy events may occur.

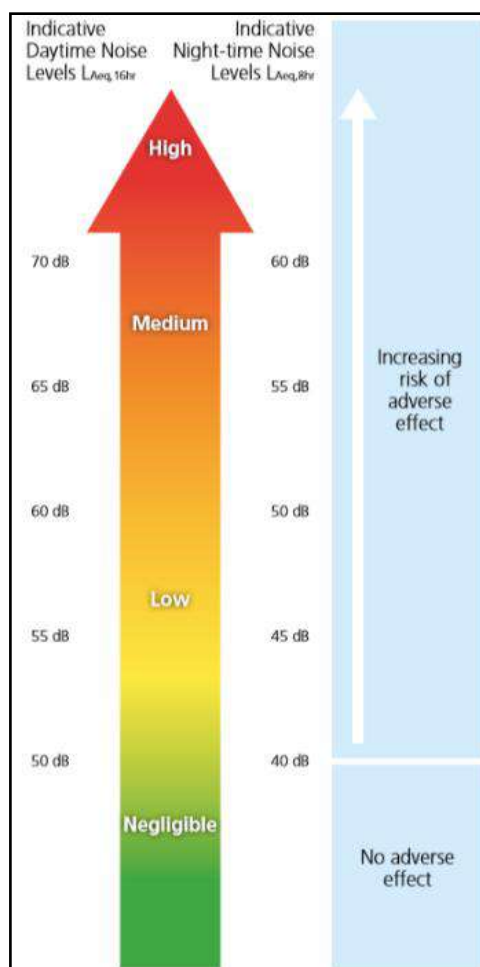


Figure 8.1 ProPG Stage 1 – Initial Noise Risk Assessment

Table 8.8 ProPG Internal Noise Levels

Activity	Location	Day (07:00 to 23:00hrs) dB $L_{Aeq,16hr}$	Night (23:00 to 07:00hrs) dB $L_{Aeq,8hr}$
Resting	Living room	35 dB $L_{Aeq,16hr}$	-
Dining	Dining room/area	40 dB $L_{Aeq,16hr}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16hr}$	30 dB $L_{Aeq,8hr}$ 45 dB $L_{Amax,T}^*$

*Note The document comments that the internal $L_{AFmax,T}$ noise level may be exceeded no more than 10 times per night without a significant impact occurring.

In addition to these absolute internal noise levels ProPG provides guidance on flexibility of these internal noise level targets. For instance, in cases where the development is considered necessary or desirable, and noise levels exceed the external noise guidelines, then a relaxation of the internal L_{Aeq} values by up to 5 dB can still provide reasonable internal conditions.

ProPG provides the following advice with regards to external noise levels for amenity areas in the development:

“The acoustic environment of external amenity areas that are an intrinsic part of the overall design should always be assessed and noise levels should ideally not be above the range 50 – 55 dB LAeq, 16hr.”

8.4 Receiving Environment

The subject site is located in Greenhills, Dublin 12, within the Greenhills Industrial Estate. The site is bound to the north by the Greenhills Road, and to the east, south and west by existing commercial buildings. The surrounding environment in the vicinity of the development site is mixed in nature with manufacturing, retail units and warehousing making up the majority of the surrounding building uses.

8.4.1 Baseline Noise Environment

8.4.1.1 Environmental Noise Survey

An environmental noise survey has been conducted at the site in order to quantify the existing noise environment. The survey was conducted in general accordance with ISO 1996: 2017: *Acoustics – Description, measurement and assessment of environmental noise*. Specific details are set out below.

Choice of Measurement Locations

The measurement locations are described below and shown in Figure 8.2.

N1	located in the northern portion of the site, approximately at the location of development building facades.
N2	located to the south of the site opposite a neighbouring manufacturing facility.
N3	located to the southwest of the site to the rear of houses at St Columba's Road.
N4	located to the south west of the site adjacent to the internal road.
N5	located north of the site adjacent to the Greenhills Road

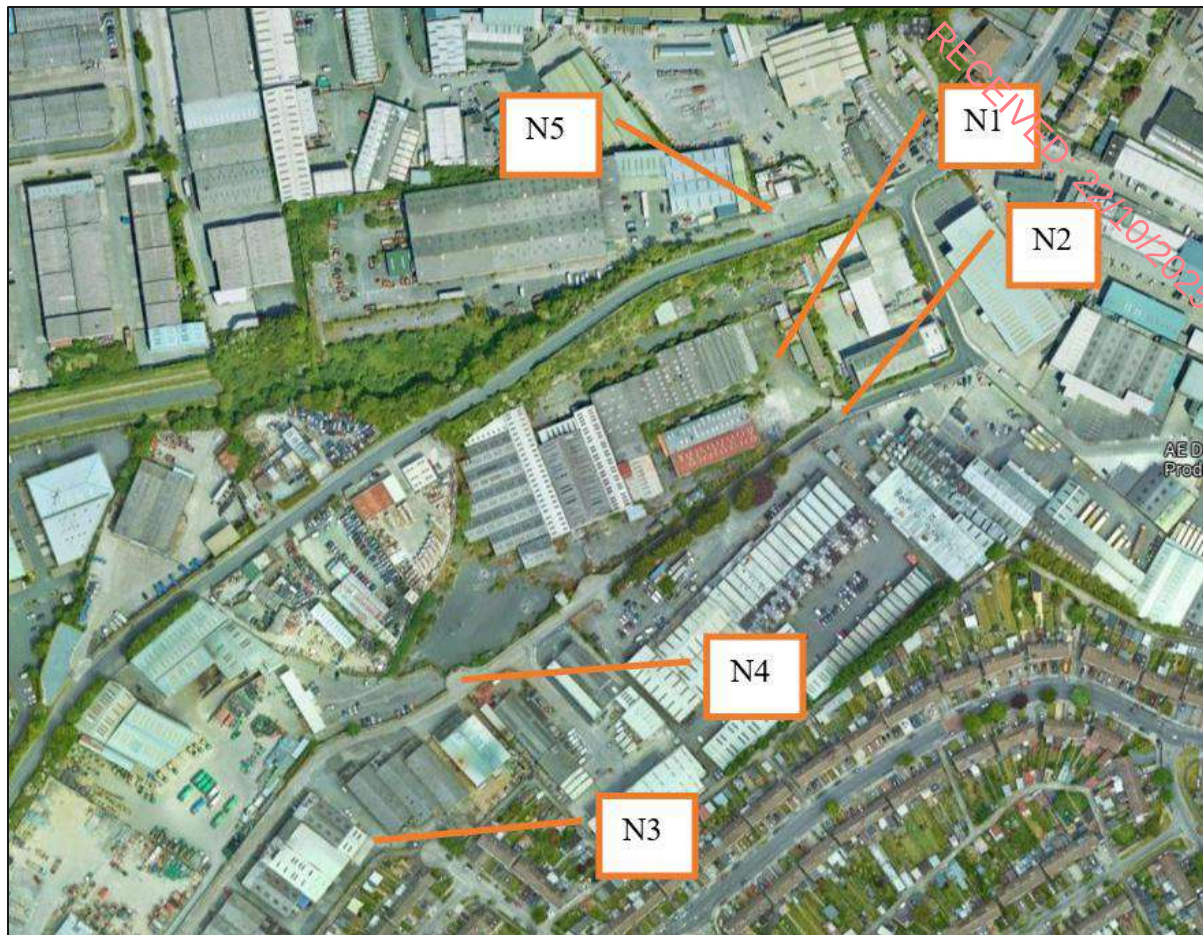


Figure 8.2 Noise Survey Locations

Survey Periods

The noise survey was carried out over the following periods:

Table 8.9 Survey Periods

Survey Position	Survey Period
N1 (unattended)	13:45hrs on 25 May to 12:20hrs on 28 May 2021 ^{NOTE A} Valid dataset comprises data from survey start to 19:00hrs on 27 May 2021
N2	16:07hrs to 23:53hrs on 14 March 2024
N3	14:57hrs to 16:24hrs on 14 March 2024
N4	15:14hrs to 16:42hrs on 14 March 2024
N5	15:39hrs to 17:33hrs on 14 March 2024 and 23:01 to 23:49 on 21 March 2024

NOTE A Evidence of interference was observed on collection of equipment. Data set has been reviewed and affected data excluded from the assessment.

Instrumentation

The noise measurements were carried out using the equipment listed below.

Table 8.10 Noise Monitoring Equipment Details Unattended 2021

Measurement	Manufacturer	Equipment Model	Serial Number	Calibration date
Sound Level Meter	Rion	NL-52	575782	August 2019
Calibrator	Brüel & Kjær	Type 4231	2394086	March 2021

Table 8.11 Noise Monitoring Equipment Details Unattended 2024

Measurement	Manufacturer	Equipment Model	Serial Number	Calibration date
Sound Level Meter	Rion	NL-52	34313057	October 2023
Calibrator	Brüel & Kjær	Type 4231	2615338	November 2023

Measurement Parameters

The noise survey results are presented in terms of the following parameters.

- L_{Aeq}** is the equivalent continuous sound level. It is a type of average and is used to describe a fluctuating noise in terms of a single noise level over the sample period.
- L_{AFmax}** is the instantaneous maximum sound level measured during the sample period using the 'F' time weighting.
- L_{A90}** is the sound level that is exceeded for 90% of the sample period. It is typically used as a descriptor for background noise.

The "A" suffix denotes the fact that the sound levels have been "A-weighted" in order to account for the non-linear nature of human hearing. All sound levels in this report are expressed in terms of decibels (dB) relative to 2×10^{-5} Pa.

Survey Results and Discussion

The results of the noise survey at five monitoring locations are summarised below.

Location N1

The unattended measurements collected over the survey period are summarised below, excluding periods during which interference was identified.

Table 8.12 Measured Noise Levels at N1

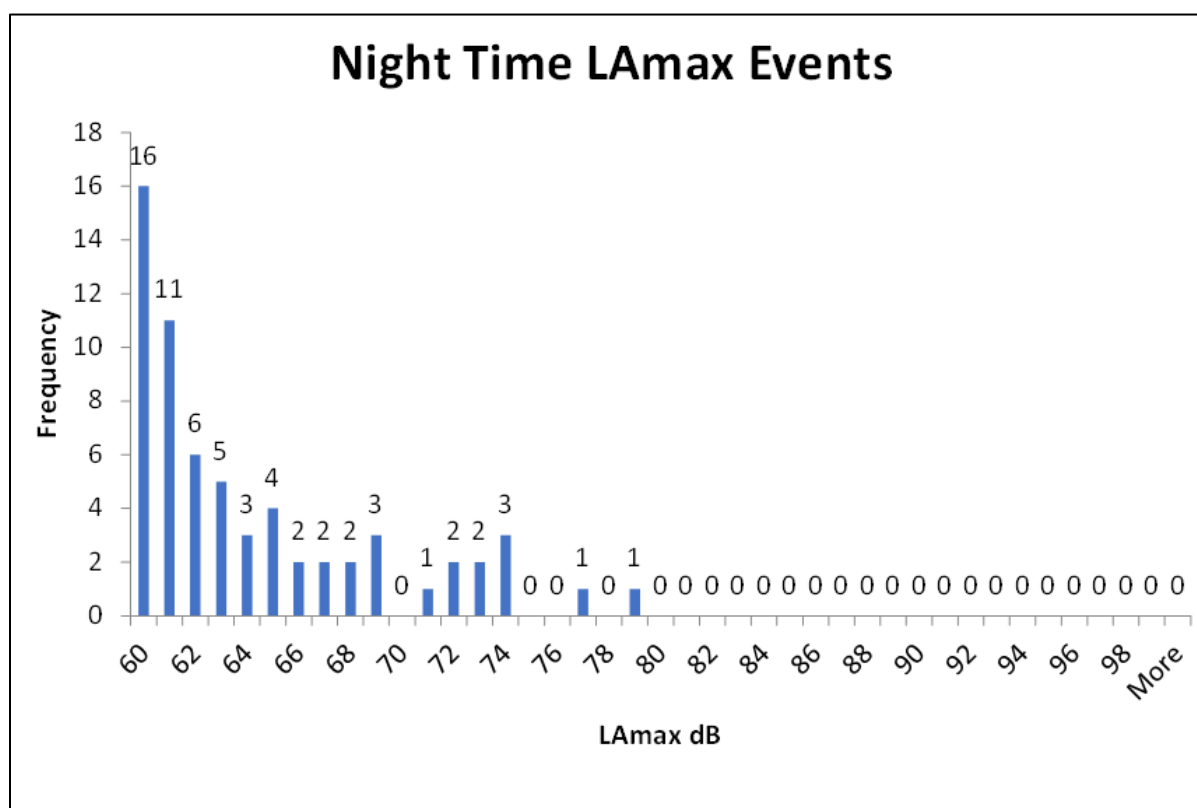
Date	Period	Measured Noise Levels (dB re. 2×10^{-5} Pa)		
		L_{Aeq}	L_{Amax}	L_{A90}
25 May 2021	Day	56	79	52
	Night	52	79	47
26 May 2021	Day	56	76	52
	Night	52	74	47
27 May 2021	Day	57	77	54
Average	Day	56	76 – 79	53
	Night	52	74 – 79	47

On installation and collection at this location the primary noise sources were observed to be traffic noise on the industrial estate road, traffic on Greenhills Road and steady plant noise and HGV movements at the manufacturing facility opposite. Activities relating to the day-to-day operation of a commercial trade business currently in operation on the site also contributed to daytime measured noise. Daytime ambient noise levels ranged from 56 to 57 dB L_{Aeq} with an average of 56 dB L_{Aeq} . Daytime background noise levels ranged from 52 to 54 dB L_{A90} with an average of 53 dB L_{A90} .

Night-time ambient noise levels were of the order of 52 dB L_{Aeq} . Night-time background noise levels were of the order of 47 dB L_{A90} . Night-time maximum noise levels were in the range of 74 to 79 dB L_{Amax} .

In addition, the L_{AFmax} values were measured over 15-minute intervals over the duration of the unattended monitoring survey.

Figure 8.3 presents the number of measured L_{AFmax} events for each decibel level during the night period measured at Location N1. On review of the maximum noise levels the value of 72 dB L_{AFmax} is not regularly exceeded on a given night (less than 10 events). This value has been used to determine the typical L_{Amax} levels experienced facades of future development buildings closer to the Greenhills Road.

**Figure 8.3** Location N1 Night-time L_{Amax} events

Location N2**Table 8.13** Measured Noise Levels at N2

Date	Period	Time	Measured Noise Levels (dB re. 2×10^{-5} Pa)		
			L _{Aeq}	L _{Amax}	L _{A90}
14/03/2024	Day	16:07	66	81	61
		16:53	67	82	62
		17:43	65	78	61
	Night	23:06	64	74	62
		23:38	64	74	62

Daytime measured noise levels at the survey location were dictated by nearby activity within the industrial estate. Noise sources included intermittent HGV movements including air brakes, reverse alarms, forklift activity, plant noise, birdsong and distant traffic noise.

Daytime ambient noise levels were in the range of 65 to 67 dB L_{Aeq}. Background noise levels were in the range of 61 to 62 dB L_{A90}.

During the night-time period noise sources were noted to include steady plant noise from the opposite commercial facility, faint traffic noise, delivery vehicle and car movements on the industrial estate road. Other noise sources included faint traffic and faint activity in nearby warehouse buildings.

Night-time ambient noise levels were 64 dB L_{Aeq}. Background noise levels were 62 dB L_{A90}.

Further comment on industrial noise observed is presented in Section 8.4.2.

Location N3**Table 8.14** Measured Noise Levels at N3

Date	Time	Measured Noise Levels (dB re. 2×10^{-5} Pa)		
		L _{Aeq}	L _{Amax}	L _{A90}
14/03/2024	14:57	56	72	50
	15:32	56	83	50
	16:09	50	58	49

Measured noise levels at the survey location were dictated by passing traffic, HGV movements, factory noise, forklifts activity, drilling, pedestrian conversation and birdsong.

Ambient noise levels were in the range of 50 to 56 dB L_{Aeq}. Background noise levels were in the range of 49 to 50 dB L_{A90}.

Location N4**Table 8.15** Measured Noise Levels at N4

Date	Time	Measured Noise Levels (dB re. 2×10^{-5} Pa)		
		L _{Aeq}	L _{Amax}	L _{A90}
14/03/2024	15:14	61	84	55
	15:52	60	74	54
	16:27	62	82	52

At this location noise sources were noted to include road traffic noise, HGV movements, factory noise, forklift activity operations, sawing, pedestrian conversation and birdsong.

Location N5**Table 8.16** Measured Noise Levels at N5

Date	Time	Measured Noise Levels (dB re. 2×10^{-5} Pa)		
		L _{Aeq}	L _{Amax}	L _{A90}
14/03/2024	15:39	75	87	67
	16:31	76	87	66
	17:18	76	87	66
21/03/2024	23:01	69	86	49
	23:34	70	85	49

Daytime noise sources at the survey location were noted as nearby activity within the industrial estate. The noted noise sources included plant noise, birdsong, power washing and road traffic noise.

Daytime ambient noise levels were in the range of 75 to 76 dB L_{Aeq}. Background noise levels were in the range of 66 to 67 dB L_{A90}.

During the night-time period noise sources were noted to include factory noise and road traffic noise.

Night-time ambient noise levels were in the range of 69 to 70 dB L_{Aeq}. Background noise levels were 49 dB L_{A90}.

8.4.2 Comment on Industrial Noise Environment

During the attended noise survey at the proposed development site, noise from the Brennan's manufacturing facility to the south of the site was observed. The noise included steady plant noise, HGV movements, HGV air brakes and tipping noise.

The development lands have been zoned REGEN under the South Dublin County Council Development Plan 2022 – 2028, i.e. zoned for enterprise / residential-led development.

Therefore, in order to present a robust assessment, the current noise environment has to be considered with respect to inward noise impact on the proposed development. During the course of the baseline noise surveys commercial noise from the facility to the south-east of the proposed development was noted. Measured noise levels have been incorporated into the inward noise impact assessment in addition to the primary noise source, i.e. traffic noise on the Greenhills Road.

8.4.3 Do-Nothing Scenario

In the absence of the proposed development being constructed, the noise environment at the nearest noise sensitive locations will remain largely unchanged. The noise and vibration levels measured/noted during the baseline studies are considered representative of the Do-Nothing scenario. The Do-Nothing scenario is therefore considered neutral impact.

However, if the proposed development were not to proceed, then a different development, similar in nature may be constructed as the land is zoned for development in keeping with the national policy for compact growth on brownfield sites.

8.5 Characteristics of the Proposed Development

The proposed development is located on the former Chadwicks Greenhills site and consist of the construction of a mixed-use residential and commercial development comprising 588 no. residential apartment units (291 no. one-beds, 238no. two-beds and 59 no. three-beds), 1 no. 570.91sqm 443sqm childcare facility and 6no. commercial/retail units in 4 no. blocks. A detailed description of the development is provided in Chapter 3 (Project Description).

When considering a development of this nature, the potential noise and vibration impact on the surroundings is considered for each of two distinct stages:

- Construction and demolition phase; and,

- Operational phase.

The construction phase will involve demolition, excavation over the development site, construction of foundations and buildings, landscaping, and vehicle movements to site using the local road network. This phase will generate the highest potential noise impact due to the works involved, however the time frame is short term in nature.

The primary sources of outward noise in the operational context are deemed to be long term in duration and will comprise traffic movements to the development site using the existing road network and plant noise emissions from the completed buildings. These issues are discussed in detailed in the following sections.

Inward noise incident on the development from existing and future noise sources, namely road traffic noise and commercial activity, has also been assessed. Traffic noise as a result of the future bus connects route adjacent to the proposed development has also been taken into account.

8.6 Potential Impact of the Proposed Development

The potential noise and vibration impacts associated with the construction and operational phases of the proposed development are discussed in the following sections.

8.6.1 Construction Phase

8.6.1.1 Construction Phase Noise

During the demolition and construction phases of the proposed development, a variety of items of plant will be in use, such as excavators, piling equipment, dumper trucks, compressors and generators. Due to the nature of daytime activities undertaken on a construction site such as this, there is potential for generation of significant levels of noise. The flow of vehicular traffic to and from a construction site is also a potential source of relatively high noise levels.

For the purposes of this assessment, two stages of construction have been assessed: the demolition phase, which involves the demolition of one two-storey office building and nine storage/warehouse buildings, and the general construction phase of the proposed development, which will incorporate standard construction techniques to build the structures within the development. The source noise levels used for each of these construction phases are discussed below.

The demolition of the one two-storey office building and nine storage/warehouse buildings will likely be the most noise intrusive works during this phase of construction. Reference to BS 5288-1 indicates that highest noise levels during this phase will be associated with activities associated with the demolition of these existing structures. Noise levels from these activity types are typically in the range of 80 to 90 dB LAeq at 10m. For construction activities associated with demolition, a total construction noise level of 92 dB LAeq at 10m has been used for the purposes of indicative calculations. This would involve for example, one item of plant at 90 dB LAeq and two items of plant at 85 dB LAeq and one item of plant at 80 dB LAeq operating simultaneously within one work area which is considered a worst-case scenario.

Once the site clearance and demolition works have been completed, a large portion of the work will involve manual labour and cranes with lower overall noise levels. For the purpose of this assessment a combined sound pressure level of 78 dB LAeq,T at 10m has been used for construction noise calculations during ongoing site works and compounds once site clearance and demolition works are completed. This would include, for example, one item of plant at 75 dB LAeq and three items of plant at 70 dB LAeq operating simultaneously within a work area resulting in a total noise level of 78 dB LAeq along the closest works boundary.

Given the nature of the proposed works which will include standard building techniques across the site, the cumulative construction noise levels above represent conservative noise levels used to assess construction activities associated with the various stages of construction. This worst-case scenario is a robust assumption made for developments of this size, on the basis that it is unlikely that more than 5 no. items of such plant/equipment would be operating simultaneously in such close proximity to each other at all times. In reality items of construction plant and machinery will be operating at varying distances from any one NSL.

Guidance on the approximate attenuation achieved by standard construction hoarding surrounding construction sites is also provided in BS 5228-1. It states that when the top of the plant is just visible to the receiver over the noise barrier, an approximate attenuation of 5 dB can be assumed, while a 10 dB attenuation can be assumed when the noise screen completely hides the sources from the receiver.

This scenario can be assumed in this case due to the proximity of the noise-sensitive locations, i.e. a hoarding height will be chosen so as to completely hide the source. Table 8.17 shows the potential noise levels calculated at various distances based on the assumed sound levels of the construction and attenuation provided by the barrier of 10 dB.

The closest noise sensitive locations have been identified as shown in Figure 8.4 and described below.

There are several residential receptors located surrounding the proposed development to the south and northeast. Residential houses are set back some 90m to 160m from areas of significant construction works associated with the development.

The proposed development site is surrounded by existing commercial and industrial receptors. For the most part these buildings are warehouses with low noise sensitivity. The closest offices, showrooms and cafés are located between 25m and 40m from areas of significant works.

Review of the baseline noise survey, available noise mapping and the threshold values detailed in Table 8.1 indicates that the appropriate daytime noise criteria for construction noise are as follows:

- Residential receptors 65 dB $L_{Aeq,T}$
- Commercial/industrial receptors 75 dB $L_{Aeq,T}$

A night-time threshold is not included as construction work will not be taking place at night.

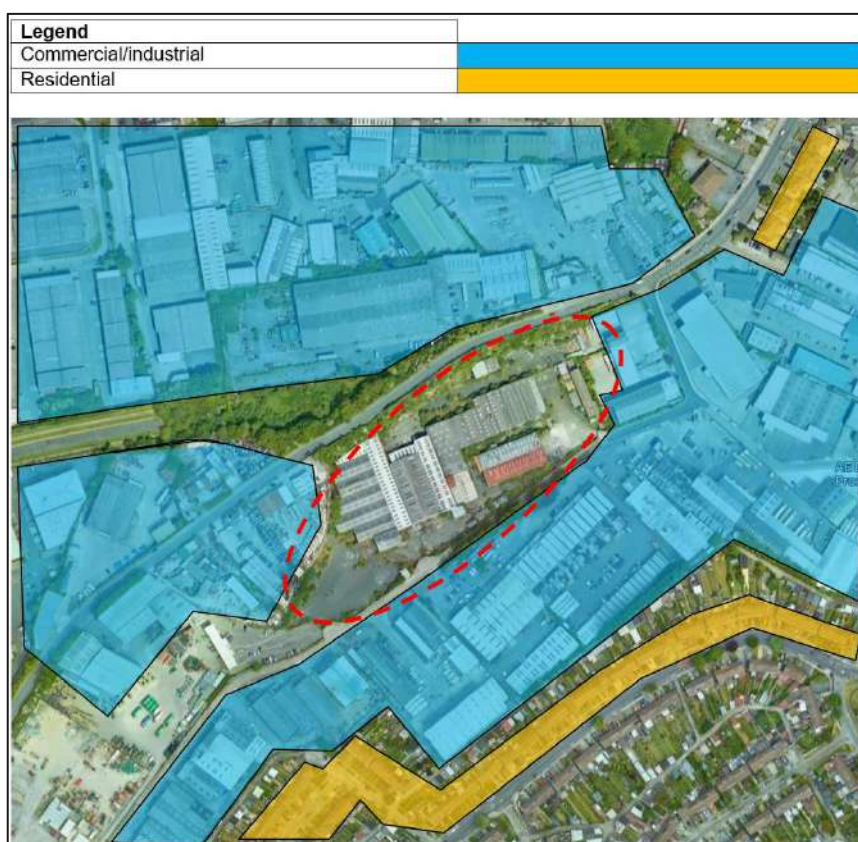


Figure 8.4 Noise Sensitive Locations

Table 8.17 Potential Construction Noise Levels at Varying Distances Assuming 10 dB attenuation from Site Hoarding

Construction Phase	Cumulative Sound Pressure dB $L_{Aeq,T}$ at 10m	Calculated noise levels at varying distances (dB $L_{Aeq,T}$)					
		10m	20m	30m	40m	50m	60m
Site Clearance and Demolition	92	80	74	70	68	66	64
General Construction	78	66	60	56	54	52	50

The calculated noise levels in Table 8.17 show that the criteria for residential receptors will not be exceeded at locations greater than 60m from construction works during the site clearance and demolition phase of the construction and not exceeded at locations greater than 10m from the general construction of the proposed development. In this instance the nearest houses are located some 90m away and therefore the contribution of construction noise is predicted to be comfortably within the recommended criteria during both phases assessed in relation to the construction of the proposed development. The resultant effect is negative, short term and slight to moderate at all residential NSLs.

Commercial receptors are approximately 25m from construction works associated with the proposed development, it is predicted that at these distances construction noise related to the proposed development will fall below the adopted construction noise threshold of 75 dB $L_{Aeq,T}$. The resultant effect will be negative, short term and slight to moderate.

In order to minimise the impact of construction activity mitigation, measures are detailed in Section 8.7

8.6.1.2 Construction Phase Traffic

During the construction phase, traffic associated with the proposed development would consist of a mix of Light Goods Vehicles (LGVs) and Heavy Goods Vehicles (HGVs) travelling to and from the site.

In terms of the additional construction traffic on local roads that will be generated as a result of the proposed development, the following comment is presented: As stated in the DMRB Noise and Vibration (UKHE 2020), Volume 11, Section 3, Part 7, in order to increase traffic noise levels by 1 dB traffic volumes would need to increase by the order of 25% it is considered that additional traffic introduced onto the local road network due to the construction phase associated with various phases of the development will introduce a level of traffic that will not result in a significant noise impact. However, a series of mitigation measures within Section 8.7 will be implemented to ensure that noise from vehicle movements during construction are reduced to a minimum.

8.6.1.3 Construction Phase Vibration

Potential for vibration impacts during the construction phase programme are associated with the ground breaking, piling and excavations required. There is potential for piling to be used for building and basement foundations for and the proposed development buildings. For the purposes of this assessment the expected vibration levels during piling assuming augured or bored piles have been determined through reference to published empirical data. The British Standard BS 5228 – Part 2: Vibration, publishes the measured magnitude of vibration of rotary bored piling using a 600mm pile diameter for bored piling into soft ground over rock, (Table D.6, Ref. No. 106):

- 0.54 mm/s at a distance of 5 m, for auguring;
- 0.22 mm/s at a distance of 5 m, for twisting in casing;
- 0.42 mm/s at a distance of 5m, for spinning off, and;
- 0.43 mm/s at a distance of 5 m, for boring with rock auger.

Considering the low vibration levels at very close distances to the piling rigs, vibration levels at the nearest buildings are not expected to pose any significance in terms of cosmetic or structural damage. In addition, the range of vibration levels is typically below a level which would cause any disturbance to occupants of nearby buildings.

In this instance, taking account of the distance to the nearest sensitive off-site buildings, vibration levels at the closest neighbouring buildings are expected to be orders of magnitude below the limits set out in Table 8.4 to avoid any cosmetic damage to buildings. Vibration levels are also expected to be below a level that would cause disturbance to building occupants, as set out in Table 8.5. The potential vibration impact during the construction phase is of short-term, neutral and imperceptible impact.

During demolition and ground-breaking in the excavation phase, there is potential for vibration to propagate through the ground. Empirical data for this activity is not provided in the BS 5228-2:2009+A1:2014 standard, however the likely levels of vibration from this activity is expected to be below the vibration threshold for building damage on experience from other sites.

AWN have previously conducted vibration measurements under controlled conditions, during trial construction works on a sample site where concrete slab breaking was carried out. The trial construction works consisted of the use of the following plant and equipment when measured at various distances:

- 3 tonne hydraulic breaker on small CAT tracked excavator
- 6 tonne hydraulic breaker on large Liebherr tracked excavator

Vibration measurements were conducted during various staged activities and at various distances. Peak vibration levels during staged activities using the 3 Tonne Breaker ranged from 0.48 to 0.25 PPV (mm/s) at distances of 10 to 50m respectively from the breaking activities. Using a 6 Tonne Breaker, measured vibration levels ranged between 1.49 to 0.24 PPV (mm/s) at distances of 10 to 50m respectively.

The range of values recorded provides some context in relation typical ranges of vibration generated by construction breaking activity likely required on the proposed site. This range of vibration magnitudes indicate vibration levels at the closest neighbouring buildings are likely to be below the limits set out in Table 8.4 to avoid any cosmetic damage to buildings.

In terms of disturbance to building occupants, works undertaken within close proximity to the commercial receptors on the eastern site perimeter have the potential to emit perceptible vibration levels.

Notwithstanding the above, any construction activities undertaken on the site will be required to operate below the recommended vibration threshold set out in Table 8.4 during all activities. Further discussion on mitigation measures during this phase are discussed in section 8.7.

It is anticipated that excavations will be made using standard excavation machinery, which typically do not generate appreciable levels of vibration close to the source. Taking this into account and considering the distance that these properties are from the works and the attenuation of vibration levels over distance, the resultant vibration levels are expected to be well below a level that would cause disturbance to building occupants or even be perceptible.

8.6.2 Operational Phase

8.6.2.1 Mechanical Plant

Building and mechanical services plant items are proposed that will serve the apartments and ground floor commercial/retail units.

The selection of building services plant will ensure that noise levels comply with the criteria described in Section 8.3.2.1. It is acknowledged that the selection of the specific plant items is subject to change during the detailed design stage, and this is normal industry practice. However, noise from any new plant items will be designed and/or controlled so as not to give rise to any adverse effects at the nearest noise sensitive locations.

Considering the large distances to the nearest off-site residential receptors, it is expected that contribution of plant noise at these locations will be negligible. It is more relevant to consider the noise sensitive receptors within the proposed development. Once plant selections are designed so that there is no negative impact on the proposed development, this will ensure that at receptors external to the proposed development, the plant noise levels will not exceed the recommended criteria.

The effect associated with building services plant, once designed to achieve the relevant noise criteria, is categorised as negative, imperceptible and permanent.

8.6.2.2 Additional Traffic on Public Roads

For the purposes of assessing the potential noise impact, it is appropriate to consider the relative increase in noise level associated with traffic movements on existing roads and junctions with and without the proposed development, given that traffic from the development will make use of the existing road network.

Daily Traffic (AADT) for the Do Minimum and Do Something scenarios have been reviewed to calculate the change in traffic noise. All operational traffic calculations are based on the traffic data provided by NRB Consulting Engineers. The assessment years are based on the forecasted opening years and design years of the proposed development. The junctions used for the assessment are the same junctions highlighted within Figure 8.5. The significance of effects is assessed against the criteria within Table 8.7.

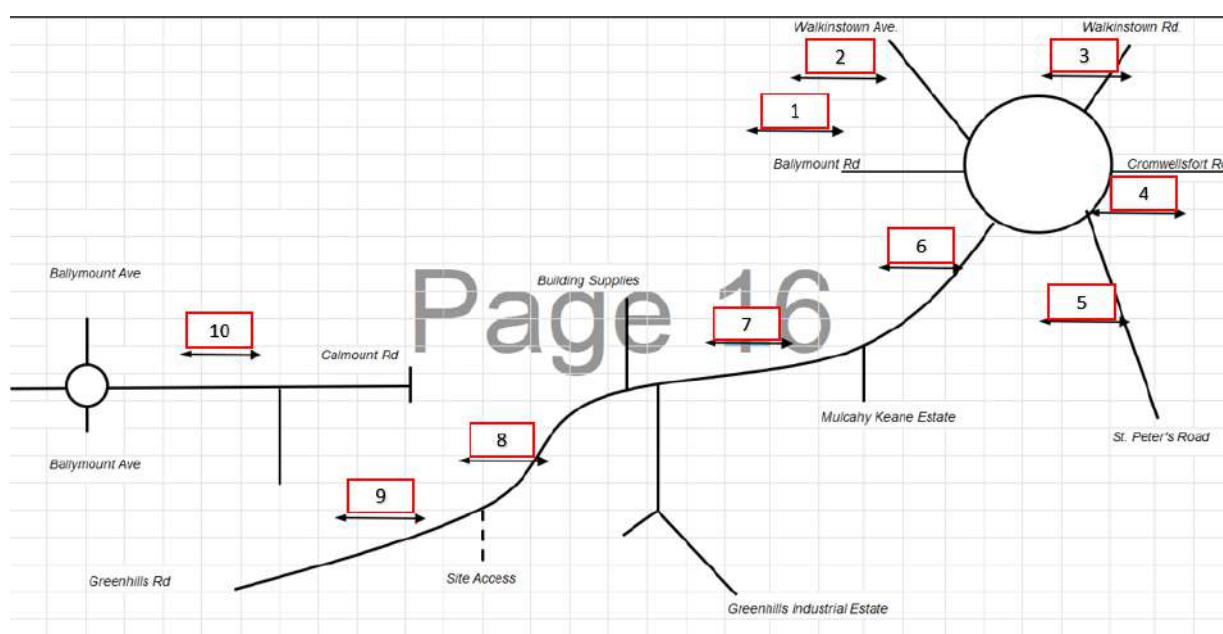


Figure 8.5 Road Junctions Assessed in Operational Traffic Noise Assessment

Table 8.18 Potential Impact in Relation to Operational Phase Traffic Do Nothing v Do Something 2026

Road Section ID	Total Vehicle AADT (2026 Do Nothing)	HGV%	Total Vehicle AADT (2026 Do Something)	HGV%	Calculated Change in Noise Levels, dB	Significance
1	12,102	3%	12,193	3%	0.0	Imperceptible
2	15,541	3%	15,750	3%	0.1	Not Significant
3	12,015	3%	12,535	3%	0.2	Not Significant
4	14,743	3%	14,970	3%	0.1	Not Significant
5	13,512	3%	13,599	3%	0.0	Imperceptible
6	14,732	3%	15,866	3%	0.4	Not Significant
7	14,394	3%	15,528	3%	0.5	Not Significant
8	13,976	3%	15,110	3%	0.5	Not Significant
9	13,976	3%	14,904	3%	0.4	Not Significant
10	16,652	3%	17,579	3%	0.3	Not Significant

Table 8.19 Potential Impact in Relation to Operational Phase Traffic Do Nothing v Do Something 2041

Road Section ID	Total Vehicle AADT (2041 Do Nothing)	HGV%	Total Vehicle AADT (2041 Do Something)	HGV%	Calculated Change in Noise Levels, dB	Significance
1	13,649	3%	13,739	3%	0.0	Imperceptible
2	17,526	3%	17,735	3%	0.1	Not Significant
3	13,550	3%	14,071	3%	0.2	Not Significant
4	16,626	3%	16,853	3%	0.1	Not Significant
5	15,239	3%	15,325	3%	0.0	Imperceptible
6	10,614	3%	11,748	3%	0.4	Not Significant
7	10,233	3%	11,367	3%	0.5	Not Significant
8	9,762	3%	10,895	3%	0.5	Not Significant
9	9,762	3%	10,689	3%	0.4	Not Significant
10	12,779	3%	13,707	3%	0.3	Not Significant

For the both the opening year of 2026 and the design year of 2041 traffic flows associated with the development are predicted to increase noise levels from 0.0 to 0.5 dB. With reference to Table 8.7, the predicted change in noise level associated with additional traffic on the existing road network will result in a negative, imperceptible to not significant and long-term effect.

8.6.3 Cumulative Effects

8.6.3.1 Construction Phase

Due to the proximity of the site to nearby sensitive receivers, there is potential for cumulative noise and vibration impacts in the event that construction works relating to other projects or schemes are ongoing simultaneously. In the event of two construction phases of the proposed development overlapping predicted construction noise levels within Section 8.6.1 may rise by the order of +3 dB. Review of noise sensitive locations where there is potential for cumulative impacts are residential units approximately 90m from the site boundary and the various commercial/industrial receptors surrounding the proposed development site.

Sensitive receptors at further distances would be less vulnerable to cumulative effects, since during the construction phase of the proposed development, construction noise on site will be localised and will therefore likely be the primary noise source at the nearest noise sensitive receivers.

Cumulative impacts will need to be considered and managed in the case that the construction phase of the proposed development occurs simultaneously to other permitted developments. It is recommended that liaison between construction sites is on-going throughout the duration of the construction phase.

Contractors should schedule work in a co-operative effort to limit the duration and magnitude of potential cumulative impacts on nearby sensitive receptors. Cumulative construction noise impacts are expected to be negative, significant and short-term.

8.6.3.2 Operational Phase

The noise criteria set for buildings within the development are designed to avoid any significant increase in the prevailing background noise environment external to the site. Operational noise limits included in this report refer to cumulative noise from all fixed installations on site. The design of plant and other fixed installations will be progressed during the design stage to ensure the noise limits at off-site noise sensitive locations are not exceeded.

Traffic volumes assessed take account of the additional traffic from other permitted schemes and developments and therefore the operational traffic noise assessment presented is already assessing the cumulative impact. This assessment has concluded there will be no significant noise impact due to operational traffic from the proposed development.

8.6.4 Inward Noise Impact Assessment

The development lands are bound to the north by the Greenhills Road which dominates the noise environment along this boundary. In order to establish noise levels across the development site an acoustic noise model has been developed and calibrated against noise levels measured during the baseline study on site.

8.6.4.1 Noise Model of Study Area

Proprietary noise calculation software was used for the purposes of establishing the prevailing noise levels on the proposed site. The selected software, Brüel & Kjær Type 7810 Predictor, calculates noise levels in accordance with the Calculation of Road Traffic Noise (CRTN - ISBN 0 11 550847 3) issued by the UK Department of Transport in 1988. This is the standard recognised for the prediction of road traffic noise by Transport Infrastructure Ireland (TII) and the Environmental Noise Regulations 2006 SI/140 2006.

8.6.4.2 Noise Model Validation

Noise levels recorded during both the attended and unattended survey were used to calibrate the noise model to within 1 dB of the calculated values. The resultant daytime levels output from the model calibration N5 are slightly higher than the average measured levels (N5) but are representative of periods of higher noise levels measured on site. This is regarded as very strong correlation in respect of predicted noise levels. Noise levels are calculated over daytime periods, i.e. 07:00 to 23:00hrs and night-time periods, 23:00 to 07:00 hrs.

Table 8.20 Calculated v Measured Noise Levels at Development Site

Location	Time Period	Measured Noise Level (dB)	Calculated Noise Level (dB)
N1	Daytime, L _{Aeq,16hr}	56	56
	Night-time, L _{Aeq,8hr}	52	52
N5	Daytime, L _{Aeq,16hr}	76	73
	Night-time, L _{Aeq,8hr}	70	69

Figure 8.6 and Figure 8.7 display the calculated noise contours across the site for day and night-time periods at a height of 4m above ground, i.e. the typical height of a first-floor window.

The results of the modelling exercise demonstrate that highest noise levels are experienced along the north of the site in proximity to the road edges and reduce considerably by 10 dB towards the southwest of the site, in the absence of any development buildings.



Figure 8.6 Initial Noise Risk Assessment – Daytime (4m Height)



Figure 8.7 Initial Noise Risk Assessment – Nighttime (4m Height)

Giving consideration to the noise levels presented in the previous sections the initial site noise risk assessment has concluded that the level of risk across the site lies within the Medium to High noise risk categories.

ProPG states the following with respect to medium and high risks areas:

Medium Risk As noise levels increase, the site is likely to be less suitable from a noise perspective and any subsequent application may be refused unless a good acoustic design process is followed and is demonstrated in an ADS which confirms how the adverse impacts of noise will be mitigated and minimised, and which clearly demonstrate that a significant adverse noise impact will be avoided in the finished development.

High Risk High noise levels indicate that there is an increased risk that development may be refused on noise grounds. This risk may be reduced by following a good acoustic design process that is demonstrated in a detailed ADS. Applicants are strongly advised to seek expert advice.

Given the above, it can be concluded that the development site may be categorised as *Medium to High* Noise Risk and as such the Acoustic Design Statement (following here and also in Section 8.6.4.3) is required to demonstrate that suitable care and attention has been applied in mitigating and minimising noise impact to such an extent that an adverse noise impacts will be avoided in the final development.

It should be noted that ProPG states the following with regard to how the initial site noise risk is to be used:

“It is important that the assessment of noise risk at a proposed residential development site is not the basis for the eventual recommendation to the decision maker. The recommended approach is intended to give the developer, the noise practitioner, and the decision maker an early indication of the likely suitability of the site for new residential development from a noise perspective and the extent of the acoustic issues that would be faced. Thus, a site considered to be high risk will be recognised as presenting more acoustic challenges than a site considered as low risk. A site considered as a negligible risk is likely to be acceptable from a noise perspective and need not normally be delayed on noise grounds. A potentially problematical site will be flagged at the earliest possible stage, with an increasing risk indicating the increasing importance of good acoustic design”

Following the guidance contained in ProPG, therefore, it does not preclude residential development on sites that are identified as having medium or high noise levels. It merely identifies the fact that a more considered approach will be required to ensure the developments on the higher risk sites are suitably designed to mitigate the noise levels. The primary goal of the approach outlined in ProPG is to ensure that the best possible acoustic outcome is achieved for a particular site.

8.6.4.3 Acoustic Design Statement – Part 1

Façade Noise Levels

Noise levels have been predicted across the proposed development site during day and night-time periods using the noise model developed to include the development buildings.

Figure 8.8 and Figure 8.11 illustrate the predicted traffic noise levels for daytime and night-time at heights of 4m and 10m.



Figure 8.8 Predicted Noise Levels – Daytime 4m Height



Figure 8.9 Predicted Noise Levels – Daytime 10m Height

Predicted daytime noise levels at 4m height across the site range from <35 dB in sheltered areas, screened from road traffic, to 65 dB along the northern boundary which faces on to Greenhills Road. The daytime noise levels at 10m height across the site range from <35 dB in sheltered areas, screened from road traffic, to 70 dB along the northern boundary.



Figure 8.10 Predicted Noise Levels – Nighttime 4m Height



Figure 8.11 Predicted Noise Levels – Nighttime 10m Height

Predicted nighttime noise levels at 4m height across the site range from <35 dB in sheltered areas, screened from road traffic, to 60 dB along the northern boundary which faces on to Greenhills Road.

The nighttime noise levels at 10m height across the site range from <35 dB in sheltered areas, screened from road traffic, to 68 dB along the northern boundary.

Where façade noise levels are less than 55 dB $L_{Aeq,16hr}$ during the day and 50 dB $L_{Aeq,8hr}$ at night it is possible to achieve reasonable internal noise levels while also allowing for supplementary ventilation of dwellings with open windows. Therefore, for those properties where the façade noise levels are anticipated to be less than 55 dB $L_{Aeq,16hr}$ during the day and 50 dB $L_{Aeq,8hr}$ at night no further mitigation is required. This applies at blocks further from Greenhills Road towards the south of the site and where facades are screened from road noise.

Where façade levels are above the levels detailed above, the sound insulation performance of the building façade becomes important, and a minimum sound insulation performance specification is required for windows and vents to ensure that when windows are closed the internal noise criteria are achieved.

Predicted noise levels on several facades are above a level whereby internal noise levels are achieved with standard double glazing and therefore mitigation in the form of enhanced glazing and ventilators will be required. These facades include north-facing façade of Blocks A, B, C and D.

The specification of this enhanced façade is discussed in section 8.7.3.

An external assessment maximum level of 71 dB L_{AFmax} has been assumed in the noise intrusion calculations for a worst-case conservative assessment based on the measured and calculated noise levels.

Noise from Industrial/Commercial Sources

With reference to baseline noise levels set out in section 8.4.1, commercial noise from a neighbouring facility has been assessed as part of the inward noise impact assessment. Specifically, noise in the area adjacent to the south eastern facades of Blocks A and B has been assessed in order to determine appropriate mitigation measures to ensure the required internal noise levels in residential units at these locations are achieved. These mitigation measures are set out in section 8.7.3.

External Noise Levels

Figure 8.12 presents the calculated day time noise levels across the site with the development buildings in place. The existing boundary wall will be retained along sections of the eastern and northern site boundary. The contours are calculated for a height of 1.5m.

External noise levels within the majority of communal open spaces across the development site are within the recommended range of noise levels from ProPG of between 50 – 55 dB $L_{Aeq,16hr}$ as illustrated in Figure 8.12.

Outdoor space along the northern boundary of the site experience higher noise levels due to proximity to local roads however this is offset somewhat by the desirability of proximity to urban surroundings and proximity and accessibility of public transport and local amenities. There is also provision of amenity space within the development itself.

It is considered that the objectives of achieving suitable external noise levels is achieved within the overall site, therefore no further mitigation is required to control external noise levels across amenity areas.



Figure 8.12 Predicted Noise Levels – External Amenity Areas 1.5m Height

8.7 Mitigation Measures

8.7.1 Construction Phase Mitigation

The assessment detailed in Section 8.6.1 has determined that construction activities can operate within the adopted construction noise threshold levels at the identified residential and commercial NSLs within the vicinity of the construction of the proposed development.

Vibration levels at the neighbouring buildings beyond 20m are expected to be orders of magnitude below the limits set out in Table 8.4 **Error! Reference source not found.** to avoid any cosmetic damage to buildings.

A suite of noise and vibration control measures will be employed by the contractor during the construction phase in order to avoid exceedance of the adopted construction noise threshold values at the nearest NSLs.

The best practice measures set out in BS 5228 (2009 +A1 2014) Parts 1 and 2 will be complied with. This includes guidance on several aspects of construction site mitigation measures, including, but not limited to:

- Selection of quiet plant;
- Noise control at source;
- Screening, and;
- Liaison with the Public

Further comment is offered on these items in the following paragraphs. Noise control measures that will be considered include the selection of quiet plant, enclosures and screens around noise sources, hours of work and noise monitoring, where required.

8.7.1.1 Selection of Quiet Plant

The potential for any item of plant to result in exceedance of construction noise thresholds will be assessed prior to the item being brought onto the site. The least noisy item of plant will be selected

wherever practicable (e.g., plant items with sound attenuation incorporated). Should a particular item of plant already on the site be found to exceed the construction noise thresholds, the first action will be to identify whether the item can be replaced with a quieter alternative.

The appointed contractor will evaluate the choice of excavation, breaking, piling or other working methods taking into account various ground conditions and site constraints. Where alternative lower noise generating equipment are available that will provide equivalent structural / excavation results, these will be selected to control noise within the relevant thresholds, where it is practicable to do so.

8.7.1.2 Noise Control at Source

The following measures will be implemented, by the appointed contractor to control noise at source. These measures relate to specific site considerations:

- For mobile plant items such as dump trucks, cranes, excavators and loaders, the installation of an acoustic exhaust, utilising an acoustic canopy to replace the normal engine cover and / or maintaining enclosure panels closed during operation can reduce noise levels by up to 10 dB. Mobile plant will be switched off when not in use and not left idling.
- For percussive tools such as pneumatic concrete breakers and tools a number of noise control measures include fitting a muffler or sound reducing equipment to the breaker 'tool' and ensuring any leaks in the air lines are sealed;
- Where compressors, generators and pumps are located in proximity to NSLs and have the potential to exceed the construction noise thresholds, these will be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation; and
- Resonance effects in panel work or cover plates can be reduced through stiffening or the application of damping compounds, while other noise nuisance can be controlled by fixing resilient materials in between the surfaces in contact.
- For all materials handling, ensure that materials are not dropped from excessive heights, lining drops chutes and dump trucks with resilient materials.

8.7.1.3 Screening

Screening is an effective method of reducing CNLs at a receiver location and can be used successfully as an additional measure to other forms of noise control. The effectiveness of a noise screen will depend on the height and length of the screen, its mass, and its position relative to both the source and receiver. Standard construction site hoarding (2.4 m in height) with a mass per unit of surface area greater than 7 kg/m² can provide adequate sound insulation. This is recommended, as a minimum around all site boundaries of the proposed development site.

Erection of localised demountable enclosures or screens will be used around particularly noisy equipment as required, when in operation in proximity to NSLs with the potential to exceed the construction noise thresholds. Annex B of BS 5228-1 (Figures B1, B2 and B3) provide typical details for temporary and mobile acoustic screens, sheds and enclosures that can be constructed on-site from standard materials. A well placed and designed mobile temporary screen around a pile, breaker or excavation can effectively reduce noise emissions by 10 dB(A).

In addition, careful planning of the construction site layout will also be considered. The placement of site buildings such as offices and stores between the site and sensitive locations can provide a good level of noise screening.

8.7.1.4 Hours of Work

Working hours will be restricted to 08:00 to 19:00 Monday to Friday & 08:00 to 14:00 on Saturdays. Sunday or Bank Holiday work will only take place periodically at the agreement with South Dublin County Council. Similarly, any other out of hours working will be only permitted by arrangement with site management and South Dublin County Council.

8.7.1.5 Liaison with the Public

A designated Community Liaison Officer (CLO) will be appointed to site during construction works. Any noise complaints will be logged and followed up in a prompt fashion by the CLO. In addition, prior to particularly noisy construction activity, the CLO will inform the nearest noise sensitive locations of the time and expected duration of the noisy works

8.7.1.6 Monitoring

During the construction phase the contractor will carry out noise monitoring at representative NSLs to evaluate and inform the requirement and / or implementation of noise management measures. Noise monitoring will be conducted in accordance with ISO 1996–1 (ISO 2016) and ISO 1996–2 (ISO 2017).

8.7.1.7 Vibration Control

Vibration from construction activities will be limited to the values set out in Table 8.4 to avoid any form of potential cosmetic damage to buildings and structures. Monitoring will be undertaken at sensitive buildings, where proposed works have the potential to be at or exceed the vibration limit values in Table 8.4.

8.7.2 Operational Phase Mitigation

8.7.2.1 Additional Traffic on Public Roads

Changes to traffic flows will result in an imperceptible to not significant increase in noise level in the surrounding environment. Therefore, no mitigation measures are necessary in this case.

8.7.2.2 Mechanical Services Plant

With consideration at the detailed design stage, the selection and location of plant items within the proposed development and associated buildings will ensure that noise emissions from any mechanical and electrical building services plant do not exceed the relevant noise criteria outlined, therefore no further mitigation is required. In addition, noise emissions should be broadband in nature and should not contain any tonal or impulsive elements.

Once operational noise emissions are controlled within the development site, there will be no perceptible noise impact at sensitive receivers off-site

8.7.2.3 Vibration

Based on the nature of the proposed development there are no appreciable sources of vibration during the operational phase of the development. No mitigation is deemed necessary.

8.7.3 Inward Noise Impact – Design Statement Part 2

As is the case in most buildings, the glazed elements and ventilation paths of the building are typically the weakest element from a sound insulation perspective. In general, all wall constructions (i.e. block work or concrete and spandrel elements) offer a high degree of sound insulation, much greater than that offered by the glazing systems. Therefore, the noise intrusion via the wall construction will be minimal.

In this instance residential units on the facades highlighted in Figure 8.13 will be provided with glazing and ventilation that achieves the minimum sound insulation performances as set out in Table 8.21 and Table 8.22. These performance requirements may be refined during the detailed design stage. Other facades in the development will be able to achieve good internal noise levels through the installation of standard double glazing.

Table 8.21 Sound Insulation Performance Requirements for Glazing, SRI (dB)

Mark-up	Octave Band Centre Frequency (Hz)						Rw
	125	250	500	1k	2k	4k	
Red	27	26	33	39	39	47	37

Mark-up	Octave Band Centre Frequency (Hz)						Rw
	125	250	500	1k	2k	4k	
Orange	19	27	34	39	35	40	35

The overall R_w and $D_{n,e,w}$ outlined in this section are provided for information purposes only. The overriding requirement is the Octave Band sound insulation performance values which may also be achieved using alternative glazing and ventilation configurations. Any selected system will be required to provide the same level of sound insulation performance set out in Table 8.21.

The following performance requirements apply to all ventilation paths from outside the building. This can be achieved by passive acoustic wall vents or via mechanical ventilation systems.

Table 8.22 Sound Insulation Performance Requirements for Ventilation, $D_{n,e,w}$ (dB)

Mark-up	Octave Band Centre Frequency (Hz)						$D_{n,e,w}$
	125	250	500	1k	2k	4k	
Red	35	34	33	38	49	45	39
Orange	29	32	37	36	35	40	37



Figure 8.13 Façade Acoustic Requirements

It is important to note that the acoustic performance specifications detailed herein are minimum requirements which apply to the overall glazing and ventilation systems. In the context of the acoustic performance specification the 'glazing system' is understood to include any and all of the component parts that form part of the glazing element of the façade, i.e. glass, frames, seals, openable elements etc.

The assessment has demonstrated that the recommended internal noise criteria will be achieved through consideration of the proposed façade elements at the design stage. The calculated glazing and ventilation specifications are preliminary and are intended to form the basis for noise mitigation at the

detailed design stage. Consequently, these may be subject to change as the project progresses at the detailed design stage.

8.8 Residual Impact of the Proposed Development

8.8.1 Construction Phase

The use of best practice noise control measures, hours of operation, scheduling of works within appropriate time periods, and noise monitoring during this phase will be implemented during the duration of the construction. The inclusion of the control measures around screening discussed in 8.7.1.3, have been accounted for within the construction calculations presented within 8.6.1.1.

After the implementation of these best practice mitigation measures, residual construction noise levels at the closest NSLs are expected to fall within the adopted construction noise thresholds. The residual effect in relation to construction noise is negative, short term and slight to moderate.

It is important to note that construction activities are inherently transient, meaning noise intrusive works will only affect the nearest NSLs for brief periods. The construction noise calculations are highly conservative, representing a worst-case scenario. In practice, it is likely that the actual noise levels and associated residual impacts will be lower than predicted.

The likely residual effect of construction traffic and vibration is short term, negative, and not significant

8.8.2 Operational Phase

Noise levels from any building services plant within the development site will be controlled to not exceed the noise levels outlined within section

Once operational noise emissions are controlled within the development site, noise emissions outside the site will be imperceptible. The residual noise effect is neutral, Imperceptible and long Term.

Traffic along the surrounding road network will not lead to a change in noise level that would pose any significant effect. The resultant impact is long-term, negative and not significant.

8.8.3 Inward Noise

Noise levels inwards on the proposed development have been measure and assessed. Mitigation measures have been specified to ensure that internal noise levels are achieved. The resultant residual noise impact from this source will be of negative, not significant and permanent impact.

8.9 Cumulative Impact

There is potential for a temporary increase in cumulative construction noise if multiple phases or other developments occur at the same time. Residual cumulative effects related to the construction phase, post-mitigation, are likely to be not significant. This is also true for the operational phase, provided that the operational noise levels outlined in 8.6.2 are adhered to during the detailed design, and the mitigation measures specified in section 8.7.2 are followed.

8.10 Conclusion

In conclusion an assessment of noise and vibration impacts associated with the proposed residential development at the former Chadwick's site has been conducted for both the construction and operational phases. Reference has been made to the most up to date and relevant standards and guidance and all findings of the report have been compiled within this EIA chapter.

A baseline noise survey has been carried out to determine the prevailing noise environment and to inform the impact assessment. The noted noise sources noted during the environmental noise survey related to industrial noise at nearby sites and the road networks within the vicinity of the proposed development.

During the construction phase, noise and vibration levels are expected to fall within the adopted construction noise thresholds during both the demolition and construction phases of the proposed

development. Mitigation measures outlined within Section 12.10 will be implemented across the site to reduce the likelihood of significant effects.

In the operational phase, the primary sources of noise will be from traffic associated with the proposed development and the introduction of any mechanical plant associated with the proposed development. The predicted noise levels are determined to be within best practice limits as defined by relevant standards and guidelines.

An inward noise impact has been completed to identify areas of the proposed development where enhanced glazing and ventilation will be implemented in order to mitigate the effects of inward noise intrusion on future inhabitants of the proposed development.

Both construction and operational vibration associated with the proposed development is anticipated to be not significant.

8.11 References

- British Standard Institute (BSI) British Standard (BS) 5228-1:2009 +A1 2014 Code of Practice for noise and vibration control of construction and open sites - Part 1: Noise
- BS 5228-2:2009+A1:2014 Code of Practice for noise and vibration control of construction and open sites - Part 2: Vibration (BSI 2014b);
- BS 7385: 1993 Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration (hereafter referred to as BS 7385-2). (BSI 1993);
- BS 6472-1: 2008 Guide to evaluation of human exposure to vibration in buildings, Part 1 Vibration sources other than blasting (BSI 2008);
- BS 8233:2014 Guidance on sound insulation and noise reduction for buildings
- BS 4142: 2014 +A1 2019 Methods for Rating and Assessing Industrial and Commercial Sound (BSI 2019);
- UK Highways England (UKHE) Design Manual for Roads and Bridges (DMRB) LA 111 Sustainability and Environmental Appraisal LA 111 Noise and Vibration Revision 2 (UKHE 2020);
- S.I. No. 549/2018 – European Communities (Environmental Noise) Regulations 2018
- S.I. No. 241/2006 - European Communities Noise Emission by Equipment for Use Outdoors (Amendment) Regulations 2006;
- South Dublin County Development Plan 2022-2028
- International Organization for Standardization (ISO) 9613-2:1996 Acoustics – Attenuation of sound during propagation outdoors - Part 2: General method of calculation (ISO 1996);
- ISO 1996-1: 2016 Acoustics - Description, measurement and assessment of environmental noise. Part 1: Basic quantities and assessment procedures (ISO 2016);
- ISO 1996-2:2017 - Description, measurement and assessment of environmental noise - Part 2: Determination of sound pressure levels (ISO 2017), and;
- The UK Department of Transport Calculation of Road Traffic Noise (UK Department of Transport 1998).

9.0 AIR QUALITY

9.1 Introduction

This chapter assesses the likely air quality impacts associated with the proposed development at the former Chadwicks site, Greenhills Road, Walkinstown, Dublin 12. A full description of the development is available in Chapter 3.

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She has prepared air quality and climate impact assessments as part of EIARs for residential developments including Woodbrook, Shankill (Planning Application Ref. ABP-305844-19), Ballygossan Park, Skerries (Planning Application Ref. LRD0010/S3), SHD Ratoath (Planning Application Ref. SH305196), SHD Rathmullen, Drogheda (Planning Application Ref. SH305552), commercial and industrial developments by Dublin Airport Authority, Abbvie, Mountpark, Pfizer, Takeda, as well as renewable energy developments such as Crockahenny Windfarm, Upperchurch Windfarm, Knocknamona Windfarm and Keerglen Windfarm. She also specialises in conducting air dispersion modelling assessments of emissions from data centres, energy centres and the chemical industry as part of EPA Industrial Emissions Licences for Echelon DC, AWS, Takea, MSD and Regeneron. She has undertaken air quality and climate impact assessments for transportation schemes, primarily regional and national road schemes, from constraints, through to route selection and EIAR stage.

9.2 Assessment Methodology

9.2.1 Criteria for Rating of Impacts

9.2.1.1 Ambient Air Quality Standards

In order to reduce the risk to health from poor air quality, national and European statutory bodies have set limit values in ambient air for a range of air pollutants. These limit values or "Air Quality Standards" are health or environmental-based levels for which additional factors may be considered. For example, natural background levels, environmental conditions and socio-economic factors may all play a part in the limit value which is set.

Air quality significance criteria are assessed on the basis of compliance with the appropriate standards or limit values. The applicable standards in Ireland are set out in Directive (EU) 2024/2881 of the European Parliament and of the Council of 23 October 2024 on ambient air quality and cleaner air for Europe (recast). This Directive sets out new air quality standards for pollutants to be reached by 2030 which are more closely aligned with the World Health Organisation (WHO) air quality guidelines.

Prior to 2030 the air quality standards set out in EU Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe are still applicable.

The Air Quality Standards Regulations 2022 (S.I. 739 of 2022) transposed EU Directive 2008/50/EC. With the adoption of Directive (EU) 2024/2881, Ireland must transpose this Directive into national law (i.e. update the Air Quality Standards Regulations) before October 2026.

The ambient air quality standards applicable for nitrogen dioxide (NO₂) and particulate matter (as PM₁₀ and PM_{2.5}) are outlined in Table 9.1 These pollutants are of relevance to the proposed development. The limit values set out in Directive (EU) 2024/2881 will need to be achieved by 2030, with the limit values set out in the Air Quality Standards Regulations 2022 (and future updated regulations) applicable until 2030.

Table 9.1 Ambient Air Quality Limit Values

Pollutant	2008/50/EC Limit Type	2008/50/EC Limit Value (applicable until 2030)	Directive (EU) 2024/2881 Limit Type	Directive (EU) 2024/2881 Limit Value (to be attained by 2030)
Nitrogen Dioxide (NO ₂)	Hourly limit for protection of human health - not to be exceeded more than 18 times/year	200 µg/m ³	Hourly limit for protection of human health - not to be exceeded more than 3 times/year	200 µg/m ³
	n/a	n/a	24-hour limit for protection of human health - not to be exceeded more than 18 times/year	50 µg/m ³
	Annual limit for protection of human health	40 µg/m ³	Annual limit for protection of human health	20 µg/m ³
Particulate Matter (as PM ₁₀)	24-hour limit for protection of human health - not to be exceeded more than 35 times/year	50 µg/m ³	24-hour limit for protection of human health - not to be exceeded more than 18 times/year	45 µg/m ³
	Annual limit for protection of human health	40 µg/m ³	Annual limit for protection of human health	20 µg/m ³
Particulate Matter (as PM _{2.5})	n/a	n/a	24-hour limit for protection of human health - not to be exceeded more than 18 times/year	25 µg/m ³
	Annual limit for protection of human health	25 µg/m ³	Annual limit for protection of human health	10 µg/m ³

9.2.1.2 WHO Air Quality Guidelines & Clean Air Strategy

In April 2023, the Government of Ireland published the *Clean Air Strategy for Ireland* (Government of Ireland 2023), which provides a high-level strategic policy framework needed to reduce air pollution. The strategy commits Ireland to achieving the 2021 WHO Air Quality Guidelines Interim Target 3 (IT3) by 2026 (shown in Table 9.2), the IT4 targets by 2030 and the final targets by 2040 (shown in Table 9.2). The strategy notes that a significant number of EPA monitoring stations observed air pollution levels in 2021 above the WHO targets; 80% of these stations would fail to meet the final PM_{2.5} target of 5 µg/m³. The strategy also acknowledges that “meeting the WHO targets will be challenging and will require legislative and societal change, especially with regard to both PM_{2.5} and NO₂”.

Annex II of Directive (EU) 2024/2881 gives assessment thresholds which align with the clean air strategy final 2040 WHO targets. Directive (EU) 2024/2881 states that “Member States shall endeavour to achieve and preserve the best ambient air quality and a high level of protection of human health and the environment, with the aim of achieving a zero-pollution objective as referred to in Article 1(1), in line with WHO recommendations, and below the assessment thresholds laid down in Annex II.”

These assessment thresholds relate to monitoring of ambient air quality by Member States, where “exceedances of the assessment thresholds specified in Annex II shall be determined on the basis of concentrations during the previous 5 years where sufficient data are available. An assessment threshold shall be deemed to have been exceeded if it has been exceeded during at least 3 separate years out of those previous 5 years.”

Table 9.2 WHO Air Quality Guidelines 2021

Pollutant	Limit Type	IT3 (2026)	IT4 (2030)	Final Target (2040)
NO ₂	24-hour limit for protection of human health	-	-	25 µg/m ³
	Annual limit for protection of human health	20 µg/m ³	-	10 µg/m ³

Pollutant	Limit Type	IT3 (2026)	IT4 (2030)	Final Target (2040)
PM (as PM ₁₀)	24-hour limit for protection of human health	75 µg/m ³	50 µg/m ³	45 µg/m ³
	Annual limit for protection of human health	30 µg/m ³	20 µg/m ³	15 µg/m ³
PM (as PM _{2.5})	24-hour limit for protection of human health	37.5 µg/m ³	25 µg/m ³	15 µg/m ³
	Annual limit for protection of human health	15 µg/m ³	10 µg/m ³	5 µg/m ³

The applicable air quality limit values for the purposes of this assessment are those set out in Table 9.1. The limit values stipulated under Directive 2008/50/EC and the Air Quality Standards Regulations 2022 are applicable for the construction phase and opening year 2026 for the proposed development. The limit values stipulated by Directive (EU) 2024/2881 are applicable for the design year 2041 for the proposed development.

9.2.1.3 Dust Deposition Guidelines

The concern from a health perspective is focused on particles of dust that are less than 10 microns (PM₁₀) and less than 2.5 microns (PM_{2.5}). The EU ambient air quality standards outlined in Table 9.1 have set ambient air quality limit values for PM₁₀ and PM_{2.5}.

With regards to larger dust particles that can give rise to nuisance dust, there are no statutory guidelines regarding the maximum dust deposition levels that may be generated during the construction phase of a development in Ireland. Furthermore, no specific criteria have been stipulated for nuisance dust in respect of this development.

With regard to dust deposition, the German TA-Luft standard for dust deposition (non-hazardous dust) (German VDI, 2002) sets a maximum permissible emission level for dust deposition of 350 mg/m²/day averaged over a one-year period at any receptors outside the site boundary. The TA-Luft standard has been applied for the purpose of this assessment based on recommendations from the EPA in Ireland in the document titled *Environmental Management Guidelines - Environmental Management in the Extractive Industry (Non-Scheduled Minerals)* (EPA, 2006). The document recommends that the TA-Luft limit of 350 mg/m²/day be applied to the site boundary of quarries. This limit value can be implemented with regard to dust impacts from construction of the proposed development.

9.2.1.4 Air Quality & Traffic Significance Criteria

The Transport Infrastructure Ireland (TII) guidance document *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022) details a methodology for determining air quality impact significance criteria for road schemes which can be applied to any project that causes a change in traffic. The degree of impact is determined based on the percentage change in pollutant concentrations relative to the Do-Nothing scenario. The TII significance criteria are outlined in Table 4.9 of *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022) and reproduced in Table 9.3 below. These criteria have been adopted for the proposed development to predict the impact of NO₂, PM₁₀ and PM_{2.5} emissions as a result of the proposed development.

Table 9.3 Air Quality & Traffic Significance Criteria

Long term average concentration at receptor in assessment year	% Change in concentration relative to Air Quality Limit Value (AQLV)			
	1%	2-5%	6-10%	>10%
75% or less of AQLV	Neutral	Neutral	Slight	Moderate
76 – 94% of AQLV	Neutral	Slight	Moderate	Moderate
95 – 102% of AQLV	Slight	Moderate	Moderate	Substantial
103 – 109% of AQLV	Moderate	Moderate	Substantial	Substantial
110% or more of AQLV	Moderate	Substantial	Substantial	Substantial

Source: TII (2022) *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106*

As per Table 9.3 a neutral effect is one where a change in concentration at a receptor is:

- 5% or less where the opening year, without the proposed development, annual mean concentration is 75% or less of the standard; or
- 1% or less where the opening year, without the proposed development, annual mean concentration is 94% or less of the standard.

Where an effect does not meet the criteria for neutral, as described above, the effect can either be positive or negative. The TII guidance (2022) states that *“the evaluation of significance of effects for the operational phase should be undertaken for the opening year only as the design year is likely to show lower total pollutant concentrations and changes in concentration”* (TII 2022).

Non-significant effects (i.e. of local importance only) are ‘neutral’ or ‘slight’ changes in concentrations while significant effects can be changes in pollutant concentrations that are either ‘moderate’ or ‘substantial’ however, the TII guidance (2022) states that these must be considered in the context of the project and ‘moderate’ or ‘substantial’ increases are not necessarily always significant effects.

The impact descriptors in Table 9.3 are used to describe the impact at each modelled receptor location, and the significance of the impacts is then determined, aligning with the terminology in the EPA guidelines (EPA 2022). Whilst it may be determined that there are ‘slight’, ‘moderate’ or ‘substantial’ impacts at one or more receptors, an overall judgement should be made of whether the proposed development is ‘significant’ or ‘not significant’ in terms of air quality. Factors to consider when determining the overall significance of a proposed development are provided in Table 4.10 of the TII guidance (TII 2022).

9.2.2 Construction Phase

9.2.2.1 Construction Dust Assessment

The Institute of Air Quality Management in the UK (IAQM) guidance document ‘*Guidance on the Assessment of Dust from Demolition and Construction*’ (2024) outlines an assessment method for predicting the impact of dust emissions from construction activities based on the scale and nature of the works and the sensitivity of the area to dust impacts. The IAQM methodology has been applied to the construction phase of this development in order to predict the likely risk of dust impacts in the absence of mitigation measures and to determine the level of site-specific mitigation required. The use of UK guidance is recommended by Transport Infrastructure Ireland in their guidance document *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022).

The major dust generating activities are divided into four types within the IAQM guidance (2024) to reflect their different potential impacts. These are:

- Demolition;
- Earthworks;
- Construction; and
- Trackout (transport of dust and dirt from the construction site onto the public road network).

The magnitude of each of the four categories is divided into Large, Medium or Small scale depending on the nature of the activities involved. The criteria for determining the category for the works involved are outlined in Table 9.4, these are based on the IAQM guidance (2024). The magnitude of each activity is combined with the overall sensitivity of the area to determine the risk of dust impacts from site activities. This allows the level of site-specific mitigation to be determined.

Table 9.4 IAQM Criteria to Determine Dust Emissions Magnitude

Dust Emission Magnitude		
Small	Medium	Large
Demolition		
- total building volume <12,000 m³ - construction material with low potential for dust release (e.g. metal cladding or timber) - demolition activities <6 m above ground - demolition during wetter months	- total building volume 12,000 - 75,000 m³ - potentially dusty construction material - demolition activities 6 – 12 m above ground level	- total building volume >75,000 m³ - potentially dusty construction material (e.g. concrete) - on-site crushing and screening - demolition activities >12 m above ground level
Earthworks		
- total site area <18,000 m² - soil type with large grain size (e.g. sand) <5 heavy earth moving vehicles active at any one time - formation of bunds <3 m in height - earthworks during wetter months	- total site area 18,000 m² - 110,000 m² - moderately dusty soil type (e.g. silt) 5 – 10 heavy earth moving vehicles active at any one time - formation of bunds 3 – 6 m in height	- total site area >110,000 m² - potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size) >10 heavy earth moving vehicles active at any one time - formation of bunds >6 m in height
Construction		
- total building volume <12,000 m³ - construction material with low potential for dust release (e.g. metal cladding or timber)	- total building volume 12,000 - 75,000 m³ - potentially dusty construction material (e.g. concrete) - on-site concrete batching	- total building volume >75,000 m³ - on-site concrete batching - sandblasting
Trackout (truck movements)		
<20 HDV (>3.5 t) outward movements in any one day - surface material with low potential for dust release - unpaved road length <50 m	20 – 50 HDV (>3.5 t) outward movements in any one day - moderately dusty surface material (e.g. high clay content) - unpaved road length 50 – 100 m	>50 HDV (>3.5 t) outward movements in any one day - potentially dusty surface material (e.g. high clay content) - unpaved road length >100 m

Once the dust emission magnitude has been determined the next step, according to the IAQM guidance (2024), is to establish the level of risk by combining the magnitude with the overall sensitivity of the area to dust soiling, human health and ecological effects. The level of risk associated with each activity is determined using the criteria in Table 9.5.

Table 9.5 IAQM Criteria to Determine Risk of Dust Impacts

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
Demolition			
High	High risk	Medium risk	Medium risk
Medium	High risk	Medium risk	Low risk
Low	Medium risk	Low risk	Negligible

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
Earthworks			
High	High risk	Medium risk	Low risk
Medium	Medium risk	Medium risk	Low risk
Low	Low risk	Low risk	Negligible
Construction			
High	High risk	Medium risk	Low risk
Medium	Medium risk	Medium risk	Low risk
Low	Low risk	Low risk	Negligible
Trackout			
High	High risk	Medium risk	Low risk
Medium	Medium risk	Medium risk	Low risk
Low	Low risk	Low risk	Negligible

9.2.2.2 Construction Phase Traffic Assessment

Construction phase traffic also has the potential to impact air quality. The TII guidance *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022), states that road links meeting one or more of the following criteria can be defined as being 'affected' by a proposed development and should be included in the local air quality assessment. While the guidance is specific to infrastructure projects, the approach can be applied to any development that causes a change in traffic.

- Annual average daily traffic (AADT) changes by 1,000 or more;
- Heavy duty vehicle (HDV) AADT changes by 200 or more;
- Daily average speed change by 10 kph or more;
- Peak hour speed change by 20 kph or more;
- A change in road alignment by 5m or greater.

NRB Consulting have prepared a Traffic and Transport Impact Assessment for the proposed development enclosed separately and have prepared Chapter 13 Material Assets - Traffic of this EIAR. As per Chapter 13, it has been determined by NRB that the construction stage traffic will not increase by 1,000 AADT, or 200 HDV AADT, or that the development will not result in speed changes or changes in road alignment. Therefore, the traffic does not meet the above scoping criteria. A detailed air quality assessment of construction stage traffic emissions has been scoped out from any further assessment as there is no potential for significant impacts to air quality with respect with human or ecological receptors.

9.2.3 Operational Phase

9.2.3.1 Operational Phase Traffic Assessment

Operational phase traffic has the potential to impact local air quality as a result of increased vehicle movements associated with the proposed development. The TII scoping criteria detailed in Section 9.2.2.2 were used to determine if any road links are affected by the proposed development and require inclusion in a detailed air dispersion modelling assessment. NRB Consulting have prepared a Traffic and Transport Impact Assessment for the proposed development enclosed separately and have prepared Chapter 13 (Material Assets -Traffic). The traffic assessment has included traffic associated with other specific cumulative developments, as required. This ensures the full cumulative impact is assessed. It has been determined by NRB that the proposed development will result in the operational phase traffic increasing by more than 1,000 AADT on a number of road links. Therefore, in accordance with the TII scoping criteria a detailed air dispersion modelling assessment of operational phase traffic emissions was conducted.

The impact of traffic emissions on air quality is assessed for both human and ecological receptors within 200 m of impacted roads as per the TII PE-ENV-01106 guidance (TII, 2022). There are no sensitive ecological sites within 200 m of any of the identified impacted roads and therefore an assessment of air quality impacts to ecology from traffic emissions is not required. The following sections describe the methodology for the assessment.

The impact to air quality as a result of changes in traffic is assessed at sensitive human receptors in the vicinity of affected roads. These are discussed in further detail within Section 9.3.3 and shown graphically in 9.3.

The TII guidance (2022) states that modelling should be conducted for NO₂, PM₁₀ and PM_{2.5} for the Base, Opening and Design Years for both the Do Minimum (Do Nothing) and Do Something scenarios. Modelling of operational NO₂, PM₁₀ and PM_{2.5} concentrations has been conducted for the Do Nothing and Do Something scenarios using the TII Road Emissions Model (REM) online calculator tool (TII, 2024).

The following inputs are required for the REM tool: receptor locations, light duty vehicle (LDV) annual average daily traffic movements (AADT), annual average daily heavy-duty vehicles (HDV AADT), annual average traffic speeds, road link lengths, road type, project county location and pollutant background concentrations. The *Default* fleet mix option was selected along with the *Intermediate Case* fleet data base selection, as per TII Guidance (TII, 2024). The *Intermediate Case* assumes a linear interpolation between the *Business as Usual* case – where current trends in vehicle ownership continue and the *Climate Action Plan (CAP)* case – where adoption of low emission light duty vehicles occurs.

Using this input data the model predicts the road traffic contribution to ambient ground level concentrations at the identified sensitive receptors using generic meteorological data. The TII REM uses county-based Irish fleet composition for different road types, for different European emission standards from pre-Euro to Euro 6/VI with scaling factors to reflect improvements in fuel quality, retrofitting, and technology conversions. The TII REM also includes emission factors for PM₁₀ emissions associated with brake and tyre wear (TII, 2024). The predicted road contributions are then added to the existing background concentrations to give the predicted ambient concentrations. The ambient concentrations are then compared with the relevant ambient air quality standards to assess the compliance of the proposed development with these ambient air quality standards.

Traffic Data used in Operational Phase Air Quality Assessment

Traffic flow information is detailed in Table 9.5 as obtained from NRB for the purposes of this assessment. Data for the Base Year 2022 and the Do Nothing and Do Something scenarios for the Opening Year 2026 and Design Year 2041 were provided. The traffic data included specific cumulative developments in the area as required, specifically the BusConnects scheme has been included in the traffic for the Design Year 2041. Additionally, a conservative growth factor has been applied to the traffic data to allow for cumulative development within the area (see Chapter 13 (Material Assets – Traffic) for further details).

The modelling assessment has been undertaken for road links that were within 200 m of receptors. Background concentrations have been included as per Section 9.3.2 of this chapter based on available EPA background monitoring data (EPA, 2024).

Table 9.6 Traffic Data used in Operational Phase Air Quality Assessment

Road Name	Speed (kph)	Base Year	Opening Year		Design Year	
			Do Nothing	Do Something	Do Nothing	Do Something
		LDV AADT (HDV AADT)	LDV AADT (HDV AADT)	LDV AADT (HDV AADT)	LDV AADT (HDV AADT)	LDV AADT (HDV AADT)
Greenhills Road (Link 6)	50	13401 (414)	14290 (442)	15390 (476)	10296 (318)	11396 (352)
Greenhills Road (Link 7)	50	13093 (405)	13962 (432)	15062 (466)	9926 (307)	11026 (341)
Greenhills Road (Link 8)	50	12713 (393)	13557 (419)	14656 (453)	9469 (293)	10569 (327)

9.3 Baseline Environment

9.3.1 Meteorological Data

A key factor in assessing temporal and spatial variations in air quality is the prevailing meteorological conditions. Depending on wind speed and direction, individual receptors may experience very significant variations in pollutant levels under the same source strength (i.e. traffic levels) (WHO, 2006). Wind is of key importance in dispersing air pollutants and for ground level sources, such as traffic emissions, pollutant concentrations are generally inversely related to wind speed. Thus, concentrations of pollutants derived from traffic sources will generally be greatest under very calm conditions and low wind speeds when the movement of air is restricted. In relation to PM₁₀, the situation is more complex due to the range of sources of this pollutant. Smaller particles (less than PM_{2.5}) from traffic sources will be dispersed more rapidly at higher wind speeds. However, fugitive emissions of coarse particles (PM_{2.5} - PM₁₀) will actually increase at higher wind speeds. Thus, measured levels of PM₁₀ will be a non-linear function of wind speed.

The nearest representative weather station collating detailed weather records is Casement Aerodrome meteorological station, which is located approximately 7.7 km west of the site. Casement Aerodrome met data has been examined to identify the prevailing wind direction and average wind speeds over a five-year period (see Figure 9.1 for data collated during five representative years 2020 – 2024), the predominant wind direction is westerly to south-westerly with generally moderate wind speeds (Met Éireann, 2025).

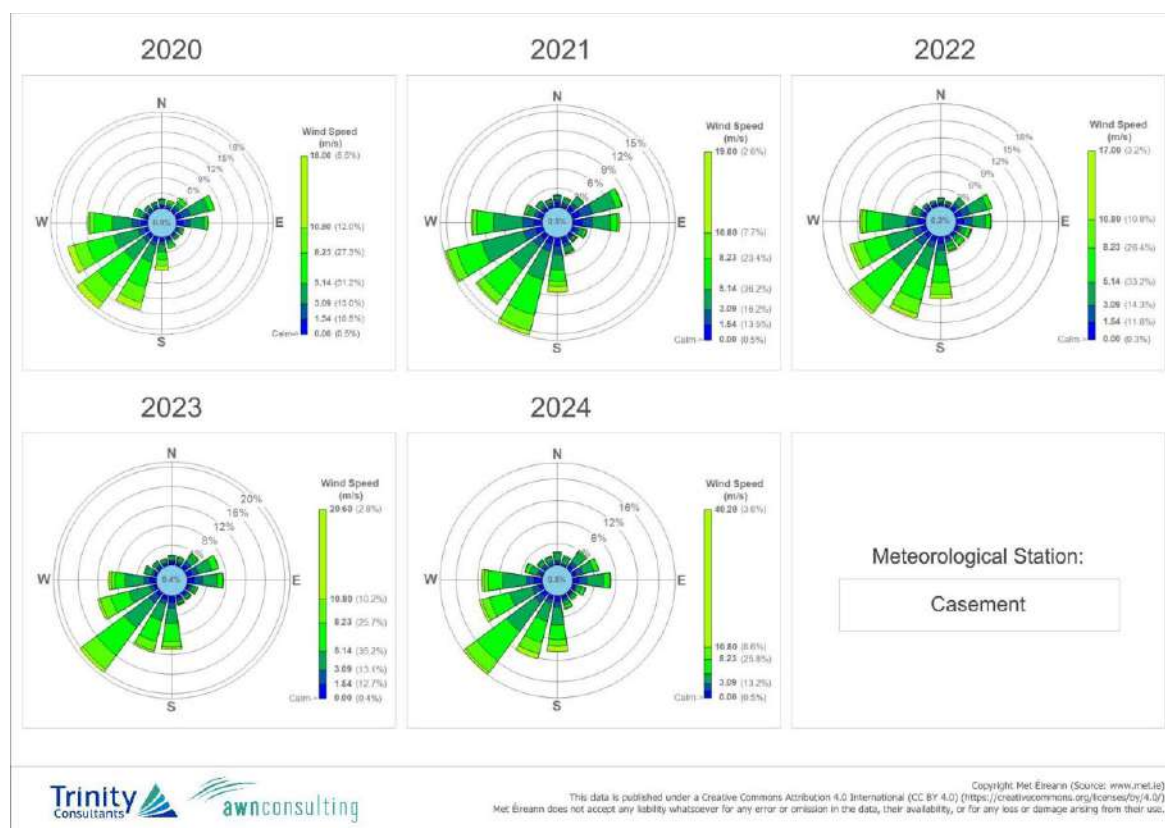


Figure 9.1 Wind Roses for Casement Aerodrome Met Station

9.3.2 Baseline Air Quality

Air quality monitoring programs have been undertaken in recent years by the EPA. The most recent annual report on air quality in Ireland is “Air Quality In Ireland 2023” (EPA, 2024). The EPA website details the range and scope of monitoring undertaken throughout Ireland and provides both monitoring data and the results of previous air quality assessments.

As part of the implementation of the Air Quality Standards Regulations 2022 (S.I. No. 739 of 2022), as amended, four air quality zones have been defined in Ireland for air quality management and assessment purposes (EPA, 2024). Dublin is defined as Zone A and Cork as Zone B. Zone C is composed of 23 towns with a population of greater than 15,000. The remainder of the country, which represents rural Ireland but also includes all towns with a population of less than 15,000, is defined as Zone D.

In terms of air monitoring and assessment, the proposed development site is within Zone A (EPA, 2024). The long-term monitoring data has been used to determine background concentrations for the key pollutants in the region of the proposed development. The background concentration accounts for all non-traffic derived emissions (e.g. natural sources, industry, home heating etc.).

NO₂

Long-term NO₂ monitoring was carried out at the representative Zone A suburban background locations of Tallaght, Dún Laoghaire, Swords and Ballyfermot for the period 2019 – 2023 (see Table 9.7) (EPA, 2024). Long term average concentrations are significantly below the annual average limit of 40 µg/m³. Average results range from 10 – 20 µg/m³ for the suburban background locations. Additionally, there were no exceedances of the hourly limit value of 200 µg/m³.

The monitoring sites in Ballyfermot and Tallaght are considered representative of the proposed development location due to their proximity to the site and similar location characteristics. Concentrations of NO₂ at the Ballyfermot and Tallaght sites ranged from 13 – 20 µg/m³ over the period 2019 – 2023. The NO₂ annual average for suburban background locations over the 2019 - 2023 period suggests an overall average of no more than 14 µg/m³ as a background concentration. Based on the above information an estimate of the current background NO₂ concentration for the region of the proposed development is 14 µg/m³.

Table 9.7 Trends In Zone A Air Quality - Nitrogen Dioxide (NO₂)

Station	Averaging Period	Year				
		2019	2020	2021	2022	2023
Tallaght	Annual Mean NO ₂ (µg/m ³)	-	14	13	14	14
	1-hr Mean > 200 µg/m ³ (days)	-	0	0	0	0
Dun Laoghaire	Annual Mean NO ₂ (µg/m ³)	15	13	16	16	13
	1-hr Mean > 200 µg/m ³ (days)	0	0	0	0	0
Swords	Annual Mean NO ₂ (µg/m ³)	15	11	11	12	10
	1-hr Mean > 200 µg/m ³ (days)	0	0	0	0	0
Ballyfermot	Annual Mean NO ₂ (µg/m ³)	20	12	13	13	13
	1-hr Mean > 200 µg/m ³ (days)	0	0	0	0	0

PM₁₀

Continuous PM₁₀ monitoring was carried out at four representative Zone A locations from 2019 – 2023; Ballyfermot, Dún Laoghaire, Finglas, Marino, Phoenix Park, St. Anne's Park and Tallaght. Annual average PM₁₀ concentrations across the sites ranged from 9 – 14 µg/m³ over the 2019 – 2023 period (see Table 9.8). There was at most 1 exceedance of the daily limit of 50 µg/m³ in 2023 (35 exceedances are permitted per year) (EPA, 2024). The overall average PM₁₀ concentration at the suburban background Zone A sites over the 2019 – 2023 period is 12 µg/m³. Based on the EPA data, a conservative estimate of the current background PM₁₀ concentration in the region of the proposed development is 12 µg/m³.

Table 9.8 Trends In Zone A Air Quality - Nitrogen Dioxide (NO₂)

Station	Averaging Period	Year				
		2019	2020	2021	2022	2023
Ballyfermot	Annual Mean PM ₁₀ (µg/m ³)	14	12	12	13	11
	24-hr Mean > 50 µg/m ³ (days)	7	2	0	1	0

Station	Averaging Period	Year				
		2019	2020	2021	2022	2023
Dun Laoghaire	Annual Mean PM ₁₀ (µg/m ³)	12	12	11	12	12
	24-hr Mean > 50 µg/m ³ (days)	2	0	0	1	0
Finglas	Annual Mean PM ₁₀ (µg/m ³)	13	12	12	12	12
	24-hr Mean > 50 µg/m ³ (days)	2	0	0	1	0
Marino	Annual Mean PM ₁₀ (µg/m ³)	14	13	12	14	12
	24-hr Mean > 50 µg/m ³ (days)	4	0	0	3	0
Phoenix Park	Annual Mean PM ₁₀ (µg/m ³)	11	10	10	11	9
	24-hr Mean > 50 µg/m ³ (days)	2	0	0	0	0
St. Anne's Park	Annual Mean PM ₁₀ (µg/m ³)	12	11	11	13	11
	24-hr Mean > 50 µg/m ³ (days)	1	0	0	1	0
Tallaght	Annual Mean PM ₁₀ (µg/m ³)	12	10	10	11	11
	24-hr Mean > 50 µg/m ³ (days)	3	1	0	1	1

PM_{2.5}

Average PM_{2.5} levels at the Zone A suburban monitoring locations of Ballyfermot, Dún Laoghaire, Finglas, Marino, St. Anne's Park and Phoenix Park over the period 2019 - 2023 ranged from 6 - 10 µg/m³ (EPA, 2024). The overall annual average concentration for this 5-year period is 8 µg/m³. Based on this information, an estimate of the background PM_{2.5} concentration in the region of the proposed development is 8 µg/m³.

Summary

Based on the above information the air quality in the suburban Dublin area is generally good, with concentrations of the key pollutants generally well below the relevant limit values set out in Directive 2008/50/EC. However, the current pollutant concentrations at some monitoring sites are not in compliance with the 2030 limit values set out in Directive (EU) 2024/2881 and the clean air strategy; further measures will be needed at a national scale to reduce air pollution in future years. The EPA have indicated that road transport emissions are contributing to increased levels of NO₂ with the potential for breaches in the annual NO₂ limit value in future years at locations within urban centres and roadside locations. In addition, burning of solid fuels for home heating is contributing to increased levels of particulate matter (PM₁₀ and PM_{2.5}). The EPA predict that exceedances in the particulate matter limit values are likely in future years if burning of solid fuels for residential heating continues (EPA, 2024).

The current estimated background concentrations have been used in the operational phase air quality assessment for both the Opening and Design Year as a conservative approach to predict future pollutant concentrations. This is in line with the TII methodology (TII, 2022).

9.3.3 Sensitivity of the Receiving Environment

9.3.3.1 Construction Phase

In line with the UK Institute of Air Quality Management (IAQM) guidance document '*Guidance on the Assessment of Dust from Demolition and Construction*' (2024) prior to assessing the impact of dust from a proposed development, the sensitivity of the area must first be assessed as outlined below. Both receptor sensitivity and proximity to proposed works areas are taken into consideration. For the purposes of this assessment, high sensitivity receptors are regarded as residential properties where people are likely to spend the majority of their time. Commercial properties and places of work are regarded as medium sensitivity while low sensitivity receptors are places where people are present for short periods or do not expect a high level of amenity. Table 9.9 outlines the criteria for determining the sensitivity of the area to dust soiling and dust-related human health effects as per the IAQM guidance (2024).

Table 9.9 Criteria for Determining the Sensitivity of the Area

Sensitivity of the Area to Dust Soiling Effects on People and Property						
Receptor Sensitivity	Number of Receptors	Distance from Source (m)				
		<20	<50	<100	<250	
High	>100	High	High	Medium	Low	
	10 - 100	High	Medium	Low	Low	
	1 - 10	Medium	Low	Low	Low	
Medium	>1	Medium	Low	Low	Low	
Low	>1	Low	Low	Low	Low	
Sensitivity of the Area to Human Health Impacts						
Receptor Sensitivity	Annual Mean PM ₁₀ Concentration	Number of Receptors	Distance from Source (m)			
			<20	<50	<100	<250
High	< 24 µg/m ³	>100	Medium	Low	Low	Low
		10 - 100	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low
Medium	< 24 µg/m ³	>10	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low
Low	< 24 µg/m ³	>1	Low	Low	Low	Low

In terms of receptor sensitivity to dust soiling, the area directly surrounding the proposed development (within 50 m of the boundary) is predominantly commercial and industrial in nature which is considered of medium sensitivity. There are a number of highly sensitive residential properties further than 100 m but within 250 m of the proposed development boundary (see Figure 9.2). Based on these receptor numbers and using the IAQM criteria in Table 9.9, the sensitivity of the area to dust soiling impacts from the proposed development is medium.

In addition to sensitivity to dust soiling, the IAQM guidelines also outline the assessment criteria for determining the sensitivity of the area to human health impacts. The criteria take into consideration the current annual mean PM₁₀ concentration, receptor sensitivity based on type (residential receptors are classified as high sensitivity) and the number of receptors affected within various distance bands from the construction works. A conservative estimate of the current annual mean PM₁₀ concentration in the vicinity of the proposed development is 12 µg/m³. There are a number of commercial and industrial premises within 20 m of the proposed development boundary. Additionally, there are a number of highly sensitive residential properties further than 100 m but within 250 m of the proposed development boundary (see Figure 9.2). Based on the IAQM criteria outlined in Table 9.9 the worst-case sensitivity of the area to dust-related human health effects is low.

The IAQM guidelines also outline the assessment criteria for determining the sensitivity of the area to dust-related ecological impacts. Dust emissions can coat vegetation leading to a reduction in the photosynthesising ability of the plant, as well as other effects. The guidance states that dust impacts to vegetation can occur up to 50 m from the site, and 50 m from site access roads, up to 250 m for the site entrance. The sensitivity of the area is determined based on the distance to the source, the designation of the site, (European, National or local designation) and the potential dust sensitivity of the ecologically important species present. There are no sensitive ecological receptors that meet these criteria within the study area and therefore there is no potential for impacts to sensitive ecology from construction dust emissions and no further assessment is required.

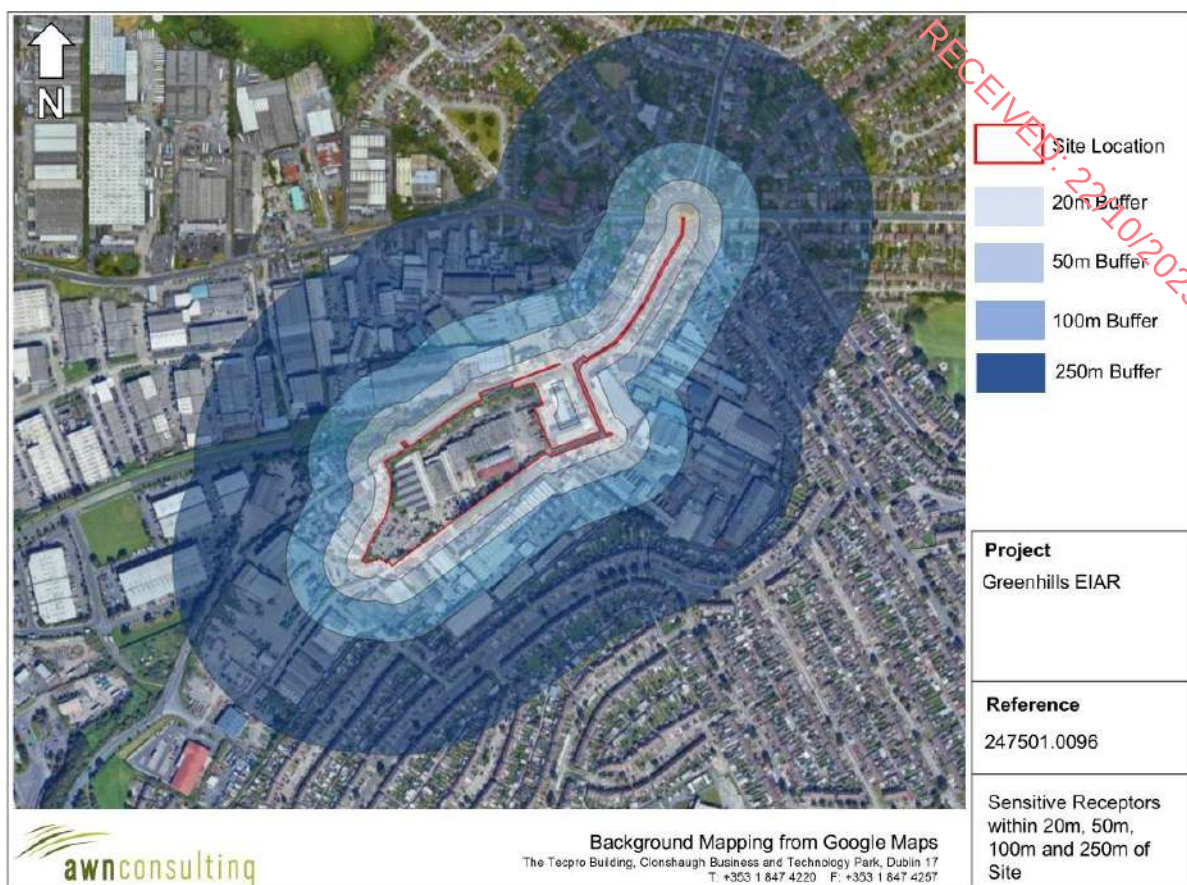


Figure 9.2 Sensitive Receptors within 20m, 50m, 100m and 250m of Site

9.3.3.2 Operational Phase

The impact to air quality due to changes in traffic is assessed at sensitive receptors in the vicinity of affected roads. The TII guidance (2022) states that a proportionate number of representative receptors, which are located in areas which will experience the highest concentrations or greatest improvements because of the proposed development, are to be included in the modelling. The TII criteria state that receptors within 200 m of impacted road links should be assessed; roads which are greater than 200 m from receptors will not impact pollutant concentrations at that receptor (TII, 2022). The TII guidance (2022) defines sensitive receptor locations for the purposes of modelling annual mean pollutant concentrations as: residential housing, schools, hospitals, care homes and short term-accommodation such as hotels, i.e. locations where members of the public are likely to be regularly present for 24 hours. A total of 1 no. high sensitivity residential receptor (R1) was included in the modelling assessment (see Figure 9.3). There were no other relevant receptors identified within 200 m of the affected road links.

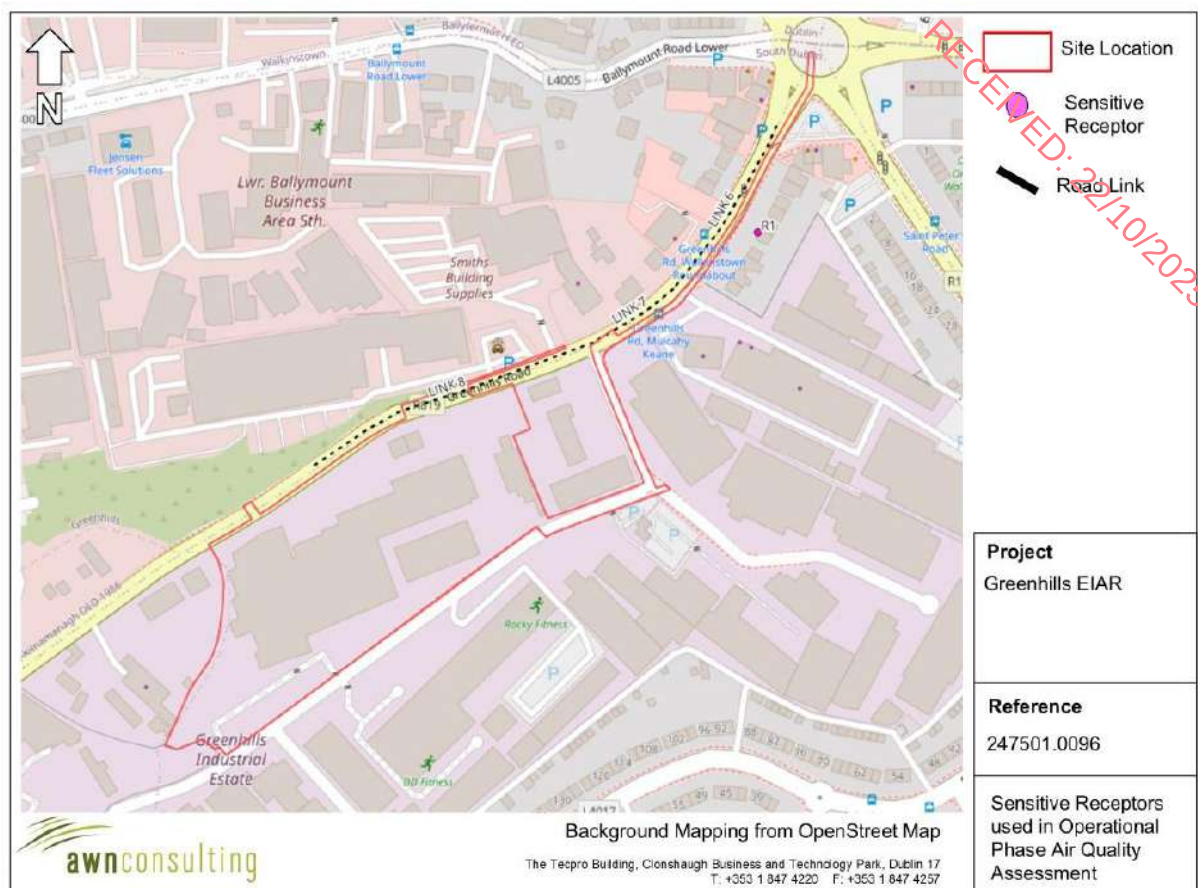


Figure 9.3 Sensitive Receptors Included in Operational Phase Air Quality Modelling Assessment

9.4 Impact Assessment

9.4.1 Do-Nothing

In the Do-Nothing scenario, ambient air quality at the site will remain as per the baseline and will change in accordance with trends within the wider area (including influences from potential new developments in the surrounding area, changes in road traffic, etc).

The Do-Nothing scenario associated with the operational phase of the development is assessed within Section 9.4.3.1. and it was found to be **direct, long-term, negative** and **slight** which is overall **not significant**.

9.4.2 Construction Phase

9.4.2.1 Construction Dust Assessment

The greatest potential impact on air quality during the construction phase of the proposed development is from construction dust emissions and the potential for nuisance dust. While construction dust tends to be deposited within 250 m of a construction site, the majority of the deposition occurs within the first 50 m (IAQM, 2024). The extent of any dust generation depends on the nature of the dust (soils, peat, sands, gravels, silts etc.) and the nature of the construction activity. In addition, the potential for dust dispersion and deposition depends on local meteorological factors such as rainfall, wind speed and wind direction. A review of Casement Aerodrome meteorological data indicates that the prevailing wind direction is westerly to south-westerly and wind speeds are generally moderate in nature (see Section 9.3). In addition, dust generation is considered negligible on days where rainfall is greater than 0.2 mm. A review of historical 30-year average data for Casement Aerodrome meteorological station indicates that on average 194 days per year have rainfall over 0.2 mm (Met Eireann, 2025) and therefore it can be determined that 53% of the time dust generation will be reduced due to natural meteorological conditions.

In order to determine the level of dust mitigation required during the proposed works, the potential dust emission magnitude for each dust generating activity needs to be taken into account, in conjunction with the previously established sensitivity of the area (see Section 9.3.3). The major dust generating activities are divided into four types within the IAQM (2024) guidance to reflect their different potential impacts. These are: demolition, earthworks, construction and trackout (movement of heavy vehicles).

Determining the Potential Dust Emission Magnitude

The magnitude of the works under each category can be classified as either small, medium or large depending on the scale of the works involved. The magnitude of each activity has been determined below for the proposed development using the criteria in Table 9.4.

- Demolition: The dust emission magnitude for the demolition activities can be categorised as 'medium' due to the volume of buildings involved, with the potential for c.70,000 m³ of buildings to be demolished.
- Earthworks: The dust emission magnitude for the proposed earthwork activities can be classified as medium as the total site area is between 18,000 – 110,000 m².
- Construction: The dust emission magnitude for the proposed construction activities can be classified as large as a worst-case as the total volume of buildings to be constructed will be greater than 75,000 m³.
- Trackout: The dust emission magnitude for the proposed trackout can be classified as medium, as there will be between 20 - 50 outward HGV movements per day during the construction phase of the proposed development.

Determining the Risk of Dust Impacts

Once the dust emission magnitude has been determined the next step, according to the IAQM guidance (2024), is to establish the level of risk by combining the magnitude with the overall sensitivity of the area to dust soiling and dust-related human health effects (see Section 9.3.3). The level of risk associated with each activity is determined using the criteria in Table 9.5. The overall risk of dust impacts from the construction works is shown in Table 9.10 for each category.

- Demolition: As the overall sensitivity of the area to dust soiling is medium, when combined with a medium dust emission magnitude, this produces an overall medium risk of dust impacts (as per the criteria in Table 9.5). As the overall sensitivity of the area to dust-related human health effects is low, this results in a low risk of dust-related human health effects (as per the criteria in Table 9.5).
- Earthworks: As the overall sensitivity of the area to dust soiling is medium, when combined with a medium dust emission magnitude, this produces an overall medium risk of dust soiling impacts (as per the criteria in Table 9.5). As the overall sensitivity of the area to dust-related human health effects is low, this results in a low risk of dust-related human health effects (as per the criteria in Table 9.5).
- Construction: Combining the large dust emissions magnitude for the construction activities with the medium sensitivity to dust soiling results in a medium risk of dust soiling impacts using the criteria in Table 9.5. There is an overall low risk of dust-related human health impacts as a result of the proposed construction activities.
- Trackout: Combining the medium dust emission magnitude for the trackout activities with the medium sensitivity to dust soiling results in a medium risk of dust impacts using the criteria in Table 9.5. There is an overall low risk of dust-related human health impacts as a result of the proposed trackout activities.

There is at most a medium risk of dust soiling impacts and a low risk of dust-related human health impacts associated with the proposed works. As a result, best practice dust mitigation measures associated with medium risk works will be implemented to ensure there are no significant impacts at

nearby sensitive receptors. In the absence of mitigation, dust impacts are predicted to be **direct, short-term, negative** and **slight**.

Table 9.10 Risk of Dust Impacts used to Define Site-Specific Mitigation

Receptor	Receptor Sensitivity	Dust Emission Magnitude – Trackout	Risk of Dust-Related Impacts
Demolition			
Dust Soiling	Medium	Medium	Medium Risk
Human Health	Low		Low Risk
Earthworks			
Dust Soiling	Medium	Medium	Medium Risk
Human Health	Low		Low Risk
Construction			
Dust Soiling	Medium	Large	Medium Risk
Human Health	Low		Low Risk
Trackout			
Dust Soiling	Medium	Medium	Medium Risk
Human Health	Low		Low Risk

9.4.2.2 Construction Phase Traffic Assessment

There is also the potential for traffic emissions to impact air quality with respect to human health in the short-term over the construction phase, particularly, due to the increase in HGVs accessing the site. The construction stage traffic has been reviewed, and a detailed air quality assessment has been scoped out as none of the road links impacted by the proposed development satisfy the TII assessment criteria in Section 9.2.2.2.

It can therefore be determined that the construction stage traffic will have an imperceptible, neutral, short-term and not significant impact on air quality.

9.4.3 Operational Phase

9.4.3.1 Operational Phase Traffic Assessment

The potential impact of the proposed development has been assessed by modelling emissions from the traffic generated as a result of the development. The traffic data includes the Do Nothing and Do Something scenarios. The impact of NO₂, PM₁₀ and PM_{2.5} emissions for the Opening Year 2026 and Design Year 2041 was predicted at the nearest sensitive receptors to the impacted road links. This assessment allows the significance of the development, with respect to both relative and absolute impacts, to be determined.

The TII guidance PE-ENV-01106 (TII, 2022a) details a methodology for determining air quality impact significance criteria for TII road schemes and infrastructure projects. However, this significance criteria can be applied to any development that causes a change in traffic. The degree of impact is determined based on both the absolute and relative impact of the proposed development. Results are compared against the 'Do-Nothing' scenario, which assumes that the proposed development is not in place in future years, to determine the degree of impact.

Traffic related air emissions have the potential to impact air quality which can affect human health. The following details the results of the air dispersion modelling assessment of traffic emissions to determine the impact to human health. The predicted pollutant concentrations have been compared against the ambient air quality limit values set out in Table 9.1. The limit values set out in Directive 2008/50/EC and the Ambient Air Quality Standards Regulations 2022 are applicable to the Opening Year 2026. The limit values set out under Directive (EU) 2024/2881 are applicable to the Design Year 2041.

NO₂

The results of the NO₂ modelling are shown in Table 9.11. In the Opening Year 2026, predicted annual mean concentrations of NO₂ are in compliance with the annual mean limit value of 40 µg/m³ set out

under Directive 2008/50/EC, reaching at most 42% of the limit. In addition, the TII guidance (2022a) states that the hourly limit value for NO₂ of 200 µg/m³ is unlikely to be exceeded at roadside locations unless the annual mean is above 60 µg/m³. As predicted NO₂ concentrations are significantly below 60 µg/m³ (Table 9.11), it can be concluded that the short-term NO₂ limit value will be complied with at all receptor locations. Some increases in NO₂ concentrations are predicted at the worst-case receptor assessed in the Opening Year when compared with the Do-Nothing scenario (see Table 9.11). Concentrations are predicted to increase by at most 0.12 µg/m³ at receptor R1. When comparing the change in concentration with the air quality limit value, it results in a maximum change of 0.3% at receptor R1. All other receptors in the area will experience similar or lesser impacts and all increases are considered 'neutral' as per the TII criteria in Table 9.3.

In the Design Year 2041, predicted annual mean NO₂ concentrations are in compliance of the limit value of 20 µg/m³ set out under Directive (EU) 2024/2881, at the worst-case receptor assessed, reaching at most 74% of the limit. The proposed development will result in a 'neutral' increase in NO₂ concentrations according to the TII significance criteria in Table 9.3, with concentrations increasing by at most 0.09 µg/m³ as a result of the proposed development (at receptor R1, see Table 9.11), which is an increase of 0.45% when compared with the applicable annual mean limit value for NO₂.

Table 9.11 Predicted Annual Mean NO₂ Concentrations (µg/m³)

Receptor	Impact Opening Year						
	DN	% of AQLV	DS	% of AQLV	DS-DN	% Change of AQLV	Description
R1	16.9	42%	17.0	42%	0.12	0.30%	Neutral
Receptor	Impact Design Year						
	DN	% of AQLV	DS	% of AQLV	DS-DN	% Change of AQLV	Description
R1	14.8	74%	14.9	74%	0.09	0.45%	Neutral

PM₁₀

The results of the PM₁₀ modelling can be seen in Table 9.12 for the Opening Year 2026 and Design Year 2041.

In the Opening Year 2026, annual mean PM₁₀ concentrations are in compliance with the annual mean limit value of 40 µg/m³ set out under Directive 2008/50/EC reaching at most 36% of the limit. In the Design Year 2041 annual mean PM₁₀ concentrations are also in compliance with the annual mean limit value of 20 µg/m³ set out under Directive (EU) 2024/2881 reaching at most 70% of the limit. In addition, the proposed development will not result in any days of exceedance of the daily PM₁₀ limit value (Table 9.1) in both the opening and design years.

The changes in PM₁₀ concentrations as a result of the proposed development can be assessed relative to the 'Do Nothing' (DN) levels. In the Opening Year 2026 annual PM₁₀ concentrations will increase by at most 0.1 µg/m³ at receptor R1, this is a 0.25% increase when compared with the annual mean limit value of 40 µg/m³. All other receptors in the area will experience similar or lesser impacts and all increases are considered 'neutral' as per the TII criteria in Table 9.3.

In the Design Year 2041 the proposed development will result in a maximum increase of 0.19 µg/m³ at receptor R1, which is a 0.95% increase when compared with the annual mean limit of 20 µg/m³. The changes in concentrations in the Design Year are considered 'neutral' based on the TII criteria in Table 9.3.

Table 9.12 Predicted Annual Mean PM₁₀ Concentrations (µg/m³)

Receptor	Impact Opening Year						
	DN	% of AQLV	DS	% of AQLV	DS-DN	% Change of AQLV	Description
R1	14.5	36%	14.6	36%	0.10	0.25%	Neutral
Receptor	Impact Design Year						
	DN	% of AQLV	DS	% of AQLV	DS-DN	% Change of AQLV	Description
R1	13.7	69%	13.9	70%	0.19	0.95%	Neutral

PM_{2.5}

In relation to changes in PM_{2.5} concentrations as a result of the proposed development, the results of the assessment can be seen in Table 9.13 for the modelled Opening Year 2026 and Design Year 2041.

In the Opening Year 2026, predicted annual mean concentrations of PM_{2.5} are in compliance with the annual mean limit value of 25 µg/m³ set out under Directive 2008/50/EC reaching at most 38% of the limit. There is predicted to be an increase in PM_{2.5} concentrations at the worst-case receptor assessed in the Opening Year when compared with the Do-Nothing scenario (see Table 9.13). Concentrations are predicted to increase by at most 0.05 µg/m³ at receptor R1. When comparing the change in concentration with the air quality limit value, it results in a maximum change of 0.2% at receptor R1. All other receptors in the area will experience similar or lesser impacts and all increases are considered 'neutral' as per the TII criteria in Table 9.13.

In the Design Year 2041, predicted annual mean PM_{2.5} concentrations are in compliance with the limit value of 10 µg/m³ set out under Directive (EU) 2024/2881 at all receptors assessed. Concentrations reach at most 91% of the annual mean limit value. The proposed development will result in a 'neutral' increase in PM_{2.5} concentrations according to the TII significance criteria in Table 9.3, with concentrations increasing by at most 0.11 µg/m³ as a result of the proposed development (at receptor R1, see Table 9.13), which is an increase of 1.1% when compared with the annual mean limit value of 10 µg/m³ for PM_{2.5}.

Table 9.13 Predicted Annual Mean PM_{2.5} Concentrations (µg/m³)

Receptor	Impact Opening Year						
	DN	% of AQLV	DS	% of AQLV	DS-DN	% Change of AQLV	Description
R1	9.4	38%	9.4	38%	0.05	0.20%	Neutral
Receptor	Impact Design Year						
	DN	% of AQLV	DS	% of AQLV	DS-DN	% Change of AQLV	Description
R1	9.0	90%	9.1	91%	0.11	1.10%	Neutral

Significance of Predicted Changes in NO₂, PM₁₀ and PM_{2.5} Concentrations

As outlined in Section 9.2.1.4, the TII guidance (2022) states that significance of effects should be assessed based on the opening year only. Non-significant effects are 'neutral' or 'slight' changes in concentrations while significant effects can be changes in pollutant concentrations that are either 'moderate' or 'substantial' however, the TII guidance (2022) states that these must be considered in the context of the project and 'moderate' or 'substantial' increases are not necessarily always significant effects.

In relation to NO₂, PM₁₀ and PM_{2.5} the predicted changes in concentrations all 'neutral' at the worst-case receptor assessed. Therefore, according to the TII criteria as outlined in Section 9.2.1.4, the impact is not significant.

For the purposes of this assessment, it has been assumed that the current estimated background pollutant concentrations are applicable for both the opening and design years, with no decreases in future background concentrations allowed for. There will be some decreases in background concentrations in future years, however at present there is no guidance-based methodology available for estimating future year background concentrations and therefore, as a conservative approach, the current estimated background concentrations have been applied to future years.

Due to the large uncertainty in future improvements in fleet composition and emissions, such as projected changes to vehicle registration and electric vehicle uptake, the future year emission rates utilised by the REM do not account for the full implementation of these measures. Predicted design year concentrations are therefore currently overly conservative as future emissions improvements are not fully taken into account, as well as no improvement in background concentrations being assumed. As a result, the opening year predicted concentrations are the most appropriate for determining the significance of effects as per Section 9.2.1.4.

It can be concluded that the impact of traffic emissions on air quality and human health during the operational phase is **long-term, direct, localised, imperceptible**, and overall **not significant** in EIA terms.

The measures set out in the *Clean Air Strategy for Ireland* (Government of Ireland 2023) aim to work towards solutions to ensure that air pollution concentrations are reduced in order to comply with the future changes in limit values. Ireland will need to continue to implement and develop measures to ensure continuing improvements in air quality in future years in order to meet the objectives of the Clean Air Strategy for Ireland (Government of Ireland, 2023) and to ensure the ambient air quality limit values set out in Directive (EU) 2024/2881 are achieved. The estimated background concentrations used in the assessment are the largest contribution to predicted pollutant concentrations, rather than pollutant contributions associated with the proposed development. Strategies to improve air quality at a national level in future years will contribute to reducing background concentrations and therefore it is envisioned that air quality will improve in the future.

9.4.3.2 Odour

In addition to air quality impacts from traffic, the potential for odours in the area due to the presence of the Brennan's Bread factory to the immediate south/south-west of the proposed development has been considered.

The exposure of the population to a particular odour consists of two factors; the concentration and the length of time that the population may perceive the odour. By definition, 1 OU_E/m³ is the detection threshold of 50% of a qualified panel of observers working in an odour-free laboratory using odour-free air as the zero reference.

Currently there is no general statutory odour standard in Ireland relating to industrial installations, or commercial operations such as the Brennan's Bread facility. Guidance from the UK, and adapted for Irish EPA use, recommends that odour standards should vary from 1.5 – 6.0 OU_E/m³ as a 98th percentile of one hour averaging periods at the worst-case sensitive receptor based on the offensiveness of the odour and with adjustments for local factors such as population density. Table 9.14 outlines a summary of the indicative odour criterion which is based on the UK Environment Agency *H4 Odour Management guidance* (Environment Agency, 2011) and Table 3.1 in the EPA AG9 guidance document – *Odour Emissions Guidance Note* (EPA, 2019).

As per the criteria in Table 9.14, the Brennan's Bread facility would fall under the 'Less Offensive' category as it can be classed as a bakery. In this case, perceived odours from the facility are unlikely to cause significant nuisance to occupiers of the proposed development. It is the obligation of the Brennan's Bread facility to ensure no odour nuisance occurs beyond their site.

Based on the class of activity at the Brennan's Bread facility it is not predicted to cause significant odour nuisance at the proposed development.

Table 9.14 Indicative Odour Standards Based On Offensiveness Of Odour And Adapted for Irish EPA

Industrial Sectors	Relative Offensiveness of Odour	Indicative Criterion ^{Note 1}
- Processes involving decaying animal or fish remains. - Processes involving septic effluent or sludge - Waste sites including landfills, waste transfer stations and non-green waste composting facilities.	Most Offensive	1.5 OU _E /m ³ as a 98 th percentile of hourly averages at the worst-case sensitive receptor

Industrial Sectors	Relative Offensiveness of Odour	Indicative Criterion ^{Note 1}
- Intensive Livestock Rearing - Fat Frying / Meat Cooking (Food Processing) - Animal Feed - Sugar Beet Processing - Well aerated green waste composting Most odours from regulated processes fall into this category i.e. any industrial sector which does not obviously fall within the "most offensive" or "less offensive" categories.	Moderately Offensive	3.0 OU_E/m³ as a 98thile of hourly averages at the worst-case sensitive receptor
- Brewery / Grain / Oats Production - Coffee Roasting - Bakery - Confectionery	Less Offensive	6.0 OU_E/m³ as a 98thile of hourly averages at the worst-case sensitive receptor

Note 1 Professional judgement should be applied in the determination of where the worst-case sensitive receptor is located.

9.5 Mitigation Measures

9.5.1 Construction Phase

The proposed development has been assessed as having a medium risk of dust soiling impacts and a low risk of dust related human health impacts during the construction phase as a result of demolition, earthworks, construction and trackout activities (see Section 9.4.2). Therefore, the following dust mitigation measures shall be implemented during the construction phase of the proposed development. These measures are appropriate for sites with a medium risk of dust impacts and aim to ensure that no significant nuisance occurs at nearby sensitive receptors. The mitigation measures draw on best practice guidance from Ireland (DCC (2018), DL RCC (2022)), the UK (IAQM (2024), BRE (2003), The Scottish Office (1996), UK ODPM (2002)) and the USA (USEPA, 1997). These measures will be incorporated into the overall Construction Environmental Management Plan (CEMP) prepared for the site. The measures are divided into different categories for different activities.

Communications

- Develop and implement a stakeholder communications plan that includes community engagement before works commence on site. Community engagement includes explaining the nature and duration of the works to local residents and businesses.
- The name and contact details of a person to contact regarding air quality and dust issues shall be displayed on the site boundary, this notice board should also include head/regional office contact details.

Site Management

- During working hours, dust control methods will be monitored as appropriate, depending on the prevailing meteorological conditions. Dry and windy conditions are favourable to dust suspension therefore mitigations must be implemented if undertaking dust generating activities during these weather conditions.
- A complaints register will be kept on site detailing all telephone calls and letters of complaint received in connection with dust nuisance or air quality concerns, together with details of any remedial actions carried out

Preparing and Maintaining the Site

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Avoid site runoff of water or mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
- Cover, seed or fence stockpiles to prevent wind whipping.
- Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.

Operating Vehicles / Machinery and Sustainable Travel

- Ensure all vehicles switch off engines when stationary - no idling vehicles.
- Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable.
- Impose and signpost a maximum-speed-limit of 15 kph haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
- Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)

Operations

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Waste Management

- Avoid bonfires and burning of waste materials.

Measures Specific to Demolition

- Prior to demolition blocks should be soft striped inside buildings (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).
- During the demolition process, water suppression should be used, preferably with a hand-held spray. Only the use of cutting, grinding or sawing equipment fitted or used in conjunction with a suitable dust suppression technique such as water sprays/local extraction should be used.
- Drop heights from conveyors, loading shovels, hoppers and other loading equipment should be minimised, if necessary fine water sprays should be employed.
- Avoid explosive blasting, using appropriate manual or mechanical alternatives.

Measures Specific to Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.

- Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- Only remove the cover in small areas during work and not all at once.
- During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will operate to ensure moisture content is high enough to increase the stability of the soil and thus suppress dust.

Measures Specific to Construction

- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
- For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.

Measures Specific to Trackout

- A speed restriction of 15 kph will be applied as an effective control measure for dust for on-site vehicles.
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- Record all inspections of haul routes and any subsequent action in a site log book.
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsters and regularly cleaned.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
- Access gates to be located at least 10 m from receptors where possible.

Monitoring

- Undertake daily on-site and off-site inspections, where receptors (including roads) are nearby, to monitor dust, record inspection results in the site inspection log. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary, with cleaning to be provided if necessary.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.

9.5.2 Operational Phase

No site-specific mitigation measures are proposed for the operational phase as impacts are predicted to be not significant.

9.6 Cumulative Impact

9.6.1 Construction Phase

There is the potential for cumulative construction dust impacts to nearby sensitive receptors if the construction phase of the proposed development coincides with that of other large-scale developments within 500 m of the site.

A review of the planned and permitted projects within the vicinity of the site was undertaken in order to identify developments with the potential for cumulative construction phase impacts. There is the

potential for the construction phase of the proposed development to coincide with that of the following permitted developments: SD23A/0108 and LRD24A/0003.

The dust mitigation measures outlined in Section 9.5 will be applied during the construction phase which will avoid significant cumulative impacts on air quality. With appropriate mitigation measures in place, the predicted cumulative impacts on air quality associated with the construction phase of the proposed development is **short-term, direct, negative** and **not significant**. no significant cumulative impacts to air quality or climate predicted for the construction phase.

9.6.2 Operational Phase

There is the potential for cumulative impacts to air quality during the operational phase as a result of traffic associated with other existing and permitted developments within the area. The traffic data provided for the operational stage air quality assessment included specific cumulative developments within the area (see Traffic and Transport Assessment and Chapter 13 Material Assets – Traffic for further details).

The cumulative operational phase impact of traffic and air quality is assessed within Section 9.4.3 and was found to have a neutral impact on air quality as per the TII significance criteria (Table 9.3). The cumulative operational stage impact is **long-term, localised, direct, negative**, and **imperceptible** which is overall **not significant**.

9.7 Residual Impact

9.7.1 Construction Phase

In order to minimise dust emissions during construction, a series of mitigation measures have been prepared as outlined in Section 9.5. Provided the dust minimisation measures are adhered to, the predicted residual air quality impacts during the construction phase are **short-term, direct, negative, localised** and **not significant**.

Best practice mitigation measures are proposed for the construction phase of the proposed development, which will focus on the proactive control of dust and other air pollutants, to minimise generation of emissions at source. The mitigation measures that will be put in place during construction will ensure that the impact complies with all EU ambient air quality legislative limit values (set out in Directive 2008/50/EC), which are based on the protection of human health (see Table 9.3). Therefore, the predicted residual, dust-related, human health impact of the construction phase of the proposed development is **short-term, direct, negative, localised** and **not significant**.

9.7.2 Operational Phase

Dispersion modelling of traffic emissions at sensitive receptors in proximity to impacted road links during the operational phase indicate pollutant emissions will be in compliance with the TII assessment criteria which is based on the impacts in the opening year. Section 9.4.3.1 determined that the impact to air quality as a result of increased traffic volumes during the operational phase of the proposed development will be **localised, direct, long-term, negative** and **imperceptible** for the opening year, which is overall **not significant** in EIA terms. However, Ireland will need to develop measures to ensure continuing improvements in air quality in future years in order to meet the objectives of the Clean Air Strategy for Ireland (Government of Ireland, 2023) and to ensure the ambient air quality limit values set out in Directive (EU) 2024/2881 are achieved.

9.8 Monitoring

9.8.1 Construction Phase

The following monitoring measures are proposed to ensure the dust mitigation measures are working satisfactorily:

- Undertake daily on-site and off-site inspections, where receptors (including roads) are nearby, to monitor dust, record inspection results in the site inspection log. This should include regular

dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary, with cleaning to be provided if necessary.

- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.

9.8.2 Operational Phase

There is no monitoring recommended for the operational phase of the proposed development as impacts to air quality are predicted to be imperceptible.

9.9 Interactions

9.9.1 Air Quality and Human Health and Population

9.9.1.1 Construction Phase

An adverse air quality impact during the construction phase can cause health and dust nuisance issues. There is a low risk of dust-related human health impacts during the construction phase of the proposed development. Best practice mitigation measures will be implemented during the construction phase to ensure that the impact of the proposed development complies with all ambient air quality legislative limits. Therefore, the predicted impact is direct, short-term, negative, localised and not significant with respect to Population and Human Health during the construction phase.

9.9.1.2 Operational Phase

Vehicles accessing the site will emit pollutants which may impact Air Quality and Human Health. However, the increased number of vehicles associated with the proposed development will not cause a significant change in air pollutant emissions in the locality. It has been assessed that emissions will be in compliance with the ambient air quality standards which are set for the protection of human health. Impacts will be long-term, localised, direct, negative and not significant.

9.9.2 Air Quality and Climate

Air Quality and Climate have interactions as the emissions from the burning of fossil fuels during the construction and operational phases generate both air quality and climate impacts. There is no impact on climate due to air quality. However, the sources of impacts on air quality and climate are strongly linked.

9.9.3 Air Quality and Land, Soils and Hydrogeology

9.9.3.1 Construction Phase

Construction phase activities such as land clearing, excavations, stockpiling of materials etc. have the potential for interactions between Air Quality and Land and Soils in the form of dust emissions. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that there will be no significant interactions between air quality and land and soils during the construction phase.

9.9.3.2 Operational Phase

There are no potentially significant interactions identified between Air Quality, and Land and Soils during the operational phase.

9.9.4 Air Quality and Biodiversity

9.9.4.1 Construction Phase

Dust generation can occur during extended dry weather periods due to construction traffic along haul routes and construction activities such as excavations and infilling works. Dust emissions can coat vegetation leading to a reduction in the photosynthesising ability as well as other effects. A high level of dust mitigation is proposed to ensure no significant effects occur. With the implementation of these

mitigation measures dust emissions will be minimised and impacts will be direct, short-term, negative, localised and not significant with respect to biodiversity.

9.9.4.2 Operational Phase

There are no potentially significant interactions identified between Air Quality and Biodiversity during the operational phase.

9.9.5 Air Quality and Material Assets – Traffic & Transport

9.9.5.1 Construction Phase

Interactions between Air Quality and Traffic can be significant. With increased traffic movements and reduced engine efficiency, i.e. due to congestion, the emissions of vehicles increase. The impacts of the proposed development on air quality are assessed by reviewing the change in annual average daily traffic on roads close to the site. In this assessment, the impact of the interactions between Traffic and Air Quality are considered to be direct, short-term, neutral, localised and not significant during the construction phase.

9.9.5.2 Operational Phase

The impact of the interactions between Traffic and Air Quality are considered to be long-term, direct, negative and not significant during the operational phase

9.10 References

- BRE (2003) Controlling Particles, Vapours & Noise Pollution from Construction Sites
- Department of the Environment Heritage and Local Government (DEHLG) (2004) Quarries and Ancillary Activities, Guidelines for Planning Authorities
- Dublin City Council (2018) Air Quality Monitoring and Noise Control Unit's Good Practice Guide for Construction and Demolition
- Dun Laoghaire-Rathdown County Council (2022) Good Practice Guide for Construction and Demolition Environmental Management
- Environmental Protection Agency (2006) Environmental Management Guidelines - Environmental Management in the Extractive Industry (Non-Scheduled Minerals)
- Environmental Protection Agency (2015) Advice Notes for Preparing Environmental Impact Statements – Draft
- Environmental Protection Agency (2019) Odour Emissions Guidance Note - AG9
- Environmental Protection Agency (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports
- Environmental Protection Agency (2024) Air Quality in Ireland 2023 (& previous annual reports)
- German VDI (2002) Technical Guidelines on Air Quality Control – TA Luft
- Government of Ireland (2023) Clean Air Strategy for Ireland
- Institute of Air Quality Management (IAQM) (2024) Guidance on the Assessment of Dust from Demolition and Construction Version 2.2
- Met Éireann (2024) Met Éireann website: <https://www.met.ie/>
- The Scottish Office (1996) Planning Advice Note PAN50 Annex B: Controlling The Environmental Effects Of Surface Mineral Workings Annex B: The Control of Dust at Surface Mineral Workings
- Transport Infrastructure Ireland (2022) Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106
- Transport Infrastructure Ireland (2024) TII Road Emissions Model (REM): Model Development Report – GE-ENV-01107
- UK Office of Deputy Prime Minister (2002) Controlling the Environmental Effects of Recycled and Secondary Aggregates Production Good Practice Guidance
- UK Environment Agency (2011) H4 Odour Management
- USEPA (1997) Fugitive Dust Technical Information Document for the Best Available Control Measures
- World Health Organisation (2021) Air Quality Guidelines (and previous Air Quality Guideline Reports 1999 & 2000 & 2006)

10.0 CLIMATE

10.1 Introduction

This chapter assesses the likely climate impacts associated with the proposed development at the former Chadwicks site, Greenhills Road, Walkinstown, Dublin 12. A full description of the development is available in Chapter 3.

The climate assessment is divided into two distinct sections – a greenhouse gas assessment (GHGA) and a climate change risk assessment (CCRA).

- Greenhouse Gas Emissions Assessment (GHGA) – Quantifies the GHG emissions from a project over its lifetime. The assessment compares these emissions to relevant carbon budgets, targets and policy to contextualise magnitude.
- Climate Change Risk Assessment (CCRA) – Identifies the impact of a changing climate on a project and receiving environment. The assessment considers a projects vulnerability to climate change and identifies adaptation measures to increase project resilience.

This chapter was completed by Ciara Nolan. Ciara is a Principal Environmental Consultant in the Air Quality & Climate section of AWN Consulting. She holds a BSc in Energy Systems Engineering from University College Dublin and has also completed an MSc in Applied Environmental Science at UCD. She is a Member of the Institute of Air Quality Management (MIAQM) and the Institution of Environmental Sciences (MIEnvSc). She has over 8 years of experience in undertaking air quality and climate assessments. She has prepared air quality and climate impact assessments as part of EIARs for residential developments including Woodbrook, Shankill (Planning Application Ref. ABP30584419), Ballygossan Park, Skerries (Planning Application Ref. LRD0010/S3), SHD Ratoath (Planning Application Ref. SH305196), SHD Rathmullen, Drogheda (Planning Application Ref. SH305552), commercial and industrial developments by Dublin Airport Authority, Abbvie, Mountpark, Pfizer, Takeda, as well as renewable energy developments such as Crockahenny Windfarm, Upperchurch Windfarm, Knocknamona Windfarm and Keerglen Windfarm. She also specialises in conducting air dispersion modelling assessments of emissions from data centres, energy centres and the chemical industry as part of EPA Industrial Emissions Licences for Echelon DC, AWS, Takea, MSD and Regeneron. She has undertaken air quality and climate impact assessments for transportation schemes, primarily regional and national road schemes, from constraints, through to route selection and EIAR stage.

10.2 Methodology

10.2.1 Relevant Guidance, Legislation and Policy

10.2.1.1 Guidance

The principal guidance and best practice documents used to inform the assessment of potential impacts on climate are summarised below. In addition to specific climate guidance documents, the following guidelines were considered and consulted in the preparation of this chapter:

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (hereafter referred to as the Environmental Protection Agency (EPA) Guidelines) (EPA, 2022); and
- Environmental Impact Assessment of Projects – Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017).

The assessment has made reference to national guidelines where available, in addition to international standards and guidelines relating to the assessment of climate impacts. These are summarised below:

- Transport Infrastructure Ireland (TII) PE-ENV-01104: Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document (TII, 2022a);
- Transport Infrastructure Ireland (TII) PE-ENV-01105: Climate Assessment Standard for Proposed National Roads (TII, 2022b);

- Transport Infrastructure Ireland (TII) GE-ENV-01106: TII Carbon Assessment Tool for Road and Light Rail Projects and User Guidance Document (TII, 2022c);
- Institute of Environmental Management & Assessment (IEMA) Environmental Impact Assessment Guide to: Assessing GHG Emissions and Evaluating their Significance (hereafter referred to as the IEMA 2022 GHG Guidance) (IEMA, 2022);
- IEMA Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (hereafter referred to as the IEMA 2020 EIA Guide) (IEMA, 2020a);
- IEMA GHG Management Hierarchy (hereafter referred to as the IEMA 2020 GHG Management Hierarchy) (IEMA, 2020b);
- IEMA Principles Series: Climate Change Mitigation & EIA (IEMA, 2010);
- Publicly Available Specification (PAS) 2080:2016 on Carbon Management in Infrastructure (BSI, 2016); and
- Technical Guidance on the Climate Proofing of Infrastructure in the Period 2021-2027 (European Commission, 2021a).

10.2.1.2 Legislation

In 2015, the Climate Action and Low Carbon Development Act 2015 (No. 46 of 2015) (Government of Ireland, 2015) was enacted (the 2015 Act). The purpose of the 2015 Act was to enable Ireland 'to pursue, and achieve, the transition to a low carbon, climate resilient and environmentally sustainable economy by the end of the year 2050' (3.(1) of No. 46 of 2015). This is referred to in the 2015 Act as the 'national transition objective'. The 2015 Act made provision for a national mitigation plan, and a national adaptation framework. In addition, the 2015 Act provided for the establishment of the Climate Change Advisory Council with the function to advise and make recommendations on the preparation of the national mitigation and adaptation plans and compliance with existing climate obligations.

The first Climate Action Plan (CAP) was published by the Irish Government in June 2019 (Government of Ireland, 2019). The Climate Action Plan 2019 outlined the current status across key sectors including Electricity, Transport, Built Environment, Industry and Agriculture and outlined the various broadscale measures required for each sector to achieve ambitious decarbonisation targets. The 2019 CAP also detailed the required governance arrangements for implementation including carbon-proofing of policies, establishment of carbon budgets, a strengthened Climate Change Advisory Council and greater accountability to the Oireachtas. The Government published the second Climate Action Plan in November 2021 (Government of Ireland, 2021a) and a third update in December 2022 (Government of Ireland, 2022) with an Annex of Action published in March 2023. The current Climate Action Plan is CAP24, published in December 2022 (DECC, 2023a).

Following on from Ireland declaring a climate and biodiversity emergency in May 2019, and the European Parliament approving a resolution declaring a climate and environment emergency in Europe in November 2019, the Government approved the publication of the General Scheme in December 2019, followed by the publication of the Climate Action and Low Carbon Development (Amendment) Act 2021 (hereafter referred to as the 2021 Climate Act) in March 2021. The Climate Act was signed into Law on the 23rd July 2021, giving statutory effect to the core objectives stated within the CAP.

The purpose of the 2021 Climate Act (Government of Ireland, 2021) is to provide for the approval of plans "for the purpose of pursuing the transition to a climate resilient, biodiversity rich and climate neutral economy by no later than the end of the year 2050". The 2021 Climate Act also provides for "carbon budgets and a decarbonisation target range for certain sectors of the economy". The 2021 Climate Act defines the carbon budget as "the total amount of greenhouse gas emissions that are permitted during the budget period".

In relation to carbon budgets, the 2015 Act (as amended) states 'A carbon budget, consistent with furthering the achievement of the national climate objective, shall be proposed by the Climate Change Advisory Council, finalised by the Minister and approved by the Government for the period of 5 years commencing on the 1 January 2021 and ending on 31 December 2025 and for each subsequent period of 5 years (in this Act referred to as a 'budget period')'. The carbon budget is to be produced for 3 sequential budget periods, as shown in Table 10.1. The carbon budget can be revised where new obligations are imposed under the law of the European Union or international agreements or where there are significant developments in scientific knowledge in relation to climate change. In relation to the sectoral emissions ceiling, the Minister for the Environment, Climate and Communications (the

Minister for the Environment) shall prepare and submit to government the maximum amount of GHG emissions that are permitted in different sectors of the economy during a budget period and different ceilings may apply to different sectors. The sectoral emission ceilings for 2030 were published in the Climate Action Plan 2024 (CAP24) (DECC, 2023a) and are shown in Table 10.2.

Table 10.1 5-Year Carbon Budgets 2021-2025, 2026-2030 and 2031-2035

Budget Period	Carbon Budget	Reduction Required
2021-2025	295 Mt CO ₂ e	Reduction in emissions of 4.8% per annum for the first budget period.
2026-2030	200 Mt CO ₂ e	Reduction in emissions of 8.3% per annum for the second budget period.
2031-2035	151 Mt CO ₂ e	Reduction in emissions of 3.5% per annum for the third provisional budget.

Table 10.2 Sectoral Emission Ceilings 2030

Sector	Baseline (MtCO ₂ e)	Carbon Budgets (MtCO ₂ e)		2030 Emissions (MtCO ₂ e)	Indicative Emissions % Reduction in Final Year of 2025 – 2030 Period (Compared to 2018)
	2018	2021- 2025	2026- 2030		
Electricity	10	40	20	3	75
Transport	12	54	37	6	50
Built Environment – Residential	7	29	23	4	40
Built Environment – Commercial	2	7	5	1	45
Industry	7	30	24	4	35
Agriculture	23	106	96	17.25	25
Other (F-gases, waste, petroleum refining)	2	9	8	1	50
Land Use, Land-use Change and Forestry (LULUCF)	5	Reflecting the continued volatility for LULUCF baseline emissions to 2030 and beyond, CAP24 puts in place ambitious activity targets for the sector reflecting an EU-type approach.			
Total	68				
Unallocated Savings	-	-	26	-5.25	-
Legally Binding Carbon Budgets and 2030 Emission Reduction Targets	-	295	200	-	51

10.2.1.3 Policy

In December 2023 the current Climate Action Plan, CAP24, was published (DECC, 2023). CAP25 is due to be published in 2025 which will update CAP24. CAP24 builds on the progress of CAP23, which first published carbon budgets and sectoral emissions ceilings, and it aims to implement the required changes to achieve a 51% reduction in carbon emissions by 2030 and 2050 net zero goal. The CAP has six vital high impact sectors where the biggest savings can be made. These sectors are renewable energy, energy efficiency of buildings, transport, sustainable farming, sustainable business and change of land-use. CAP24 states that the decarbonisation of Ireland's manufacturing industry is key for Ireland's economy and future competitiveness. There is a target to reduce the embodied carbon in construction materials by 10% for materials produced and used in Ireland by 2025 and by at least 30% for materials produced and used in Ireland by 2030. CAP24 states that these reductions can be brought about by product substitution for construction materials and reduction of clinker content in cement. Cement and other high embodied carbon construction elements can be reduced by the adoption of the methods set out in the Construction Industry Federation 2021 report Modern Methods of Construction (Construction Industry Federation, 2021). The IDA Ireland will also seek to attract businesses to invest

in decarbonisation technologies to ensure economic growth can continue alongside a reduction in emissions.

In April 2023, the Government published its Long-Term Strategy on Greenhouse Gas Emissions Reductions (DECC, 2023b). This strategy provides a long-term plan on how Ireland will transition towards net carbon zero by 2050, achieving the interim targets set out in the Climate Action Plan.

The South Dublin County Council (SDCC) Climate Action Plan 2024 – 2029 (SDCC & Codema, 2024) outlines SDCC's goals to mitigate GHG emissions and plans to prepare for and adapt to climate change. The Climate Action Plan sets out a range of actions across the six theme areas of Energy & Buildings, Transport, Flood Resilience, Nature Based Solutions, Circular Economy & Resource Management and Citizen Engagement. This is aligned to the Government's overall National Climate Objective, which seeks to pursue and achieve, by no later than the end of 2050, the transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy. The SDCC Climate Action Plan states that SDCC aims to reduce car dependency by encouraging modal shifts from cars to active travel and more sustainable modes, including public transport and cycling. SDCC states that it wishes to work with the relevant transportation bodies to introduce measures to achieve modal shifts.

The SDCC Climate Action Plan highlights the risks that climate change poses to infrastructure, individuals, communities, and business sectors (such as agriculture, tourism and transport), with risks mainly associated with extreme weather events. The SDCC Climate Action Plan notes that extreme temperature and flooding and erosion (pluvial and fluvial) have the greatest future risk when both the likelihood and consequence are accounted for. Increases in extreme rainfall and flooding will cause an inundation of residential properties, damages to commercial buildings and premises, and disruption of transport networks.

The second National Adaptation Framework (NAF) (DECC, 2024) was published in June 2024 in line with the five-year requirement of the 2015 Climate and Low Carbon Development Act. The plan provides a whole of government and society approach to climate adaptation in Ireland to reduce Ireland's vulnerability to climate change risks including extreme weather events, flooding, drought, loss of biodiversity, sea level rise and increased temperatures. Similar to the "Just Transition" when considering carbon emissions, the NAF aims for "Just Resilience" stating that:

"A climate resilient Ireland will have a reduced reliance on fossil fuel, it will have widely accessible electrified public transport and will have transitioned towards sustainable agricultural practices such as agroforestry and organic farming."

In relation to the built environment the NAF states in Chapter 3 *"deepening of adaptation considerations in the planning and building standards processes is considered the most appropriate way of increasing the resilience of the built environment"*. Within the NAF it mentions that there is a risk of damage to buildings and structures from severe weather events such as high winds and intense rainfall. New development should accommodate predicted future climate change impacts without requiring major redesign or redevelopment in the future which may be costly and inefficient. This will require facilitating innovative building design, new materials and standards (to accommodate hotter summers while withstanding changes in precipitation patterns and more intense storms for example) according to the NAF (DECC, 2024).

The National Climate Change Risk Assessment (NCCRA) was published in May 2024 (EPA, 2024a). The NCCRA was required to be developed under Action 457 from the 2021 CAP (Government of Ireland 2021). Action 457 seeks to "Further develop Ireland's national climate change risk assessment capacity to identify the priority physical risks of climate change to Ireland". The NCCRA uses definitions of the risk determinants from the Intergovernmental Panel on Climate Change (IPCC) Risk Framework (IPCC 2023):

- Hazard - the potential occurrence of a natural or human-induced physical event or trend or physical impact that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems, and environmental resources

- Exposure - the presence of people, livelihoods, species or ecosystems, environmental functions, services, and resources, infrastructure, or economic, social or cultural assets in places and settings that could be adversely affected
- Vulnerability - the propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts including sensitivity
- Risk - the potential for adverse consequences for human or ecological systems.

When considering risk, the NCCRA assess exposure and vulnerability for two future climate change scenarios or Representative Concentration Pathways (RCPs):

- RCP4.5 was selected as it represents a scenario aligned with the global temperature trajectory
- RCP8.5 was selected as it represents a high-emissions scenario and achieves the highest level of modelled temperature increases by the end of the century. Consequently, this scenario will result in the highest level of physical risk for Ireland, and therefore the greatest requirement for adaptation.

These scenarios align with a conservative approach to assess risks to Ireland and assumes global emission reduction targets are not met. This aligns with the principle of precaution as stated in the NAF (DECC 2024). In addition to the future climate scenarios, the NCCRA assesses the risk from the future climate during the following timeframes:

- Present (~2030)
- Medium term (~2050)
- Long term (~2100).

10.2.2 Greenhouse Gas Assessment

As per the EU guidance document Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment (European Commission, 2013) the climate baseline is first established with reference to EPA data on annual GHG emissions (see Section 10.3.1).

10.2.2.1 Construction Phase

The GHG assessment accounts for various components relating to the project during different life stages to determine the total impact of the development on climate. The reference study period (i.e. the assumed building life expectancy) for the purposes of the assessment is 50 years. Embodied carbon emissions are attributed to four main categories, taken from BS EN 15978. The categories are:

- **Product Stages (Category A1 to A3)** The carbon emissions generated at this stage arise from extracting the raw materials from the ground, their transport to a point of manufacture and then the primary energy used (and the associated carbon impacts that arise) from transforming the raw materials into construction products.
- **Construction (Category A4 to A5)** These carbon impacts arise from transporting the construction products to site, and their subsequent processing and assembly into the building.
- **Use Stage (Category B1 to B7)** This covers a wide range of sources from the GHG emissions associated with the operation of the building (B1), maintenance (B2), repair (B3), refurbishment (B4) and replacement (B5) of materials, and operational energy use (B6) and water use (B7).
- **End of Life Stages (Category C1 to C4)** The eventual deconstruction and disposal of the existing building at the end of its life takes account of the on-site activities of the demolition contractors. No 'credit' is taken for any future carbon benefit associated with the reuse or recycling of a material into new products.

PE-ENV-01104 (TII, 2022a) recommends the calculation of the construction stage embodied carbon using the TII Online Carbon Tool (TII, 2022b). Embodied carbon refers to the sum of the carbon needed to produce a good or service. It incorporates the energy needed in the mining or processing of raw materials, the manufacturing of products and the delivery of these products to site. The purpose of the embodied carbon assessment is to engage the design team in the consideration of embodied carbon at an early stage in the development and mitigate embodied carbon. This engagement aims to ensure carbon savings are made and to assist in aligning the project to Ireland's CAP goal of Net Carbon Zero by 2050.

The TII Online Carbon Tool (TII, 2022b) has been commissioned by TII to assess GHG emissions associated with road or rail projects in Ireland. The TII Carbon Tool (TII, 2022b) uses emission factors from recognised sources including the Civil Engineering Standard Method of Measurement (CESSM) Carbon and Price Book database (CESSM, 2013), which can be applied to a variety of developments, not just road or rail. The tool aligns with PAS 2080.

The use of the TII Carbon Tool was not considered suitable for the building elements of the proposed development. As the TII Carbon Tool was developed for road and infrastructure projects, the material types within the tool are specific to these types of developments. These material types are not fully appropriate for assessing the embodied carbon associated with the construction of buildings. Therefore, the carbon impact of the buildings was carried out using an alternative tool; the Carbon Designer for Ireland tool.

The Irish Green Building Council in partnership with One Click LCA Ltd. have developed the Carbon Designer for Ireland tool (One Click LCA Ltd., 2023) for use on Irish specific building projects. The Carbon Designer tool is promoted by the EPA and the Land Development Agency. OneClickLCA is certified to EN 15978, EN 15978, ISO 21931 – 1 & ISO 21929, and data requirements of ISO 14040 & EN 15804, and is LEED, BREEAM and PAS 2080 aligned. It allows users to assess the carbon impact of buildings at an early stage using typical default materials and values. Inputs to the tool include the gross floor area and number of stories above ground level along with the building frame type. Once the baseline is established using generic data, the tool allows for optioneering and optimization of the carbon impact. It highlights the key areas within the building with the highest carbon impact and provides options for lower carbon intensive materials. The Carbon Designer for Ireland tool was completed by the project architects (C+W O'Brien architects) with the outputs provided to AWN Consulting to assess the GHG impact of the building elements of the proposed development.

Reasonable conservative estimates have been used in this assessment where necessary to provide an estimate of the GHGs associated with the proposed development.

10.2.2.2 Operational Phase

Traffic Emissions

Emissions from road traffic associated with the proposed development have the potential to emit carbon dioxide (CO₂) which will impact climate.

The TII guidance Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106 (TII, 2022c), states that road links meeting one or more of the following criteria can be defined as being 'affected' by a proposed development and should be included in the local air quality assessment, and also the climate assessment. While the guidance is specific to infrastructure projects the approach can be applied to any development that causes a change in traffic.

- Annual average daily traffic (AADT) changes by 1,000 or more;
- Heavy duty vehicle (HDV) AADT changes by 200 or more;
- Daily average speed change by 10 kph or more;
- Peak hour speed change by 20 kph or more;
- A change in road alignment by 5 m or greater.

As per Chapter 9 – Air Quality, there are a number of road links that will experience a change of over 1,000 AADT during the operational phase as a result of the proposed development. As a result a detailed assessment of traffic related carbon dioxide (CO₂) emissions was conducted.

PE-ENV-01104 (TII, 2022a) states that road traffic related emissions information should be obtained from an Air Quality Practitioner (i.e. the air quality EIAR chapter author) to show future user emissions during operation without the development in place. The Air Quality Practitioner calculated the traffic related emissions through the use of the TII REM tool (TII, 2024) which includes detailed fleet predictions for age, fuel technology, engine size and weight based on available national forecasts. The output is provided in terms of CO₂e for the base year 2022, Opening Year 2026 and Design Year 2041. Both the Do Nothing and Do Something scenarios are quantified in order to determine the degree of change in emissions as a result of the proposed development. Traffic data was obtained from NRB for

the purpose of this assessment. Inputs include light duty vehicle (LDV) annual average daily traffic movements (AADT), annual average daily heavy-duty vehicles (HDV AADT), annual average traffic speeds, road link lengths, road type and project county location. The traffic data used in the operational phase modelling assessment is detailed in Table 9.6 of Chapter 9 – Air Quality.

Operational Phase Energy Use

The EU guidance (European Commission, 2013) also states indirect GHG emissions as a result of a development must be considered, which includes emissions associated with energy usage. A Sustainability Report was prepared by Homan O'Brien in relation to the proposed development and is submitted separately with this planning application. The report outlines a number of measures which have been incorporated into the overall design of the development which will have the benefit of reducing the impact to climate where possible during operation.

10.2.2.3 Significance Criteria for GHGA

The Transport Infrastructure Ireland (TII) guidance document entitled PE-ENV-01104 Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document (TII, 2022a) outlines a recommended approach for determining the significance of both the construction and operational phases of a development.

The significance of GHG effects set out in PE-ENV-01104 (TII, 2022a) is based on IEMA guidance (IEMA, 2022) which is consistent with the terminology contained within Figure 3.4 of the EPA's (2022) 'Guidelines on the information to be contained in Environmental Impact Assessment Reports'.

The 2022 IEMA Guidance (IEMA, 2022) sets out the following principles for significance:

- When evaluating significance, all new GHG emissions contribute to a negative environmental impact; however, some projects will replace existing development or baseline activity that has a higher GHG profile. The significance of a project's emissions should therefore be based on its net impact over its lifetime, which may be positive, negative or negligible;
- Where GHG emissions cannot be avoided, the goal of the EIA process should be to reduce the project's residual emissions at all stages; and
- Where GHG emissions remain significant, but cannot be further reduced, approaches to compensate the project's remaining emissions should be considered.

The criteria for determining the significance of effects are a two-stage process that involves defining the magnitude of the impacts and the sensitivity of the receptors (i.e. Ireland's National GHG targets). In relation to climate, there is no project specific assessment criteria, but the project will be assessed against the recommended TII significance determination. This takes account of any embedded or committed mitigation measures that form part of the design which should be considered.

TII (TII, 2022a) states that professional judgement must be taken into account when contextualising and assessing the significance of a project's GHG impact. TII (TII 2022a) states that professional judgement must be taken into account when contextualising and assessing the significance of a project's GHG impact. In line with IEMA Guidance (IEMA, 2022), TII state that the crux of assessing significance is "not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050".

Significance is determined using the criteria outlined in Table 10.3 (derived from Table 6.7 of PE-ENV-01104 (TII 2022a)) along with consideration of the following two factors:

- The extent to which the trajectory of GHG emissions from the project aligns with Ireland's GHG trajectory to net zero by 2050; and
- The level of mitigation taking place.

Table 10.3 Significance Criteria for GHGA

Effects	Significance Level	Description
Significant adverse	Major adverse	- The project's GHG impacts are not mitigated. - The project has not complied with do-minimum standards set through regulation, nor provided reductions required by local or national policies; and - No meaningful absolute contribution to Ireland's trajectory towards net zero.
	Moderate adverse	- The project's GHG impacts are partially mitigated. - The project has partially complied with do-minimum standards set through regulation, and have not fully complied with local or national policies; and - Falls short of full contribution to Ireland's trajectory towards net zero.
Not significant	Minor adverse	- The project's GHG impacts are mitigated through 'good practice' measures. - The project has complied with existing and emerging policy requirements; and - Fully in line to achieve Ireland's trajectory towards net zero.
	Negligible	- The project's GHG impacts are mitigated beyond design standards. - The project has gone well beyond existing and emerging policy requirements; and - Well 'ahead of the curve' for Ireland's trajectory towards net zero.
Beneficial	Beneficial	- The project's net GHG impacts are below zero and it causes a reduction in atmosphere GHG concentration. - The project has gone well beyond existing and emerging policy requirements; and - Well 'ahead of the curve' for Ireland's trajectory towards net zero, provides a positive climate impact.

Ireland's carbon budgets can also be used to contextualise the magnitude of GHG emissions from the proposed development (TII, 2022a). The approach is based on comparing the net proposed development GHG emissions to the relevant carbon budgets (DECC, 2023a). With the publication of the Climate Action Act in 2021 and the Climate Action Plan 2024, sectoral carbon budgets have been published for comparison with the net GHG emissions from the proposed development over its lifespan.

10.2.3 Climate Change Risk Assessment

The assessment involves determining the vulnerability of the proposed development to climate change. This involves an analysis of the sensitivity and exposure of the development to climate hazards which together provide a measure of vulnerability.

PE-ENV-01104 (TII, 2022a) states that the CCRA is guided by the principles set out in the overarching best practice guidance documents:

- Technical Guidance on the Climate Proofing of Infrastructure in the Period 2021-2027 (European Commission, 2021a); and
- The Institute of Environmental Management and Assessment, Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (2nd Edition) (IEMA, 2020).

The baseline environment information provided in Section 10.3, future climate change modelling and input from other experts working on the proposed development (i.e. hydrologists) should be used to assess the likelihood of a climate risk.

First an initial screening CCRA based on the operational phase is carried out, according to the TII guidance PE-ENV-01104. This is carried out by determining the sensitivity of proposed development assets (i.e. receptors) and their exposure to climate change hazards.

The proposed development asset categories must be assigned a level of sensitivity to climate hazards. PE-ENV-01104 (TII, 2022a) provides the list of asset categories and climate hazards to be considered. The asset categories will vary for development type and need to be determined on a development-by-development basis.

- **Asset Categories** Pavements; drainage; structures; utilities; landscaping; signs, light posts, buildings, and fences.
- **Climate Hazards** Flooding (coastal, pluvial, fluvial); extreme heat; extreme cold; wildfire; drought; extreme wind; lightning and hail; landslides; fog.

The sensitivity is based on a High, Medium or Low rating with a score of 1 to 3 assigned as per the criteria below.

- **High Sensitivity** The climate hazard will or is likely to have a major impact on the asset category. This is a sensitivity score of 3.
- **Medium Sensitivity** It is possible or likely the climate hazard will have a moderate impact on the asset category. This is a sensitivity score of 2.
- **Low Sensitivity** It is possible the climate hazard will have a low or negligible impact on the asset category. This is a sensitivity score of 1.

Once the sensitivities have been identified the exposure analysis is undertaken. The exposure analysis involves determining the level of exposure of each climate hazard at the project location irrespective of the project type. For example, flooding could be a risk if the project location is next to a river in a floodplain. Exposure is assigned a level of High, Medium or Low as per the below criteria.

- **High Exposure** It is almost certain or likely this climate hazard will occur at the project location, i.e. might arise once to several times per year. This is an exposure score of 3.
- **Medium Exposure** It is possible this climate hazard will occur at the project location, i.e. might arise a number of times in a decade. This is an exposure score of 2.
- **Low Exposure** It is unlikely or rare this climate hazard will occur at the project location, i.e. might arise a number of times in a generation or in a lifetime. This is an exposure score of 1.

Once the sensitivity and exposure are categorised, a vulnerability analysis is conducted by multiplying the sensitivity and exposure to calculate the vulnerability.

10.2.3.1 Significance Criteria for CCRA

The CCRA involves an initial screening assessment to determine the vulnerability of the proposed development to various climate hazards. The vulnerability is determined by combining the sensitivity and the exposure of the proposed development to various climate hazards.

$$\text{Vulnerability} = \text{Sensitivity} \times \text{Exposure}$$

The vulnerability assessment takes any proposed mitigation into account. Table 10.4 details the vulnerability matrix; vulnerabilities are scored on a high, medium and low scale.

TII guidance (TII, 2022a) and the EU technical guidance (European Commission, 2021a) note that if all vulnerabilities are ranked as low in a justified manner, no detailed climate risk assessment may be needed. Therefore, the impact from climate change on the proposed development can be considered to be not significant.

However, where residual medium or high vulnerabilities exist the assessment may need to be progressed to a detailed climate change risk assessment and further mitigation implemented to reduce risks. An assessment of construction phase CCRA impacts is only required according to the TII guidance (TII, 2022a) if a detailed CCRA is required.

Table 10.4 Vulnerability Matrix

		Exposure		
		High (3)	Medium (2)	Low (1)
Sensitivity	High (3)	9 - High	6 - High	3 - Medium
	Medium (2)	6 - High	4 - Medium	2 - Low
	Low (1)	3 - Medium	2 - Low	1 - Low

The screening CCRA, detailed in Section 10.4.3, did not identify any residual medium or high risks to the proposed development as a result of climate change. Therefore, a detailed CCRA for the construction and operational phase were scoped out.

While a CCRA for the construction phase was not required, best practice mitigation against climate hazards is still recommended in Section 10.5.

10.3 Receiving Environment

PE-ENV-01104 (TIL, 2022a) states that a baseline climate scenario should identify, consistent with the study area for the project, GHG emissions without the project for both the current and future baseline.

Ireland declared a climate and biodiversity emergency in May 2019 and in November 2019 there was European Parliament approval of a resolution declaring a climate and environment emergency in Europe. This, in addition to Ireland's current failure to meet its EU binding targets under Regulation 2018/842 (European Union, 2018) results in changes in GHG emissions either beneficial or adverse being of more significance than previously considered prior to these declarations.

10.3.1 Current GHG Baseline

Data published in July 2024 (EPA, 2024), indicates that Ireland exceeded, without the use of flexibilities, its 2023 annual limit set under EU's Effort Sharing Decision (ESD) (EU 2018/842) by 2.27 Mt CO₂e. However, the 2023 emissions were the first time that Ireland's emissions were below (-1.2%) 1990 levels. ETS (Emissions Trading Scheme) emissions decreased (-17.0%) and ESR (Effort Sharing Regulation) emissions decreased (-3.4%). Ireland's target is an emission reduction of 626 kt of CO₂e by 2030 on an average baseline of 2016 to 2018. The EPA estimate that 2023 total national GHG emissions, excluding LULUCF, have decreased by 6.8% on 2022 levels to 55.01 Mt CO₂e, with a 2.2 Mt CO₂e (-21.6%) reduction in electricity industries alone. This was driven by a 40.7% share of energy from renewables in 2023 and by increasing our imported electricity. Manufacturing combustion and industrial processes decreased by 5.1% to 6.3 Mt CO₂e in 2023 due to declines in fossil fuel usage. The sector with the highest emissions in 2023 was agriculture at 37.6% of the total, followed by transport at 21.4%. For 2023, total national emissions (including LULUCF) were 60.62 Mt CO₂e (EPA, 2024), as shown in Table 10.5.

The provisional 2023 figures indicate that Ireland has used 63.9% of the 295 Mt CO₂e Carbon Budget for the five-year period 2021-2025.

Table 10.5 Trends in Total National GHG Emissions 2021 – 2023

Sector <i>Note 1</i>	2021	2022	2023	Total Budget (Mt CO ₂ e) (2021-2025)	% Budget 2021-2025 Used	Annual Change 2022 to 2023
Electricity	9.893	9.694	7.558	40.0	67.9%	-22.0%
Transport	11.089	11.760	11.791	54.0	64.1%	0.3%
Buildings (Residential)	6.868	5.753	5.346	29.0	62.0%	-7.1%
Buildings (Commercial and Public)	1.444	1.447	1.409	7.0	61.4%	-2.6%
Industry	7.093	6.622	6.288	30.0	66.7%	-5.0%
Agriculture	21.940	21.795	20.782	106.0	60.9%	-4.6%
Other <i>Note 2</i>	1.864	1.931	1.832	9.0	62.5%	-5.1%

Sector <i>Note 1</i>	2021	2022	2023	Total Budget (Mt CO ₂ e) (2021-2025)	% Budget 2021-2025 Used	Annual Change 2022 to 2023
LULUCF	4.628	3.983	5.614	–	–	40.9%
Total including LULUCF	64.819	62.986	60.620	295.0	63.9%	-3.8%

Note 1 Reproduced from latest emissions data on the EPA website July 2024 (EPA, 2024).

Note 2 Other includes Petroleum refining, F-Gases and Waste (emissions from solid waste disposal on land, solid waste treatment (composting and anaerobic digestion), wastewater treatment, waste incineration and open burning of waste).

10.3.2 Future GHG Baseline

The future baseline with respect to the GHGA can be considered in relation to the future climate targets which the assessment results will be compared against. In line with TII (TII, 2022a) and IEMA Guidance (IEMA, 2022) the future baseline is a trajectory towards net zero by 2050, “whether it [the project] contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050”.

The future baseline will be determined by Ireland meeting its targets set out in the CAP24, and future CAPs, alongside binding 2030 EU targets. The European Union (EU) enacted ‘Regulation (EU) 2018/842 on binding annual GHG emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No. 525/2013’ (hereafter referred to as the Regulation) (European Union, 2018) to meet the commitments under the Paris Agreement. The Regulation aims to deliver, collectively by the EU in the most cost-effective manner possible, reductions in GHG emissions from the Emission Trading Scheme (ETS) and non-ETS sectors amounting to 43% and 30%, respectively, by 2030 compared to 2005. The Regulation was amended in April 2023 and Ireland must now limit its greenhouse gas emissions by at least 42% by 2030. The ETS is an EU-wide scheme which regulates the GHG emissions of larger industrial emitters including electricity generation, cement manufacturing and heavy industry. The non-ETS sector includes all domestic GHG emitters which do not fall under the ETS scheme and includes GHG emissions from transport, residential and commercial buildings and agriculture.

In June 2024, the EPA released the report Ireland’s Greenhouse Gas Emissions Projections 2023-2050 (EPA, 2024d), which includes total projected emissions and a breakdown of projected emissions per sector under the ‘With Existing Measures’ and ‘With Additional Measures’ scenarios. The EPA projections indicate that under the ‘With Existing Measures’ scenario, Ireland will achieve a reduction of 11% on 2018 levels by 2030. A reduction of 29% by 2030 can be achieved under the ‘With Additional Measures’ scenario, which is still short of the 42% reduction target, set out in the carbon budgets.

10.3.3 Current CCRA Baseline

The region of the proposed development has a temperate, oceanic climate, resulting in mild winters and cool summers. The Met Éireann weather station at Casement Aerodrome is the nearest, representative, weather and climate monitoring station to the proposed development with meteorological data recorded for the 30-year period from 1991 to 2020. The historical regional weather data for Casement Aerodrome meteorological station is representative of the current climate in the region of the proposed development. The data for the 30-year period from 1991 to 2020 indicates that the wettest months at Casement Aerodrome Meteorological Station were October and November, and the driest month on average was March (Met Éireann, 2024a). July was the warmest month with a mean temperature of 15.7 Celsius. January was the coldest month with a mean temperature of 5.2 Celsius.

Met Éireann’s 2023 Climate Statement (Met Éireann, 2024b) states 2023’s average shaded air temperature in Ireland is provisionally 11.20°C, which is 1.65°C above the 1961-1990 long-term average. Previous to this 2022 was the warmest year on record; however, 2023 was 0.38°C warmer (see Figure 10.1).

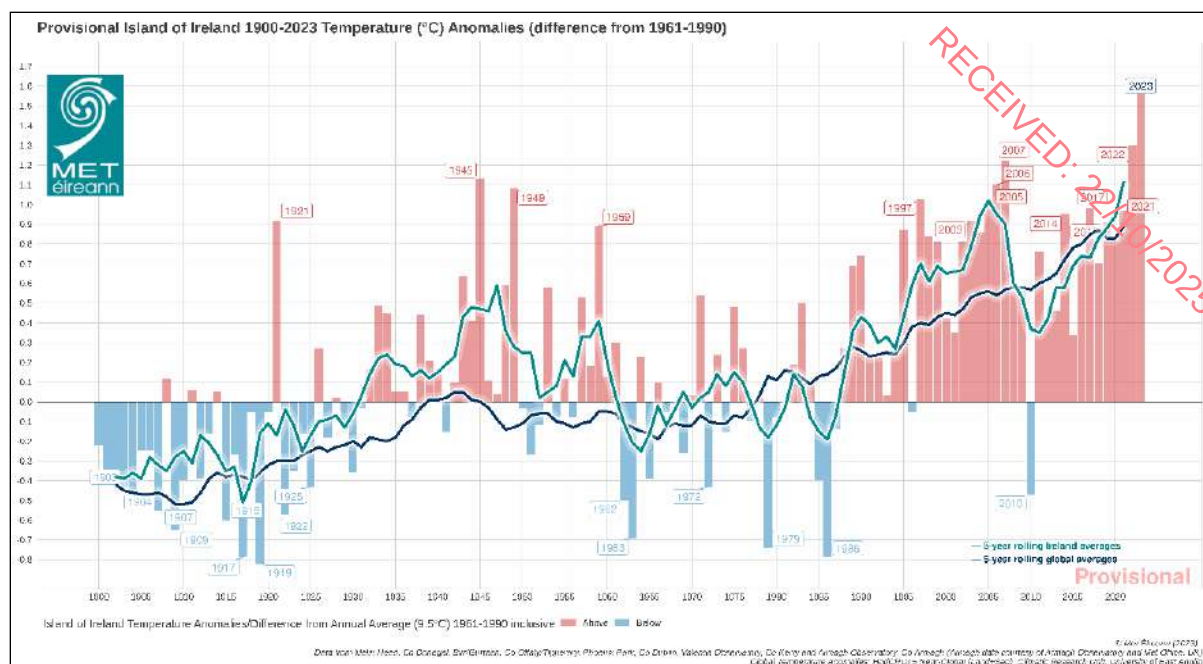


Figure 10.1 1900-2023 Temperature (°C) Temperature Anomalies (differences from 1961-1990)

2023 also had above average rainfall, this included the warmest June on record and the wettest March and July on record. Record high sea surface temperatures (SST) were recorded since April 2023 which included a severe marine heatwave to the west of Ireland during the June 2023. This marine heatwave contributed to the record rainfall in July.

Recent weather patterns and records of extreme weather events recorded by Met Éireann have been reviewed. Considering the extraordinary 2023 data, Met Éireann states that the latest Irish climate change projections indicate further warming in the future, including warmer winters. The record temperatures suggest the likelihood of extreme weather events occurring has increased. This will result in longer dry periods and heavy rainfall events. Storm surges and coastal flooding due to sea level rise. Compound events, where coastal surges and extreme rainfall events occur simultaneously will also increase. Met Éireann has high confidence in maximum rainfall rates increasing but not in how the frequency or intensity of storms will change with climate change.

10.3.4 Future CCRA Baseline

Impacts as a result of climate change will evolve with a changing future baseline, changes have the potential to include increases in global temperatures and increases in the number of rainfall days per year. Therefore, it is expected that the baseline climate will evolve over time and consideration is needed with respect to this within the design of the proposed development.

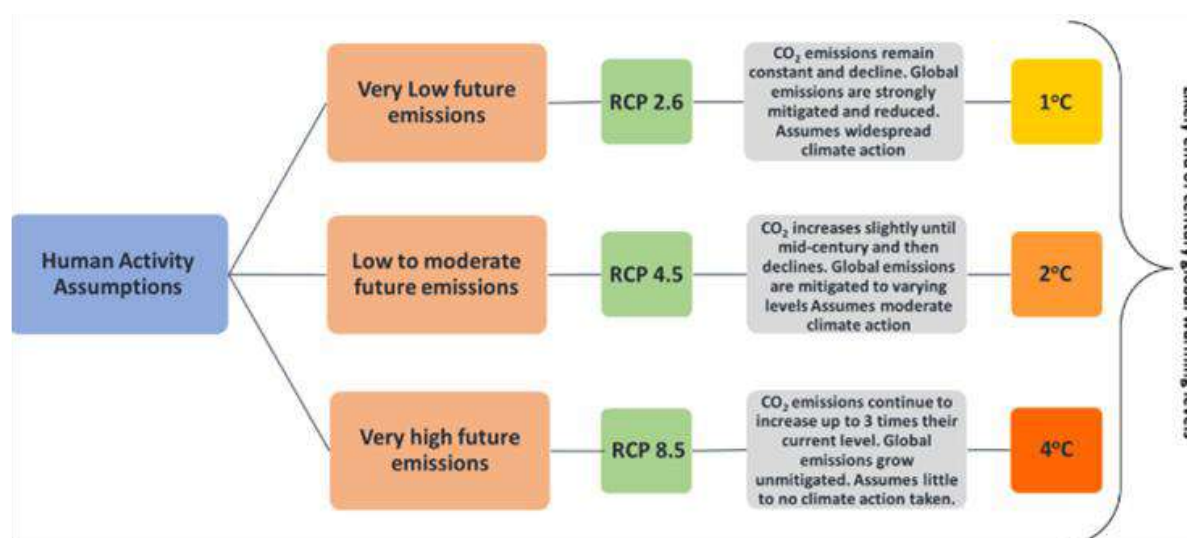
Ireland has seen increases in the annual rainfall in the north and west of the country, with small increases or decreases in the south and east including in the region where the proposed development will be located (EPA, 2021b). The EPA have compiled a list of potential adverse impacts as a result of climate change including the following which may be of relevance to the proposed development (EPA, 2021b):

- More intense storms and rainfall events;
- Increased likelihood and magnitude of river and coastal flooding;
- Water shortages in summer in the east;
- Adverse impacts on water quality; and
- Changes in distribution of plant and animal species.

TII's Guidance document PE-ENV-01104 (TII 2022a) states that for future climate change a moderate to high Representative Concentration Pathways (RCP) should be adopted. RCP4.5 is considered moderate, while RCP8.5 is considered high. Representative Concentration Pathways (RCPs) describe

different 21st century pathways of GHG emissions depending on the level of climate mitigation action undertaken.

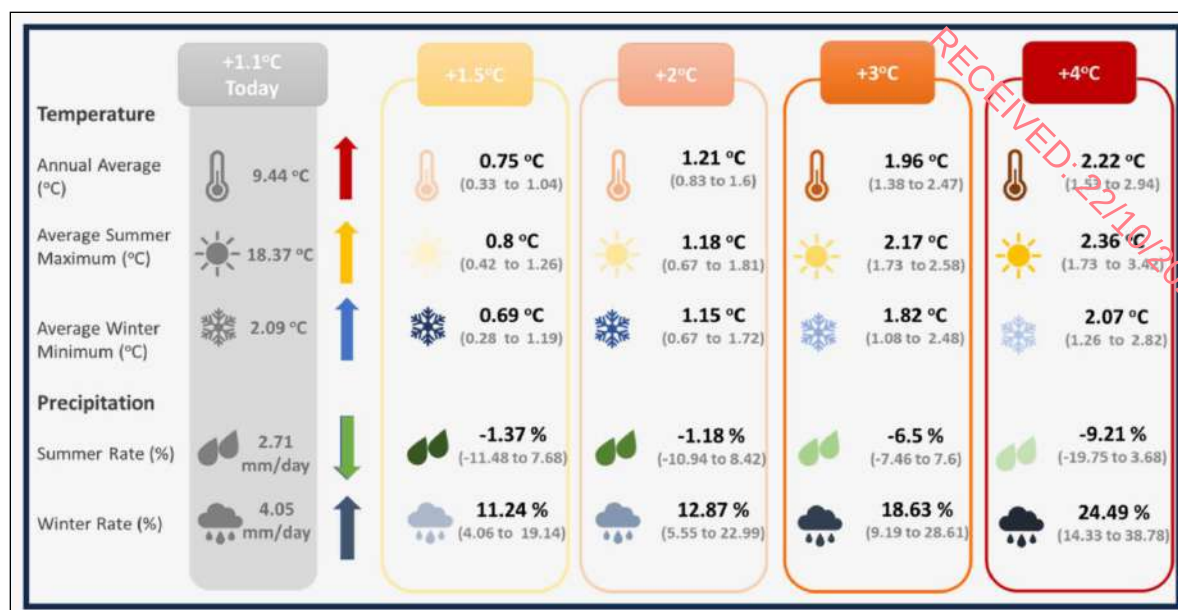
National Framework for Climate Services (NFCS) was founded in June 2022 to streamline the provision of climate services in Ireland and will be led by Met Éireann. The aim of the NFCS is to enable the co-production, delivery and use of accurate, actionable and accessible climate information and tools to support climate resilience planning and decision making. In addition to the NFCS, further work has been ongoing into climate projects in Ireland through research under the TRANSLATE project. TRANSLATE (Met Éireann, 2023b) has been led by climate researchers from University of Galway – Irish Centre for High End Computing (ICHEC), and University College Cork – SFI Research Centre for Energy, Climate and Marine (MaREI), supported by Met Éireann climatologists. TRANSLATE's outputs are produced using a selection of internationally reviewed and accepted models from both CORDEX and CMIP5. Representative Concentration Pathways (RCPs) provide a broad range of possible futures based on assumptions of human activity. The modelled scenarios include for “least” (RCP2.6), “more” (RCP4.5) or “most” (RCP8.5) climate change, see Figure 10.2.



Source: TRANSLATE project storymap (Met Éireann 2023)

Figure 10.2 Representative Concentration Pathways associated emission levels

TRANSLATE (Met Éireann, 2023b) provides the first standardised and bias-corrected national climate projections for Ireland to aid climate risk decision making across multiple sectors (for example, transport, energy, water), by providing information on how Ireland's climate could change as global temperatures increase to 1.5°C, 2°C, 2.5°C, 3°C or 4°C. Projections broadly agree with previous projections for Ireland. Ireland's climate is dominated by the Atlantic Meridional Overturning Circulation (AMOC), a large system of ocean currents – including the Gulf Stream – characterised by a northward flow of warm water and a southward flow of cold water. Due to the AMOC, Ireland does not suffer from the extremes of temperature experienced by other countries at a similar latitude. Recent studies have projected that the AMOC could decline by 30 – 40 % by 2100, resulting in cooler North Atlantic Sea surface temperatures (SSTs) (Met Éireann, 2023b). Met Éireann projects that Ireland will nevertheless continue to warm, although the AMOC cooling influence may lead to reduced warming compared with continental Europe. AMOC weakening is also expected to lead to additional sea level rise around Ireland. With climate change Ireland's temperature and rainfall will undergo more and more significant changes e.g. on average summer temperature could increase by more than 2°C, summer rainfall could decrease by 9% while winter rainfall could increase by 24% (See Figure 10.3). Future projects also include a 10-fold increase in the frequency of summer nights (values > 15°C) by the end of the century, a decrease in the frequency of cold winter nights and an increase in the number of heatwaves. A heatwave in Ireland is defined as a period of 5 consecutive days where the daily maximum temperature is greater than 25°C.



Source: TRANSLATE project storymap (Met Éireann, 2023b)

Figure 10.3 Change of climate variables for Ireland for different Global warming thresholds

The TRANSLATE research report (Met Éireann 2024d) finds that night-time temperatures will warm more than day-time temperatures, with temperatures increases across all seasons but the highest in the summer (with an increase of 0.5°C to 3.5°C). Autumn is projected to have the highest increase in average minimum temperatures (with an increase of 1.1°C to 4.4°C). The variance is dependent on the scenario that is being reviewed. While these temperatures are projected across all of Ireland, they increase most in the east of the country compared to the west. With respect to rainfall, increases of 4% to 38% are projected, however this will not be spread across the year as during summer months there are projected decreases in rainfall beyond the 2°C warming scenario.

In January 2024 the EPA published Ireland's Climate Change Assessment Synthesis Report (EPA, 2024e) which contained four volumes:

- Volume 1: Climate Science: Ireland in a Changing World
- Volume 2: Achieving Climate Neutrality by 2050
- Volume 3: Being Prepared for Ireland's Future Climate
- Volume 4: Realising the Benefits of Transition and Transformation

This report reinforces the existing and future risks arising from climate change. Volume 1 (EPA, 2024e) states that under Early action, the temperature increase averaged across the island of Ireland relative to the recent past (1976 to 2005) would reach 0.91°C (0.44 to 1.10°C) by mid-century before falling back to 0.80°C (0.34 to 1.07°C) at the end of the century. Whereas under Late action, by the end of the century it is projected that the temperature increases could be 2.77°C (2.02 to 3.49°C). Heat extremes will become more frequent and more severe and cold extremes will become less frequent and less severe with further warming.

Precipitation was 7% higher over the period 1991 to 2020 than over the 1961 to 1990 period. The average future predicted increase in precipitation is <10% in annual mean accumulated. By 2100 projected additional rises in sea level range from 0.32 to 0.6m under early action to 0.63 to 1.01m under late action scenarios, with greater storm surges potentially effecting critical infrastructure along the coastline. Projections of changes in storminess are highly uncertain and translate into large uncertainties in future frequency and intensity of extreme waves.

Volume 3 (EPA, 2024e) discusses how water supplies will face growing pressures resulting in increased water demand and how options need to be developed, including potential new sources. The report states the key role of critical infrastructure for delivering public services, economic development and a sustainable environment. These are exposed to a range of climate extremes. Failures in critical infrastructure can cascade across other sectors and present a multi-sector risk due to climate change.

The report references the EPA's Critical Infrastructure Vulnerability to Climate Change report (EPA, 2021a) as the most substantial research project in Ireland to date on climate change and critical infrastructure which assesses the future performance of Ireland's critical infrastructure when climate is considered. The Critical Infrastructure Vulnerability to Climate Change report states with respect to water availability and quality, that flood risk and heatwaves have a medium vulnerability index and the underground supply network has a high vulnerability to snowstorms and cold spells. However, while the vulnerability is high, the exposure is likely to reduce due to future climate change resulting in less cold weather events. The risk assessment highlights the co-dependence of the water sector to the energy sector, and how vulnerability in the energy sector may have cascading impacts.

Volume 4 (EPA, 2024e) calls for system change, including a transformation of urban settings. Stating that meaningful urban transformation can create a better living environment while simultaneously reducing emissions.

10.4 Impact Assessment

10.4.1 Do Nothing

In the Do-Nothing scenario, the site will remain as per the baseline and will change in accordance with trends within the wider area (including influences from potential new developments in the surrounding area, changes in road traffic, etc). The Do-Nothing scenario is considered neutral in terms of the climate assessment.

10.4.2 GHG Assessment

10.4.2.1 Construction Phase

The most significant proportion of GHG emissions tend to occur during the construction phase as a result of embodied carbon in construction materials and emissions from construction activities. Therefore, the assessment has been included in the construction phase assessment for the purposes of the EIAR. The assessment is broken down into the following stages as per Section 10.2.2.1:

- Product stage (A1 – A3);
- Transportation to site (A4);
- Site operations (construction activities) (A5); and
- Material replacement & refurbishment (B4 – B5).

The construction phase GHG emissions comprise stages A1 – A5 which includes the construction materials, the transport of the materials to site and the construction activities or site operations. Ongoing material refurbishment and replacement throughout the lifetime of the development is included within category B4 – B5, these are default values based on the typical maintenance requirements for the chosen material types over the assumed 50 year lifetime. Figure 10.4 shows the GHG emissions for the proposed development per life-cycle stage based on the output from the Carbon Designer for Ireland tool.

Construction materials make up the majority of GHG emissions for the proposed development making up approximately 71% of the total construction phase GHG emissions across the various apartment blocks. Material replacement makes up the second highest contribution at 26% of the total and material transport and construction activities make up the remainder of the construction GHG emissions. The A5 and B4-B5 categories include carbon savings associated with waste material recycling or re-use.

The carbon assessment has highlighted the areas where the highest embodied carbon emissions occur, specifically as a result of building materials. Where material types were not known, as these will not be selected until detailed design stage, the standard default material type was used within the Carbon Designer for Ireland tool. Additionally, where the specific material type was not available within the tool, as the tool does not currently contain all possible material types, a conservative alternative material type was chosen which allowed for a best representation of the embodied carbon associated with the material. Specifically, there was no input option for insulated render finishes within the tool and so this quantity was included within the brick finish category as an alternative. This substitution is considered appropriate and will not significantly alter the results of the assessment.

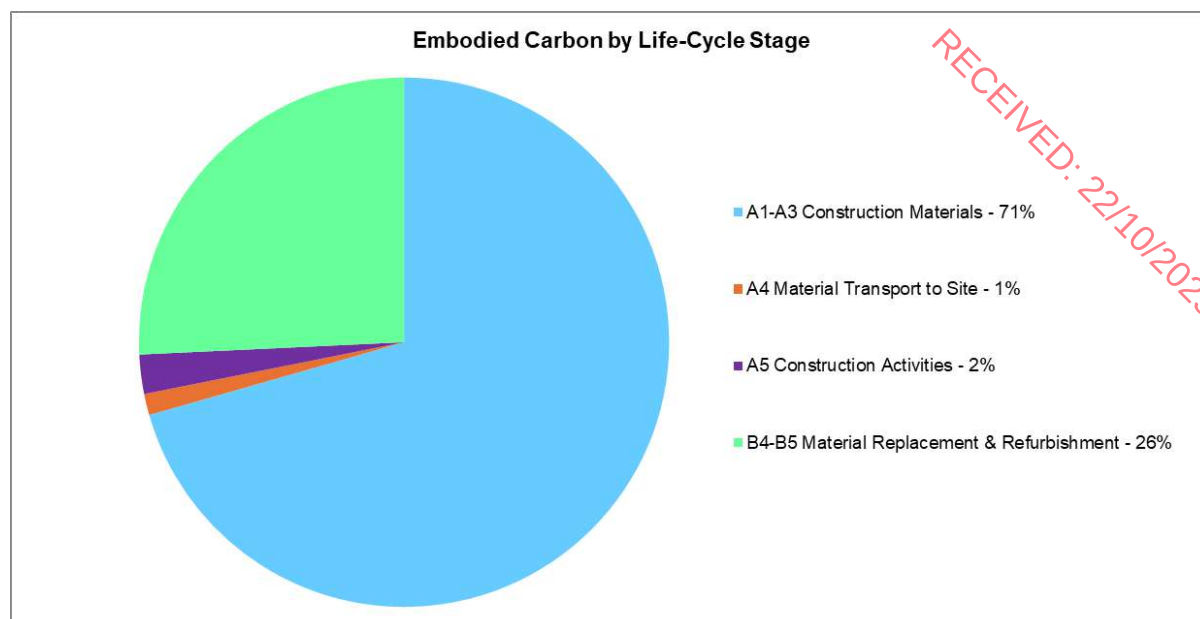


Figure 10.4 Embodied Carbon by Life-Cycle Stage

It has been calculated that the total construction phase embodied carbon (including maintenance and replacement of materials over the development lifetime) will be 23,074 tonnes CO₂e (see Table 10.6). The GHG emissions from the development as a total cannot be compared against one specific sector 2030 carbon budget, the emissions are broken down into different assessment categories and these must be compared separately to the relevant sectoral emissions budget which are detailed in Table 10.6 and Table 10.7. The relevant sectoral emissions for the proposed development comparison include the Industry sector, Transport sector and Waste sector. The predicted emissions for the proposed development are annualised over the assumed 50-year lifespan and then compared to the relevant sector 2030 carbon budgets. Annualising the full carbon emissions over the lifetime of the development allows for appropriate comparison with annual GHG targets.

Table 10.6 GHG Assessment Results

Stage	GHG Assessment Category	Predicted GHG Emissions (tCO ₂ e)	Predicted GHG Emissions as % of Project Total	Relevant Sector for Carbon Budget Comparison
A1-A3	A1-A3 Materials	16,282	71%	Industry
A4	A4 Material Transport	298	1%	Transport
A5	A5 Construction site material waste	498	2%	Waste
	A5 Construction site material waste transport	10	0.04%	Transport
	A5 Construction site waste	45	0.2%	Waste
B4 - B5	B4-B5 Maintenance Material	4,837	21%	Industry
	B4-B5 Maintenance Material Transport	7	0.03%	Transport
	B4-B5 Maintenance Material Waste	1,096	5%	Waste
Project Total		23,074		

The predicted GHG emissions (as shown in Table 10.6) can be averaged over the full lifespan of the proposed development to give the predicted annual emissions to allow for direct comparison with national annual emissions and targets.

In Table 10.7, GHG emissions have been compared against the carbon budget for the industry, transport and waste sectors in 2030 (DECC, 2024), against Ireland's total GHG emissions in 2023 and

against Ireland's EU 2030 target of a 30% reduction in non-ETS sector emissions based on 2005 levels (33 Mt CO₂e) (set out in Regulation EU 2018/842 of the European Parliament and of the Council).

The estimated total GHG emissions, when annualised over the 50-year proposed development lifespan, are equivalent to 0.0008% of Ireland's total GHG emissions in 2023 and 0.001% of Ireland's non-ETS 2030 emissions target. The estimated GHG emissions associated with transport-related activities are 0.0001% of the 2030 Transport budget, construction waste GHG emissions are 0.003% of the Waste budget and industry-related activities are 0.01% of the 2030 Industry budget.

Table 10.7 Estimated GHG Emissions Relative to Sectoral Budgets and GHG Baseline

Target/Sectoral Budget (tCO ₂ e)		Annualised Development GHG Emissions (tCO ₂ e)		% of Relevant Target/Budget
Ireland's 2023 Total GHG Emissions (existing baseline)	60,620,000	461	Total GHG Emissions	0.0008%
Non-ETS 2030 Target	33,000,000	461	Total GHG Emissions	0.001%
2030 Sectoral Budget (Industry Sector)	4,000,000	422	Total Industry Emissions	0.01%
2030 Sectoral Budget (Transport Sector)	6,000,000	6	Total Transport Emissions	0.0001%
2030 Sectoral Budget (Waste Sector)	1,000,000	32	Total Waste Emissions	0.003%

10.4.2.2 Operational Phase

Operational Energy Usage

The proposed development has been designed to reduce the impact to climate where possible. A number of measures have been incorporated into the design to ensure the operational phase emissions are minimised. The primary elements with respect to reducing climate impacts and optimising energy usage are summarised in Section 10.5.2 and are based on information provided within the Sustainability Report prepared by Homan O'Brien in relation to the proposed development.

Operational Traffic Emissions

There is the potential for increased traffic volumes to impact climate during the operational phase. To provide for a worst-case assessment and to assess potential cumulative impacts, the traffic data has included specific cumulative developments within the area (see Chapter 13 – Material Assets Traffic and Traffic & Transportation Assessment for further details).

The predicted concentrations of CO₂e for the future years of 2026 and 2041 are detailed in Table 10.8. These are significantly less than Ireland's national 2026 and 2030 targets set out under EU legislation (targets beyond 2030 are not available) and the 2030 sectoral emissions ceilings. It is predicted that in 2026 the proposed development will increase CO₂ emissions by 14 tonnes CO₂e. This equates to 0.00004% of the 2026 national emission ceiling or 0.0002% of the 2030 Transport sector emissions ceiling (see Table 10.8). Similarly low increases in CO₂ emissions are predicted to occur in 2041 with emissions increasing by 11 tonnes CO₂e. This equates to 0.00003% of the 2030 national emission ceiling or 0.0002% of the 2030 Transport sector emissions ceiling (see Table 10.8).

In addition, bicycle parking and electric vehicle parking and charging infrastructure will be provided as part of the parking requirements at the proposed development. A total of 20% of the parking requirements will be EV charging locations with the potential to increase in the future as required. This will promote the use of more sustainable methods of transport.

Table 10.8 Traffic Emissions GHG Impact Assessment

Year	Scenario	CO _{2e}
		(tonnes/annum)
2026	Do Nothing	175
	Do Something	189
2041	Do Nothing	95
	Do Something	106
Increment Change in 2026		14
National Emission Ceiling 2026 (Tonnes) ^{Note 1}		37,869,352
Impact in 2026 (as % of national emissions ceiling)		0.00004%
Transport Sector 2030 Emission Ceiling		6,000,000
Impact in 2026 (as % of transport sector emissions ceiling)		0.0002%
Increment Change in 2041		11
National Emission Ceiling 2030 (Tonnes) ^{Note 1}		33,381,312
Impact in 2041 (as % of national emissions ceiling)		0.00003%
Impact in 2041 (as % of transport sector emissions ceiling)		0.0002%

^{Note 1} Target under Commission Implementing Decision (EU) 2020/2126 of 16 December 2020 on setting out the annual emission allocations of the Member States for the period from 2021 to 2030 pursuant to Regulation (EU) 2018/842 of the European Parliament and of the Council.

10.4.2.3 GHGA Significance of Effects

The TII guidance states that the following two factors should be considered when determining significance:

- The extent to which the trajectory of GHG emissions from the project aligns with Ireland's GHG trajectory to net zero by 2050; and
- The level of mitigation taking place.

The level of mitigation described in Section 10.5 has been taken into account when determining the significance of the proposed development's GHG emissions. According to the TII significance criteria described in Section 10.2.2.3 and Table 10.4, the significance of the GHG emissions during the construction and operational phase is minor adverse. The proposed development has mitigated GHG impacts and is in line with Ireland's trajectory towards net zero.

In accordance with the EPA guidelines (EPA, 2022), the above significance equates to a significance of effect of GHG emissions during the construction and operational phase, which is **direct, long-term, negative** and **slight**, which is overall **not significant**.

10.4.3 Climate Change Risk Assessment

10.4.3.1 Construction Phase

A detailed CCRA of the construction phase has been scoped out, as discussed in Section 10.2.3 and Section 10.4.3.2, which state that there are no residual medium or high-risk vulnerabilities to climate change hazards. Therefore, a detailed CCRA is not required (TII, 2022a). However, consideration has been given to the proposed development's vulnerability to the following climate change hazards with best practice mitigation measures proposed in Section 10.5.1:

- Flood Risk due to increased precipitation, and intense periods of rainfall. This includes fluvial and pluvial flooding;
- Increased temperatures potentially causing drought, wildfires and prolonged periods of hot weather;
- Reduced temperatures resulting in ice or snow; and
- Major Storm Damage including wind damage.

10.4.3.2 Operational Phase

The sensitivity and exposure of the development to various climate hazards must first be determined to then determine the vulnerability of the proposed development to climate change. Flooding (coastal, pluvial, fluvial), extreme heat, extreme cold, wildfire, drought, extreme wind, lightning, hail, landslides and fog have been considered as climate hazards in the context of the proposed development.

The sensitivity of the proposed development to the climate hazards is assessed irrespective of the project location. Table 10.9 details the sensitivity of the proposed development on a scale of high (3), medium (2) and low (1). Once the sensitivity has been established the exposure of the proposed development to each of the climate hazards is determined, this is the likelihood of the climate hazard occurring at the project location and is also scored on a scale of high (3), medium (2) and low (1). The product of the sensitivity and exposure is then used to determine the overall vulnerability of the proposed development to each of the climate hazards as per Table 10.5. The results of the vulnerability assessment are detailed in Table 10.9.

Table 10.9 Climate Change Vulnerability Assessment

Climate Hazard	Sensitivity	Exposure	Vulnerability
Flooding (Coastal, Pluvial, Fluvial)	1 (Low)	1 (Low)	1 (Low)
Extreme Heat	1 (Low)	2 (Medium)	2 (Low)
Extreme Cold	1 (Low)	2 (Medium)	2 (Low)
Wildfire	1 (Low)	1 (Low)	1 (Low)
Drought	1 (Low)	1 (Low)	1 (Low)
Extreme Wind	1 (Low)	1 (Low)	1 (Low)
Lightning & Hail	1 (Low)	1 (Low)	1 (Low)
Landslides	1 (Low)	1 (Low)	1 (Low)
Fog	1 (Low)	1 (Low)	1 (Low)

The sensitivity and exposure of the area was determined with reference to a number of online tools and with input from the various discipline specialists on the project team. It was concluded that the proposed development does not have any significant vulnerabilities to the identified climate hazards as described in the below sections. All vulnerabilities are classified as low.

Flooding

Increased rainfall in future years as a result of climate change has the potential to result in flooding. A Flood Risk Assessment (FRA) for the proposed development was undertaken. The proposed development is located in Flood Zone C which indicates that there is a very low probability of flooding at the proposed site. It was concluded that flooding is not a risk to the proposed development.

Sustainable Drainage Systems (SuDS) have been incorporated into the site design using rain gardens bioswales and permeable surfaces in line with the drainage requirements. This will aid in reducing the potential for pluvial flooding on the site.

Extreme Wind, Fog, Lightning & Hail

In relation to extreme winds, all buildings will be designed against site specific peak wind loadings in accordance with Eurocode 1: Actions on Structures - Part 1-4: Wind Loads (EN 1991-1-4).

The landscaping planting for the site has been designed so as to incorporate hedgerows, grasses and shrubs for windbreaking purposes. In addition, tree species have been selected due to their size and potential for some wind mitigation at ground level, through tree canopies and tree anchoring.

Lightning protection systems (ese pulsar) or similar will be provided at parapet level in accordance with IS EN 62305 to mitigate against lightning.

Hail and fog are not predicted to significantly affect the buildings due to their design.

Wildfires

In relation to wildfires, the Think Hazard! tool developed by the Global Facility for Disaster Reduction and Recovery (GFDRR, 2023), indicates that the wildfire hazard is classified as low for the Dublin area. This means that there is between a 4% to 10% chance of experiencing weather that may cause disruptions and low but tangible risk of life and property loss in any given year. Future climate modelling indicates that there could be an increase in the weather conditions which are favourable to fire conditions, these include increases in temperature and prolonged dry periods. However, due to the project location in a built-up, suburban area the risk of wildfire is significantly lessened and it can be concluded that the proposed development is of low vulnerability to wildfires.

Landslides

The Geological Society of Ireland (GSI) landslide susceptibility mapping database (GSI, 2024) was reviewed to determine the risk from landslides at the proposed development. There have not been any historical landslide events in the vicinity of the proposed development and the area is of low susceptibility to future landslides. Therefore, landslides are not a risk for the proposed development site.

Extreme Temperatures (Heat & Cold) & Drought

In relation to extreme temperatures, both extreme heat and extreme cold, these have the potential to impact the building materials and some related infrastructure. All buildings will incorporate movement joints to allow buildings expand & contract as a result of extreme heat/cold. Additionally, all buildings will be designed to resist adequate snow loadings in accordance to Eurocode 1 (EN 1991-1-3): Actions on Structures – Snow Loads and the newly released snow maps from Met Eireann. All reinforcement will have an adequate exposure class to resist against extreme cold conditions.

The landscaping for the site has been designed to account for extremes in temperature. Hardy plants suitable for withstanding colder climates have been selected. Biodiverse roofs will aid buildings thermal performance. Shading trees have been incorporated into the public spaces as well as shading structures such as pergolas. The public plaza includes fountain cooling for summer heat days.

In relation to drought, drought resistant planting has been selected as part of the landscaping design. Additionally, the landscape design includes efficient irrigation and mulching. The lawn areas are limited to an amenity lawn and drought tolerant meadow areas.

Summary

Overall, the proposed development has at most low vulnerabilities to the identified climate hazards. Therefore, no detailed risk assessment is required.

10.4.3.3 CCRA Significance of Effects

With design mitigation in place, there are no significant risks to the proposed development as a result of climate change. In accordance with the EPA Guidelines (EPA, 2022), the significance of effect of the impacts to the proposed development as a result of climate change are **direct, long-term, negative** and **imperceptible**, which is overall **not significant** in EIA terms.

10.5 Mitigation

10.5.1 Construction Phase

Embodied carbon of materials and construction activities will be the primary source of climate impacts during the construction phase. During the construction phase the following best practice measures shall be implemented on site to prevent significant GHG emissions and reduce impacts to climate:

- Prevention of on-site or delivery vehicles from leaving engines idling, even over short periods.
- Ensure all plant and machinery are well maintained and inspected regularly.
- Minimising waste of materials due to poor timing or over ordering on site will aid to minimise the embodied carbon footprint of the site. A construction waste management plan will be

implemented to minimise construction waste sent to landfills. Recycling of materials will be promoted to and reduce the environmental footprint of the site.

- Sourcing materials locally will be prioritised. This will help to reduce transport related CO₂ emissions and helps support local suppliers, further promoting economic sustainability.
- Material choices and quantities will be reviewed during detailed design, to identify and implement any lower embodied carbon options, where feasible.

In terms of impact on the proposed development due to climate change, during construction the Contractor will be required to mitigate against the effects of extreme rainfall/flooding through site risk assessments and method statements. The Contractor will also be required to mitigate against the effects of extreme wind/storms, temperature extremes through site risk assessments and method statements. All materials used during construction will be accompanied by certified datasheets which will set out the limiting operating temperatures. Temperatures can affect the performance of some materials, and this will require consideration during construction. During construction, the Contractor will be required to mitigate against the effects of fog, lightning and hail through site risk assessments and method statements.

10.5.2 Operational Phase

A number of mitigation measures have been incorporated into the design of the development to reduce the impact on climate wherever possible. The development will be in compliance with the requirements of the Near Zero Energy Building (NZEB) Standards and will achieve a Building Energy Rating (BER) in line with the NZEB requirements. The following sustainability measures are outlined within the Sustainability Report prepared by Homan O'Brien in relation to the proposed development.

- The residential units will aim to achieve a BER of A2.
- U-values and thermal bridging in line with the Technical Guidance Documents Part L, 'Conservation of Fuel and Energy Buildings other than Dwellings' requirements will be achieved.
- The Energy Performance Coefficient (EPC) will be greater than 0.3 and the Carbon Performance Coefficient (CPC) will be greater than 0.35 in line with the Part L and NZEB requirements.
- A Renewable Energy Ratio (RER) of 0.2 will be achieved in line with the NZEB requirements. This will include the inclusion of heat pump technology.
- In order to reduce water use low water use sanitary ware will be installed along with a leak detection system that will be integrated with the building management system (BMS).
- Low voltage, energy efficient LED lighting will be utilised.

These identified measures will aid in reducing the impact to climate during the operational phase of the proposed development in line with the goals of the Climate Action Plan.

A number of measures have been incorporated into the design of the development to mitigate against the impacts of future climate change. For example, adequate attenuation and drainage have been incorporated into the design of the development to avoid potential flooding impacts as a result of increased rainfall events in future years. All below ground drainage services have been designed with adequate cover over all pipework to protect against extreme temperatures and drought. The buildings have been designed to account for climate change hazards such as extreme temperatures, snow loadings and increased wind loadings. These measures have been considered when assessing the vulnerability of the proposed development to climate change (see Section 10.4.3.2).

10.6 Cumulative Impact

With respect to the requirement for a cumulative assessment the IEMA (IEMA, 2022) and TII (TII, 2022a) guidance on which the assessment is based states that:

"the identified receptor for the GHG Assessment is the global climate and impacts on the receptor from a project are not geographically constrained, the normal approach for cumulative assessment in EIA is not considered applicable. By presenting the GHG impact of a project in the context of its alignment to Ireland's trajectory of net zero and any sectoral carbon budgets, this assessment will demonstrate the potential for the project to affect Ireland's ability to meet its

national carbon reduction target. This assessment approach is considered to be inherently cumulative”.

The traffic data used for the operational phase assessment included cumulative traffic from existing and permitted developments in the surrounding area and the full masterplan development. Therefore, this impact assessment is cumulative.

As per the above, the cumulative impact of the proposed development in relation to GHG emissions is considered **direct, long-term, negative** and **slight**, which is overall **not significant** in EIA terms.

10.7 Residual Impact

The impact to climate as a result of a proposed development must be assessed as a whole for all phases. The proposed development will result in some impacts to climate through the release of GHGs. TII state that the crux of assessing significance is “not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050”. The proposed development has proposed some best practice mitigation measures and is committing to reducing climate impacts where feasible. As per the assessment criteria in Table 10.4 the residual impact of the proposed development in relation to GHG emissions is considered direct, long-term, negative and slight, which is overall not significant in EIA terms.

In relation to climate change vulnerability, it has been assessed that there are no significant risks to the proposed development as a result of climate change. The residual effect of climate change on the proposed development is considered **direct, long-term, negative** and **imperceptible**, which is overall **not significant** in EIA terms.

10.8 Interactions

Climate has the potential to interact with a number of other environmental attributes.

Land, Soils, Geology and Hydrology

The impact of flood risk has been assessed and the surface water drainage network will be designed to cater for increased rainfall in future years as a result of climate change. The effect of the interactions between climate and land, soils, geology and hydrology are direct, short-term, negative and imperceptible during the construction phase and direct, long-term, negative and imperceptible during the operational phase, which is overall not significant in EIA terms.

Air Quality

Air quality and climate have interactions due to the emissions from the burning of fossil fuels during the construction and operational phases generating both air quality and climate impacts. Air quality modelling outputs are utilised within the Climate Chapter. There is no impact on climate due to air quality. However, the sources of impacts on air quality and climate are strongly linked.

Traffic and Transportation

During the construction and operational phase, there is the potential for interactions between climate and traffic. Vehicles accessing the site will result in emissions of CO₂, a greenhouse gas. The effects of the proposed development on climate are assessed by reviewing the change in annual average daily traffic on roads close to the site. In this assessment, the effects of the interactions between traffic and climate are considered to be direct, short-term, negative and not significant during the construction phase and direct, long-term, negative and not significant during the operational phase, which is overall not significant in EIA terms.

Waste

Waste management measures will be put in place to minimise the amount of waste entering landfill, which has higher associated embodied carbon emissions than other waste management such as recycling. The effect of the interactions between waste and climate are considered to be direct, short-term, negative and not significant during the construction phase and direct, long-term, negative and not significant during the operational phase, which is overall not significant in EIA terms.

10.9 References

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- Institute of Environmental Management & Assessment (IEMA) (2022) Environmental Impact Assessment Guide to: Assessing GHG Emissions and Evaluating their Significance

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- The Geological Society of Ireland (GSI) (2024) Landslide Susceptibility Mapping Database
- Transport Infrastructure Ireland (2022a) PE-ENV-01104: Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document
- Transport Infrastructure Ireland (2022b) GE-ENV-01106: TII Carbon Assessment Tool for Road and Light Rail Projects and User Guidance Document
- Transport Infrastructure Ireland (2022c) PE-ENV-01106: Air Quality Assessment of Specified Infrastructure Projects
- Transport Infrastructure Ireland (2022d) TII Road Emissions Model (REM): Model Development Report – GE-ENV-01107

11.0 MICROCLIMATE

11.1 Introduction

This section of the EIAR has been prepared by AWN Consulting Ltd (AWN) to assess the potential microclimate impact of the proposed development in the context of current relevant standards and guidance.

This chapter includes a description of the receiving environment in the vicinity of the subject site and an assessment of the potential microclimate impact associated with the proposed development during both the short-term construction phase and the long-term operational phase on its surrounding environment. The assessment of direct, indirect and cumulative impacts on the surrounding environment have been considered as part of the assessment.

Mitigation measures are included, where relevant, to ensure the proposed development is constructed and operated in an environmentally sustainable manner in order to ensure minimal impact on the receiving environment.

This assessment has been prepared by Dr Fergal Callaghan at AWN Consulting who has over 30 years' experience as an environmental consultant specialising in Microclimate and Environmental Impact Assessment. He has authored numerous Reports EIAR chapters for various developments including residential schemes, mixed-use developments, and commercial developments.

11.2 Methodology

The assessment has been undertaken with reference to the most appropriate guidance documents relating to Microclimate and EIA which are set out in the following sections. In addition, the following Environmental Protection Agency (EPA) guidelines were considered and consulted in the preparation of this Chapter:

- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017);
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports – (EPA, 2022); and
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning & Local Government, 2018);
- QDP7, South Dublin County Council Quality Design and Healthy Placemaking Guidance.

The study has been undertaken using the following methodology (It should be noted the local area is a low rise un-complicated area from a wind point of view, it is not a complicated city centre location where existing tall buildings may create turbulence or unusual local wind patterns which would require modelling, on that basis we have completed a desk-top assessment and modelling studies were not deemed to be required.):

- Determination from available data of the baseline (current) classification of the site with respect to The Beaufort Scale for Wind on Land.
- Examination of the proposed development and the potential for wind-speed amplification factors.
- Assessment of the impacts with regard to Microclimate

11.3 Population

The subject site is located in Greenhills, Dublin 12, within the Greenhills Industrial Estate. The site is bound to the north by the Greenhills Road, and to the east, south and west by existing commercial buildings. The surrounding environment in the vicinity of the development site is mixed in nature with manufacturing, retail units and warehousing making up the majority of the surrounding building uses.

11.3.1 Receiving Environment (Baseline Scenario)

The nearest representative weather station collating detailed weather records is Casement Aerodrome, which is located approximately 7.7km west of the site and is considered to be the appropriate weather station for providing weather data for the area.

Casement Aerodrome meteorological data has been examined to identify the prevailing wind direction and average wind speeds over a five-year period (see Figure 11.1 below). For data collated during five representative years (2020-2024), the predominant wind direction is south-westerly with an average wind speed of approximately 3-5 m/s, measured at a height of 10m above ground.

The Beaufort scale and its relationship to wind speed in metres/second is shown in Table 11.1 below. It can be seen that the site typically experiences Beaufort 3 (B3) to Beaufort 4 (B4) wind conditions for much of the time, which is gentle to moderate breeze.

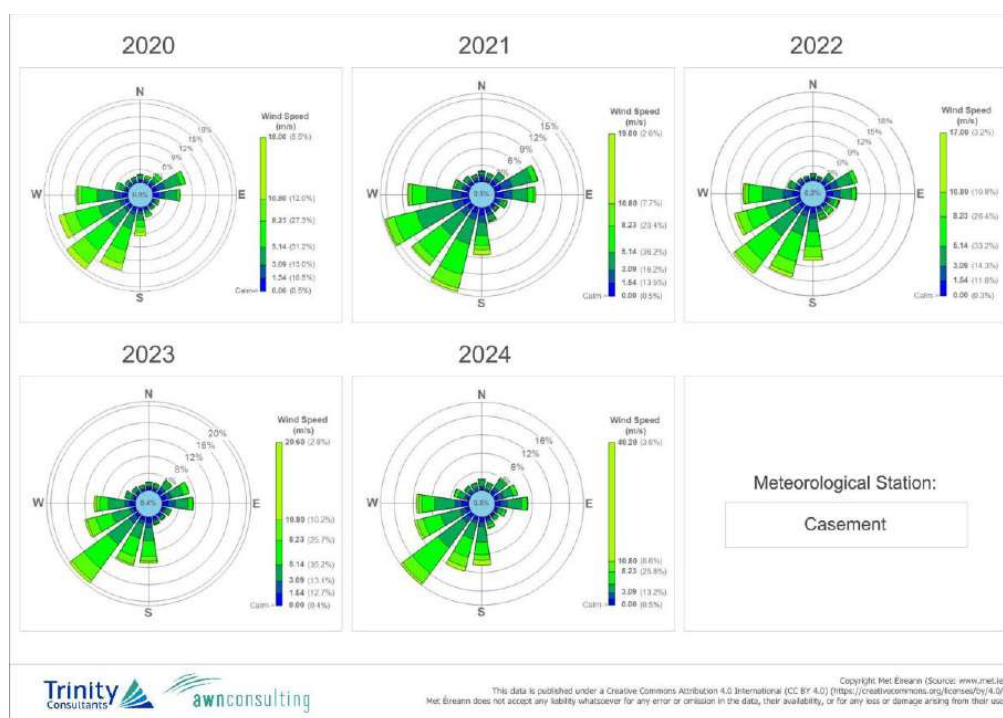


Figure 11.1 Windrose for Casement Aerodrome for period 2020 to 2024

Table 11.1 Beaufort Scale

Beaufort Scale	Wind speed(m/s)
0	<0.3
1	0.3-1.5
2	1.6-3.3
3	3.4-5.4
4	5.5-7.9
5	8.0-10.7
6	10.8-13.8
7	13.9-17.1
8	17.2-20.7
9	20.8-24.4
10	24.5-28.4
11	28.5-32.6
12	>32.7

11.4 Impact Assessment

11.4.1 Do-Nothing Scenario

In the absence of the proposed development being constructed, the microclimate environment will remain largely unchanged. The microclimate baseline described above is considered representative of the Do-Nothing scenario. The Do-Nothing scenario is therefore considered neutral impact.

That said, if the proposed development were not to proceed, then a different development, similar in nature may be constructed as the land is zoned for development in keeping with the national policy for compact growth on brownfield sites.

The do-nothing scenario is therefore considered to be **direct, long-term, neutral** and **slight** which is overall **not significant**.

11.4.2 Construction Phase

Given the short-term nature of the construction phase there are no expected microclimate impacts.

Construction involves the erection of scaffolding and the development of a structure starting with steelwork and rising walls, with window and door openings. Structures under construction are therefore porous to wind and tend to allow wind to flow through the structure with little interference with wind flow patterns and hence the impact will be **imperceptible, neutral, short-term** and **not significant**.

11.4.3 Operational Phase

Wind is normally described by its speed, either as a mean or gust speed. However, people sense the effect of the wind force, which is what we can feel, see and hear during windy conditions. Wind force is proportional to wind speed squared, therefore a relatively small increase in the wind speed can have a large effect on pedestrian comfort.

All buildings obstruct the free flow of the wind, causing it to be deflected and accelerated, resulting in very complex flow patterns. When the wind strikes the front face of a building, it will produce positive pressures that reach a maximum value at a point between about two thirds and three-quarters of the building height.

Below this height the wind will tend to be deflected down the front face towards the ground, often called 'downwash', and accelerated around the corners at ground level potentially producing areas of high wind speed and strong negative pressure. Above this height the wind will be deflected upwards and accelerated over the roof, again causing areas of high wind speed and increased turbulence. This can be a concern for roof gardens and roof terraces. A significant proportion of the wind will also spill around the side faces. Downwind, the flows around the building will recombine into a region of negative pressure known as the 'wake'.

Wind speed increases with height above ground; it follows, therefore, that the taller a building the higher the wind speeds acting on it. However, not all tall (where tall is greater than 25 metres in height) buildings cause wind problems; what is important is the relative height of the building compared with that of neighbouring buildings.

A tall building in a group of tall buildings might not cause problems whereas a mid-rise building can cause unacceptable conditions if it is adjacent to an open area or has features or openings at ground level which can accelerate wind speed. When the wind strikes a building, it will generate positive pressures on the windward face and suction on the side, roof and leeward faces.

The wind will flow in the direction of decreasing pressure gradient, that is, from areas of high pressure to areas of lower pressure. As noted above, this causes wind flow down the front face, which brings high-speed wind from higher levels down to ground level. This can significantly increase ground-level wind speeds. The downwash on the windward face will tend to 'roll up' in front of a building, creating a windward vortex. The highest wind speed-up will occur near the centre of the face a short distance in front of the building, where the wind speed-up factor, *S*, can vary between about 1.2 and 2.0 depending on the building height. The flow then accelerates around the sides towards the low-pressure area in the

wake. The S factor can reach 2.0 to 2.5 close to the corners of tall buildings, although values closer to 1.5 are likely for mid-rise buildings.

In general, tall, rectangular, sharp-edged buildings will generate the highest local ground-level wind speeds and the largest 'footprint' area of unpleasant wind speeds.

The UK Buildings Research Establishment (BRE DG 520: Wind Microclimate Around Buildings) has noted that wind speeds in the vortex between a tall building and a lower building (this occurs in the space in front of a tall building behind the lower building) can be up to 1.5 times the free wind speed (free wind speed being that measured in an open area with no buildings).

Wind speeds in the corner streams around either side of a tall building can be up to 2.5 times the free wind speed.

A useful document on wind speeds and tall buildings notes that tall buildings are generally taken to mean buildings more than 25m high, "Wind Microclimate Guidelines for Developments in the City of London (August 2019)".

The proposed development comprises a building with a proposed maximum height of approximately circa 30 metres (up to 8 storeys). The proposed development therefore is classed as a tall building.

It is acknowledged that the construction of new buildings can lead to changes to the local wind environment around the building. Generally elevated wind speeds around tall buildings are generated at three main points, either at ground level in the space behind a lower building and in front of a tall building, at an opening within the building envelope at ground level such as a tunnel or mall through the building or at building corners. Elevated wind speed can also be generated where a street runs between two tall buildings, leading to a "canyon effect".

T.V. Lawson in Building Aerodynamics, Imperial College London, Imperial College Press, 2001, has noted that when wind approaches a built-up area it is displaced upwards to roof level and generally flows across landscape at roof level, with gusts down to street level that are a function of the relative height to width of the street canyon.

It will be noted from the windrose presented as Figure 11.1 that as the predominant wind directions are from the west and from the southwest, wind striking the proposed development will therefore already have travelled across the built-up landscape of the western and south-western environs of Dublin City and therefore wind-flow across the landscape will tend to be predominantly at 2-storey roof level.

Oke (T.R. Oke, Boundary Layer Climates, Routledge, 1987) has noted when the Height to Width Ratio is greater than 0.7, the Skimming Flow Regime tends to predominate, with little in the way of wind flow down to street level.

When the H to W ratio drops to 0.4 or less, the wind speed at ground level tends to increase and the street behaves more as if it were in open country, with much more of the wind now gusting down into the street.

Similarly, the BRE DG 520 document notes that H to W ratio of > 0.65 should be a target to minimise any wind related impacts.

The proposed building height is circa.30 metres above ground. The area immediately downwind to the east and northeast is dominated by 2/3-storey commercial development with little in the way of open space.

As was noted above, the general pattern of wind-flow in the area upwind is likely to be above street-level (predominantly defined by the mainly 2-storey structures up-wind). The proposed development will be up to 30 metres in height, so wind incident to this structure will tend to be deflected both upwards and downwards.

The area downwind is dominated by industrial/commercial buildings in the region of 8 to 10m high.

Based on the above it can be expected that the skimming regime will dominate, with little in the way of wind flow down to street level and therefore the proposed development is not expected to lead to elevated windspeeds at street level. Given the scale and nature of the proposed development and the existing low-rise buildings in the area, accelerated windspeeds at ground level are not expected and therefore down-draft effects at ground-level are not to be expected when the proposed development is completed.

The predicted impacts are therefore **long-term, direct, localised, imperceptible**, and overall, **not significant**.

11.5 Mitigation Measures

Given the above predicted assessments, no mitigation measures are proposed during construction or operation.

11.6 Cumulative Impacts

11.6.1 Construction Phase

A review of the planned and permitted projects within the vicinity of the site was undertaken in order to identify developments with the potential for cumulative construction phase impacts. There is the potential for the construction phase of the proposed development to coincide with that of the following permitted developments: SD23A/0108 and LRD24A/0003.

Given the lack of predicted impact during construction phase of the proposed development it can be expected there will be similar impacts associated with the permitted developments and cumulative impacts are predicted to be **short-term, direct, neutral** and **not significant**.

11.6.2 Operational Phase

Given the predominant wind regime in the area and the lack of predicted impacts at ground level, the predicted cumulative impact is **long-term, localised, direct, neutral**, and **imperceptible** which is overall **not significant**.

11.7 Residual Impact

11.7.1 Construction Phase

Due to the lack of effects associated with the construction phase the predicted residual effects are **short-term, direct, neutral, localised** and **not significant**.

11.7.2 Operational Phase

Due to the lack of predicted impacts the residual impact is predicted to be **localised, direct, long-term, neutral** and **imperceptible**, which is overall **not significant**.

11.8 Monitoring

No monitoring is considered to be necessary during either construction or operational phases.

12.0 MATERIAL ASSETS – WASTE

12.1 Introduction

This chapter evaluates the likely impacts, if any, which the proposed development may have on Material Assets (related to waste management) as defined in the EIA Directive (Directive 2011/92/EU as amended by Directive 2014/52/EU) and the Environmental Protection Agency (EPA) Guidelines on the information to be contained in Environmental Impact Assessment Reports (2022).

This chapter has also been prepared to address the issues associated with material assets (waste management) during the construction and operational phases of the proposed development as described in Chapter 2 (Project Description and Alternatives Examined).

A site-specific Resource Waste Management Plan (RWMP) has been prepared by Awn Consulting Ltd to deal with waste generation during the excavation and construction phases of the proposed development and has been included as Appendix 12.1. The RWMP was prepared in accordance with the Environmental Protection Agency's (EPA) document *Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects* (2021).

A separate Operational Waste Management Plan (OWMP) has been prepared for the operational phase of the proposed Development and is included as Appendix 12.2 of this Chapter.

The Chapter has been prepared in accordance with *European Commissions Guidelines, Guidance on the preparation of the Environmental Impact Assessment Report (2017)* and the *EPA Guidelines on the Information to be contained in EIAR (2022)*.

These documents will ensure the management of wastes arising at the development site in accordance with legislative requirements and best practice standards.

12.2 Methodology

The assessment of the impacts of the proposed Development, arising from the consumption of resources and the generation of waste materials, was carried out taking into account the methodology specified in relevant guidance documents, along with an extensive document review to assist in identifying current and future requirements for waste management; including national and regional waste policy, waste strategies, management plans, legislative requirements and relevant reports.

This Chapter is based on the proposed development, as described in Chapter 2 (Background to the Scheme) and considers the following aspects:

- Legislative context;
- Construction phase (including site excavations); and
- Operational phase;

A desktop study was carried out which included the following:

- Review of applicable policy and legislation which creates the legal framework for resource and waste management in Ireland;
- Description of the typical waste materials that will be generated during the Construction and Operational phases; and
- Identification of mitigation measures to prevent waste generation and promote management of waste in accordance with the waste hierarchy.

Estimates of waste generation during the construction and operational phases of the proposed development have been calculated and are included in Section 15.4 of this chapter. The waste types and estimated quantities are based on published data by the *EPA in the National Waste Reports* and *National Waste Statistics* data recorded from similar previous developments, Irish and US EPA waste generation research as well as other available research sources.

Mitigation measures are proposed to minimise the effect of the proposed development on the environment during the construction and operational phases, to promote efficient waste segregation and to reduce the quantity of waste requiring disposal. This information is presented in Section 15.6 of this EIAR Chapter.

A detailed review of the existing ground conditions on a regional, local and site-specific scale are presented in Chapter 11 of this EIAR (Land, Soils & Geology) which also discusses the environmental quality of any soils which will have to be excavated to facilitate construction of the proposed Development.

12.2.1 Legislation and Guidance

Waste management in Ireland is subject to EU, national and regional waste legislation and control, which defines how waste materials must be managed, transported and treated. The overarching EU legislation is the Waste Framework Directive (2008/98/EC) which is transposed into national legislation in Ireland. The cornerstone of Irish waste legislation is the Waste Management Act 1996 (as amended). European and national waste management policy is based on the concept of 'waste hierarchy', which sets out an order of preference for managing waste (prevention > preparing for reuse > recycling > recovery > disposal) (Figure 12.1).

EU and Irish National waste policy also aims to contribute to the circular economy by extracting high-quality resources from waste as much as possible. Circular Economy (CE) is a sustainable alternative to the traditional linear (take-make-dispose) economic model, reducing waste to a minimum by reusing, repairing, refurbishing and recycling existing materials and products. (Figure 12.2).



Figure 12.2 Waste Hierarchy (Source: European Commission).



Figure 12.2 Circular Economy (Source: Repak).

The Irish government issues policy documents which outline measures to improve waste management practices in Ireland and help the country to achieve EU targets in respect of recycling and disposal of waste. The most recent policy document, Waste Action Plan for a Circular Economy – Waste Management Policy in Ireland, was published in 2020 and shifts focus away from waste disposal and moves it back up the production chain. The move away from targeting national waste targets is due to the Irish and international waste context changing in the years since the launch of the previous waste management plan, A Resource Opportunity, in 2012.

One of the first actions to be taken from the WAPCE was the development of the Whole of Government Circular Economy Strategy 2022-2023 'Living More, using Less' (2021) to set a course for Ireland to transition across all sectors and at all levels of Government toward circularity and was issued in December 2021.

The Circular Economy and Miscellaneous Provisions Act 2022 was signed into law in July 2022. The Act underpins Ireland's shift from a "take-make-waste" linear model to a more sustainable pattern of production and consumption, that retains the value of resources in our economy for as long as possible and that will work to significantly reduce our greenhouse gas emissions. The Act defines Circular Economy for the first time in Irish law, incentivises the use of recycled and reusable alternatives to

wasteful, single-use disposable packaging, introduces a mandatory segregation and incentivised charging regime for commercial waste, streamlines the national processes for End-of-Waste and By-Products decisions.

The strategy for the management of waste from the construction phase is in line with the requirements of the EPA's *'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects'* (2021). The guidance documents, *Best Practice Guidelines for the Preparation of Waste Management Plans for Construction (2006)* and *Demolition Projects and Construction and Demolition Waste Management: A Handbook for Contractors and Site Managers (FÁS & Construction Industry Federation, 2002)*, were also consulted in the preparation of this assessment.

There are currently no national Irish guidelines on the assessment of operational waste generation, and guidance is taken from industry guidelines, plans and reports including the *National Waste Management Plan for a Circular Economy (NWMPCE) 2024*, *BS 5906:2005 Waste Management in Buildings – Code of Practice*, the South Dublin County Council (SDCC) *South Dublin County Council Household & Commercial Waste Bye-Laws (2018)*, the *EPA National Waste Database Reports 1998 – 2020*, the *Circular Economy and National Waste Database Report 2021 (2023)* and the *EPA National Waste Statistics Web Resource*.

12.2.2 Terminology

Note that the terminology used herein is consistent with the definitions set out in Article 3 of the Waste Framework Directive. Key terms are defined as follows:

Waste - Any substance or object which the holder discards or intends or is required to discard.

Prevention - Measures taken before a substance, material or product has become waste, that reduce:

- a) the quantity of waste, including through the re-use of products or the extension of the life span of products;
- b) the adverse impacts of the generated waste on the environment and human health; or
- c) the content of harmful substances in materials and products.

Reuse - Any operation by which products or components that are not waste are used again for the same purpose for which they were conceived.

Preparing for Reuse - Checking, cleaning or repairing recovery operations, by which products or components of products that have become waste are prepared so that they can be re-used without any other pre-processing.

Treatment - Recovery or disposal operations, including preparation prior to recovery or disposal.

Recovery - Any operation the principal result of which is waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function, in the plant or in the wider economy. Annex II of the Waste Framework Directive sets out a non-exhaustive list of recovery operations.

Recycling - Any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations.

Disposal - Any operation which is not recovery even where the operation has as a secondary consequence the reclamation of substances or energy. Annex I of the Waste Framework Directive sets out a non-exhaustive list of disposal operations.

12.3 Baseline Environment

In terms of waste management, the receiving environment is largely defined by SDCC as the local authority responsible for setting and administering waste management activities in the area. This is

governed by the requirements set out in the EMR Waste Management Plan 2015-2021 and the draft NWMPCE (2023) which will supersede the three current regional waste management plans in Ireland. The waste management plans set out the following targets for waste management in the region:

- Achieve a recycling rate of 55% of managed municipal waste by 2025; and
- Reduce to 0% the direct disposal of unprocessed residual municipal waste to landfill (from 2016 onwards) in favour of higher value pre-treatment processes and indigenous recovery practices.

The Regional Waste Management Planning Offices have issued a National Waste Management Plan for a Circular Economy 2024 - 2030 in March 2024, which supersedes the Eastern midlands regional (EMR) waste management plan and the two other regional waste management plans. The NWMPCE does not however dissolve the three regional waste areas. The NWCPCE sets the ambition of the plan to have a 0% total waste growth per person over the life of the Plan with an emphasis on non-household wastes including waste from commercial activities and the construction and demolition sector.

The South Dublin County Council Development Plan 2022 – 2028 (2022) set out the policies and objectives for the SDCC area which reflect those sets out in the regional waste management plan.

In terms of physical waste infrastructure, SDCC no longer operates any municipal waste landfill in the area. There are a number of waste permitted and licensed facilities located in the EMR Waste Region for management of waste from the construction industry as well as municipal sources. These include soil recovery facilities, inert C&D waste facilities, municipal waste landfills, material recovery facilities and waste transfer stations.

However, these sites may not be available for use when required or may be limited by the waste contractor selected to service the development in the appropriate phase. In addition, there is potential for more suitably placed waste facilities or recovery facilities to become operational in the future which may be more beneficial from an environmental perspective.

The ultimate selection of waste contractors and waste facilities would be subject to appropriate selection criteria proximity, competency, capacity and serviceability.

12.4 Characteristics of the Proposed Development

A full description of the proposed development can be found in Chapter 2 (Project Description and Alternatives Examined). The characteristics of the proposed development that are relevant in terms of waste management are summarised below.

12.4.1 Demolition Phase

The existing site comprises of 1 no. two storey office building and 9 no. storage/warehouse buildings ranging in height from 3m – 9.9m. All existing structure will be demolished to facilitate the construction of the Proposed Development.

The demolition areas are identified in the planning drawings provided with this application. The anticipated demolition waste and rates of reuse, recycling / recovery and disposal are shown in Table 12.1, below.

Table 12.1 Estimated off-site reuse, recycle and disposal rates for demolition waste

Waste Type	Tonnes	Reuse		Recycle / Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Glass	8.8	0	0.0	85	7.5	15	1.3
Concrete, Bricks, Tiles, Ceramics	965.3	30	289.6	65	627.4	5	48.3
Plasterboard	52.7	30	15.8	60	31.6	10	5.3
Asphalts	105.3	0	0.0	25	26.3	75	79.0
Metals	394.9	5	19.7	80	315.9	15	59.2
Slate	17.6	0	0.0	85	14.9	15	2.6
Timber	210.6	10	21.1	60	126.4	30	63.2

Waste Type	Tonnes	Reuse		Recycle / Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Total	1755.0		346.2		1150.0		258.9

12.4.2 Construction Phase

During the construction phase, waste will be produced from surplus materials such as broken or off-cuts of timber, plasterboard, concrete, tiles, bricks, etc. Waste from packaging (cardboard, plastic, timber) and oversupply of materials may also be generated. The appointed Contractor will be required to ensure that oversupply of materials is kept to a minimum and opportunities for reuse of suitable materials is maximised.

In addition, topsoil, subsoil and clay will require excavation to facilitate site levelling, construction of foundations, along with the installation of underground services. The volume of material to be excavated has been estimated by J. B. Barry and Partners Limited (Project Engineers) at c. 24,008m³. It is expected that c. 1,200m³, of the excavated material will be re-used on site with the remaining c. 22,808m³ will be taken for appropriate offsite reuse, recovery, recycling and/or disposal.

If the material that requires removal from site is deemed to be a waste, removal and reuse / recycling / recovery / disposal of the material will be carried out in accordance with the Waste Management Act 1996 (as amended), the Waste Management (Collection Permit) Regulations 2007 (as amended) and the Waste Management (Facility Permit & Registration) Regulations 2007 (as amended). The volume of waste requiring recovery / disposal will dictate whether a Certificate of Registration (COR), permit or licence is required for the receiving facility. Alternatively, the material may be classed as by-product under Article 27 classification (European Communities (Waste Directive) Regulations 2011, S.I. No. 126 of 2011). For more information in relation to the envisaged management of by-products, refer to the RWMP (Appendix 12.1).

In order to establish the appropriate reuse, recovery and / or disposal route for the soils and stones to be removed off-site, they have been classified. Environmental soil analysis has been carried out on a number of the soil samples in accordance with the requirements for acceptance of waste at landfills (Council Decision 2003/33/EC Waste Acceptance Criteria). The results of the Rilta Suites showed that all 22 (19 no. soil and 3 no. ground water) of the samples tested fully complied with the inert landfill limits as listed in the EU Council Decision 2003/33/EC. This legislation sets limit values on landfills for acceptance of waste material based on properties of the waste, including potential pollutant concentrations and leachability. Waste material will need to be classified as hazardous or non-hazardous in accordance with the EPA publication Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous (2019). If the surplus material is classified as inert or non-hazardous it will be suitable for acceptance at either inert or non-hazardous soil recovery facilities / landfills in Ireland or, in the event of hazardous material being encountered, be transported for treatment / recovery or exported abroad for disposal in suitable facilities.

Waste will also be generated from construction phase workers e.g. organic / food waste, dry mixed recyclables (waste paper, newspaper, plastic bottles, packaging, aluminium cans, tins and Tetra Pak cartons), mixed non-recyclables and, potentially, sewage sludge from temporary welfare facilities provided on-site during the Construction phase. Waste printer / toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated in small volumes from site offices.

Further detail on the waste materials likely to be generated during the excavation and construction works are presented in the project-specific RWMP (Appendix 12.1). The RWMP provides an estimate of the main waste types likely to be generated during the Construction phase of the Proposed Development. These are summarised in Table 12.2.

Table 12.2 Estimated off-site reuse, recycle and disposal rates for construction waste

Waste Type	Tonnes	Reuse		Recycle / Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Mixed C&D	1215.3	10	121.5	80	972.2	10	121.6
Timber	1031.2	40	412.5	55	567.1	5	51.6
Plasterboard	368.3	30	110.5	60	221.0	10	36.8
Metals	294.6	5	14.7	90	265.2	5	14.7
Concrete	221.0	30	66.3	65	143.6	5	11.0
Other	552.4	20	110.5	60	331.4	20	110.5
Total	3682.7		836.0		2500.6		346.2

12.4.3 Operational Phase

As noted in Section 12.1, an OWMP has been prepared for the Proposed Development and is included as Appendix 12.2. The OWMP provides a strategy for segregation (at source), storage and collection of all wastes generated within the houses and duplexes during the operational phase including dry mixed recyclables (DMR), organic waste and mixed non-recyclable waste (MNR), as well as providing a strategy for management of waste glass, batteries, WEEE, printer / toner cartridges, chemicals, textiles, waste cooking oil and furniture.

The total estimated waste generation for the Proposed Development for the main waste types, based on the AWN waste generation model (WGM), is presented in Table 12.3 and Table 12.4 below, and is based on the uses and areas as advised by the Project Architects. Further unit breakdowns can be found in Appendix 12.2.

Table 12.3 Estimated waste generation for the proposed development for the main waste types

Waste type	Waste Volume (m ³ /week)			
	Residential Block A	Residential Block B	Residential Block C	Residential Block D
Organic Waste	2.36	2.90	1.19	2.11
DMR	16.15	19.84	8.14	15.45
Glass	0.46	0.56	0.23	0.41
MNR	9.39	11.54	4.73	7.35
Total	28.36	34.84	14.29	25.32

Table 12.4 Estimated waste generation for the proposed development for the main waste type

Waste type	Waste Volume (m ³ /week)			
	Commercial Block A	Creche Block B	Commercial Block B	Commercial Block D
Organic Waste	0.21	0.04	0.06	0.34
DMR	2.87	1.55	0.89	4.70
Glass	0.11	0.01	0.03	0.18
MNR	2.90	0.85	0.89	4.70
Total	5.88	2.45	1.82	9.62

The residents and tenants will be required to provide and maintain appropriate waste receptacles within their units to facilitate segregation at source of these waste types. The location of the bins within the units will be at the discretion of the occupants. As required, the residents and tenants will need to bring

these segregated wastes from their units to their allocated Waste Storage Areas (WSAs). All WSAs can be viewed on the plans submitted with the application.

The OWMP seeks to ensure that the Proposed Development contributes to the targets outlined in the EMR Waste Management Plan 2015 – 2021 and the SDCC Household & Commercial Waste Bye-Laws 2018.

Mitigation measures proposed to manage impacts arising from wastes generated during the operational phase of the Proposed Development are noted in Section 12.7.

12.5 Potential Impacts of the Proposed Development

This section details the potential waste effects associated with the Proposed Development.

12.5.1 Construction Phase

The Proposed Development will generate a range of non-hazardous and hazardous waste materials during site excavation and construction. General housekeeping and packaging will also generate waste materials, as well as typical municipal wastes generated by construction employees, including food waste. Waste materials will be required to be temporarily stored on-site pending collection by a waste contractor. If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues at the Development Site and in adjacent areas. The indirect effect of litter issues is the presence of vermin in areas affected. In the absence of mitigation, the effect on the local and regional environment is likely to be **short-term, significant** and **negative**.

The use of non-permitted waste contractors or unauthorised waste facilities could give rise to inappropriate management of waste, resulting in indirect negative environmental impacts, including pollution. It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices. In the absence of mitigation, the effect on the local and regional environment is likely to be **long-term, significant** and **negative**.

Wastes arising will need to be taken to suitably registered / permitted / licenced waste facilities for processing and segregation, reuse, recycling, recovery, and / or disposal, as appropriate. There are numerous licensed waste facilities in the EMR which can accept hazardous and non-hazardous waste materials, and acceptance of waste from the Development Site would be in line with daily activities at these facilities. At present, there is sufficient capacity for the acceptance of the likely C&D waste arisings at facilities in the region. The majority of construction materials are either recyclable or recoverable. However, in the absence of mitigation, the effect on the local and regional environment is likely to be **short-term, significant** and **negative**.

There is a quantity of excavated material which will need to be excavated to facilitate the Proposed Development. A detailed review of the existing ground conditions on a regional, local site-specific scale are presented in Chapter 6 (Land, Soils, Geology and Hydrogeology). It is anticipated that c. 22,808m³ of excavated material will need to be removed off-site. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site. However, in the absence of mitigation, the effect on the local and regional environment is likely to be **short-term, significant** and **negative**.

12.5.2 Operational Phase

The potential impacts on the environment of improper, or a lack of, waste management during the operational phase would be a diversion from the priorities of the waste hierarchy which would lead to small volumes of waste being sent unnecessarily to landfill. In the absence of mitigation, the effect on the local and regional environment is likely to be **long-term, significant** and **negative**.

The nature of the development means the generation of waste materials during the operational phase is unavoidable. Networks of waste collection, treatment, recovery and disposal infrastructure are in place in the region to manage waste efficiently from this type of development. Waste which is not suitable for recycling is typically sent for energy recovery. There are also facilities in the region for

segregation of municipal recyclables which is typically exported for conversion in recycled products (e.g. paper mills and glass recycling).

If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues at the Development Site and in adjacent areas. The knock-on effect of litter issues is the presence of vermin in affected areas. However, in the absence of mitigation, the effect on the local and regional environment is likely to be **short-term, significant** and **negative**.

Waste contractors will be required to service the Proposed Development on a regular basis to remove waste. The use of non-permitted waste contractors or unauthorised facilities could give rise to inappropriate management of waste and result in negative environmental impacts or pollution. It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices. However, in the absence of mitigation, the effect on the local and regional environment is likely to be **long-term, significant** and **negative**.

12.5.3 Potential Cumulative Impact

12.5.3.1 Construction Phase

Multiple permissions remain in place for both residential and commercial developments within the vicinity of the development. In a worst-case scenario, multiple developments in the area could be developed concurrently or overlap in the construction phase. Due to the high number of waste contractors in the Dublin region there would be sufficient contractors available to handle waste generated from a large number of these sites simultaneously, if required. Similar waste materials would be generated by all the developments. For further information on these developments, please see Chapter 3 (Planning and Development Context).

All developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will minimise/mitigate any potential cumulative effects associated with waste generation and waste management. In the event that the proposed development along with the surrounding developments do not appropriately manage waste during the construction phase, the potential effect will be **short-term, significant** and **negative**.

12.5.3.2 Operational Phase

There are existing residential and commercial developments close by, along with the multiple permissions remaining in place. All of the current and potential developments do/will generate similar waste types during their operational phases. Authorised waste contractors will be required to collect waste materials segregated, at a minimum, into recyclables, organic waste and non-recyclables. An increased density of development in the area is likely to improve the efficiencies of waste collections in the area.

All developments in the area are/will be required to manage waste in compliance with national and local legislation, policies and plans which will minimise/mitigate any potential cumulative impacts associated with waste generation and waste management. In the event that the proposed development along with the surrounding developments do not appropriately manage waste during the operational phase, the potential effect will be **long-term, significant** and **negative**.

12.6 Do-Nothing Approach

If the Proposed Development was not to go ahead there would be no excavation or construction or operational waste generated at this site. There will be a **neutral** effect on the environment.

The site is zoned for development, and it is likely that in the absence of this subject proposal that a development of a similar nature would be progressed on the site that accords with national and regional policies to promote sustainable growth and therefore the likely significant effects would be similar to this proposal.

12.7 Remedial or Mitigation Measures

This section outlines the measures that will be employed in order to reduce the amount of waste produced, manage the wastes generated responsibly and handle the waste in such a manner as to minimise the effects on the environment.

12.7.1 Construction Phase

The following mitigation measures will be implemented during the construction phase of the proposed development:

As previously stated, a project specific RWMP has been prepared in line with the requirements of the requirements of the EPA, Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021) and is included as Appendix 12.1. The mitigation measures outlined in the RWMP will be implemented in full and form part of mitigation strategy for the site and are listed in summary below. The mitigation measures presented in this RWMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the excavation and construction phases of the proposed development.

- Prior to commencement, the appointed Contractor(s) will be required to refine / update the RWMP (Appendix 12.1) in agreement with SDCC and in compliance with any planning conditions, or submit an addendum to the RWMP to SDCC, detailing specific measures to minimise waste generation and resource consumption, and provide details of the proposed waste contractors and destinations of each waste stream.
- The Contractor will implement the RWMP throughout the duration of the proposed excavation and construction phases.

A quantity of soil and stone will need to be excavated to facilitate the proposed development. The Project engineers have estimated up to 22,808 m³ of excavated material will need to be removed off-site. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site.

In addition, the following mitigation measures will be implemented:

- Building materials will be chosen to 'design out waste';
- On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling and recovery. The following waste types, at a minimum, will be segregated:
 - Concrete rubble (including ceramics, tiles and bricks);
 - Plasterboard;
 - Metals;
 - Glass; and
 - Timber.
- Left over materials (e.g. timber off-cuts, broken concrete blocks / bricks) and any suitable construction materials shall be re-used on-site, where possible; (alternatively, the waste will be sorted for recycling, recovery or disposal);
- All waste materials will be stored in skips or other suitable receptacles in designated areas of the site;
- Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required);
- A Resource Manager will be appointed by the main Contractor(s) to ensure effective management of waste during the excavation and construction works;
- All construction staff will be provided with training regarding the waste management procedures;
- All waste leaving site will be reused, recycled or recovered, where possible, to avoid material designated for disposal;
- All waste leaving the site will be transported by suitably permitted contractors and taken to suitably registered, permitted or licenced facilities; and
- All waste leaving the site will be recorded and copies of relevant documentation maintained.

Nearby sites requiring clean fill material will be contacted to investigate reuse opportunities for clean and inert material, where possible. If any of the material is to be reused on another site as by-product (and not as a waste), this will be done in accordance with Regulation 27 of the EC (Waste Directive) Regulations (2011-2020). EPA approval will be obtained prior to moving material as a by-product.

These mitigation measures will ensure that the waste arising from the construction phase of the proposed development is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated Regulations and the Litter Pollution Act 1997 and the NWMPCE 2023. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will promote more sustainable consumption of resources.

12.7.2 Operational Phase

As previously stated, a project specific OWMP has been prepared and is included as Appendix 12.2 and are listed in summary below. The mitigation measures outlined in the OWMP will be implemented in full and form part of mitigation strategy for the site. Implementation of this OWMP will ensure a high level of recycling, reuse and recovery at the development. All recyclable materials will be segregated at source to reduce waste contractor costs and ensure maximum diversion of materials from landfill, thus achieving the targets set out in the NWMPCE (2023), Waste Action Plan for a Circular Economy – Waste Management Policy in Ireland and the SDCC waste bye-laws.

- The operator of the proposed development during the operational phase will be responsible for ensuring – allocating personnel and resources, as needed – the ongoing implementation of this OWMP, ensuring a high level of recycling, reuse and recovery at the site of the proposed development.
- The operator of the proposed development will regularly audit the onsite waste storage facilities and infrastructure and maintain a full paper trail of waste documentation for all waste movements from the site.

The following mitigation measures will be implemented:

- The residents / operator of the proposed development will ensure on-site segregation of all waste materials into appropriate categories, including (but not limited to):
 - Organic waste;
 - Dry Mixed Recyclables;
 - Mixed Non-Recyclable Waste;
 - Glass;
 - Cardboard;
 - Plastic;
 - Waste electrical and electronic equipment (WEEE) including computers, printers and other ICT equipment;
 - Waste Electrical and Electronic Equipment
 - Cooking oil;
 - Cleaning chemicals (paints, adhesives, resins, detergents, etc.);
 - Furniture (and from time-to-time other bulky waste); and
 - Abandoned bicycles
- The residents / operator of the proposed development will ensure that all waste materials will be stored in colour coded bins or other suitable receptacles in designated, easily accessible locations. Bins will be clearly identified with the approved waste type to ensure there is no cross contamination of waste materials;
- The residents / operator of the proposed development will ensure that all waste collected from the site of the proposed development will be reused, recycled, or recovered, where possible, with the exception of those waste streams where appropriate facilities are currently not available; and
- The residents / operator of the proposed development will ensure that all waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted, or licensed facilities.

These mitigation measures will ensure the waste arising from the Proposed Development during the operational phase is dealt with in compliance with the provisions of the Waste Management Act 1996

as amended, associated regulations, the Litter Pollution Act 1997, the NWMPCE (2023) and the SDCC Waste Bye-Laws. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved.

12.8 Residual Impacts of the Proposed Development

It is predicted with the implementation of the mitigation measures outlined in section 12.7 and adherence to the RWMP (Appendix 12.1) and OWMP (Appendix 12.1) there will be no significant residual impact in relation to material assets-waste management. The implementation of the mitigation measures outlined in Section 12.7 will ensure that targeted rates of reuse, recovery and recycling are achieved at the site of the Proposed Development during the construction and operational phases. It will also ensure that European, National and Regional legislative waste requirements with regard to waste are met and that associated targets for the management of waste are achieved.

12.8.1 Construction Phase

A carefully planned approach to waste management as set out in Section 12.7.1 and adherence to the RWMP (which includes mitigation) (Appendix 12.1) during the construction phase will ensure that the predicted effect on the environment will be **short-term, imperceptible** and **neutral**.

12.8.2 Operational Phase

During the operational phase, a structured approach to waste management as set out in Section 12.7.2 and adherence to the OWMP will promote resource efficiency and waste minimisation. Provided the mitigation measures are implemented and a high rate of reuse, recycling and recovery is achieved, the predicted effect of the operational phase on the environment will be **long-term, imperceptible** and **neutral**.

12.8.3 Conclusion

Assuming the full and proper implementation of the mitigation measures set out herein and in the RWMP (Appendix 12.1) and the OWMP (Appendix 12.2), no likely significant negative effects are predicted to occur as a result of the construction or operational of the Proposed Development.

12.8.4 Cumulative

12.8.4.1 Construction Phase

During the Construction phase waste management will be carefully managed as set out in Section 12.7.1. Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will minimise/mitigate any potential cumulative impacts associated with waste generation and waste management. As such it is considered that the cumulative effect relating to waste management will be **short-term, imperceptible** and **neutral**.

12.8.4.2 Operation Phase

During the Operational phase waste management will be carefully managed as set out in Section 12.7.2. Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will minimise/mitigate any potential cumulative impacts associated with waste generation and waste management. As such it is considered that the cumulative effect relating to waste management will be **long-term, imperceptible** and **neutral**.

12.9 Monitoring

The management of waste during the construction phase will be monitored by the Contactor's appointed Resource Manager to ensure compliance with the above-listed mitigation measures, and relevant waste management legislation and local authority requirements, including maintenance of waste documentation.

The management of waste during the operational phase will be monitored by the operator of the proposed development to ensure effective implementation of the mitigation measures outlined in Section 15.6, Appendix 15.1 and 15.2 internally and by the nominated waste contractor(s).

Table 12.5 Monitoring Proposals

Likely Significant Effect	Monitoring Proposals
Litter Pollution	The Contractor will review and maintain waste records and site audits
Unlicensed Waste Collection (Illegal Dumping)	A register will be maintained and reviewed. A copy of all waste collection permits will be maintained.
Insufficient Waste Facilities	A register will be maintained and reviewed. A copy of all waste collection permits will be maintained.
Lack of waste Classification	An appointed Resource Manager will monitor all on-site waste segregation and classification
Unlicensed Waste Collection (Illegal Dumping)	The operator/ facilities management company will maintain waste receipts on-site for a period of 7 years and make available to SDCC as requested.
Poor Waste Segregation	Waste generation volumes will be monitored by the waste contractor / operator / facilities management company
Litter Pollution	Waste storage areas will be monitored by the waste contractor / operator / facilities management company

12.9.1 Construction Phase

The objective of setting targets for waste management is only achieved if the actual waste generation volumes are calculated and compared. This is particularly important during the excavation and construction works, where there is a potential for waste management objectives to become secondary to other objectives, i.e. progress and meeting construction schedule targets. The RWMP specifies the need for a Resource Manager to be appointed, who will have responsibility for monitoring the actual waste volumes being generated and ensuring that contractors and sub-contractors are segregating waste as required. Where targets are not being met, the Resource Manager will identify the reasons for this and work to resolve any issues. Recording of waste generation during the construction phase of the proposed development will enable better management of waste contractor requirements and identify trends. The data should be maintained to advise on future developments.

12.9.2 Operational Phase

During the operational phase, waste generation volumes should be monitored by the waste contractor and or the operator of the proposed development. There may be opportunities to reduce the number of bins and equipment required in the WSAs, where estimates have been too conservative. Reductions in bin and equipment requirements will improve efficiency and reduce waste contractor costs.

12.10 Reinstatement

In the event that the Proposed Development is discontinued, there is not likely to be any significant impacts on waste management at the site.

12.11 Difficulties Encountered

Until final materials and detailed construction methodologies have been confirmed, it is difficult to predict with a high level of accuracy the construction waste that will be generated from the proposed works as the exact materials and quantities may be subject to some degree of change and variation during the construction process.

While it is possible to initially select a licensed waste facility for soil disposal, there is potential to encounter contaminated material or material with naturally occurring variations in minerals and chemicals that necessitates sending it to a different suitably licensed facility. The sampling and testing carried out in the Site Investigation (SI) process provides spot samples, and further testing is required during the excavation process, as the true condition of all excavated materials cannot be ascertained with certainty until this is undertaken.

There is a number of licensed, permitted and registered waste facilities in the Dublin and EMR regions and across Ireland and Northern Ireland. However, these sites may not be available for use when

required or may be limited by the waste contractor selected to service the development in the appropriate phase. In addition, there is potential for more suitably placed waste facilities or recovery facilities to become operational in the future which may be more beneficial from an environmental perspective.

Licensed waste facilities have annual limitations on material that they can import as part of their license agreements. Because of this it would not make it possible to commit to a singular specific receiving facility as it is not available throughout the excavation phase. It would not be viable to cease a development and wait until a receiving facilities annual receiving quotas are reset. In a normal development waste facilities would switch between facilities with available capacity.

The ultimate selection of waste contractors and waste facilities would be subject to appropriate selection criteria proximity, competency, capacity and serviceability. The waste facilities selected will ultimately be selected to minimise the environmental impacts on the surrounding environment.

12.12 Conclusion

This chapter has discussed the potential and the predicted the impact of the Proposed Development with regards to waste management. These impacts have been considered for both the construction and operational phases of the Proposed Development. The cumulative impact of the Proposed Development and surrounding developments has also been considered.

Provided all mitigation measures as set out in this chapter and the attached RWMP and OWMP are implemented, the overall predicted impact of the proposed development is **long-term, imperceptible** and **neutral**.

12.13 References

- Waste Management Act 1996 - 2021 (No. 10 of 1996) as amended.
- Protection of the Environment Act 2003, (No. 27 of 2003) as amended.
- Litter Pollution Act 1997 (S.I. No. 12 of 1997) as amended.
- The Circular Economy and Miscellaneous Provisions Act 2022
- Regional Waste Management Planning Offices, National Waste Management Plan (2024).
- Department of Environment and Local Government (DoELG) *Waste Management – Changing Our Ways, A Policy Statement* (1998).
- European Commission, Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (2017).
- Environmental Protection Agency (EPA) 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' (2022)
- Forum for the Construction Industry – Recycling of Construction and Demolition Waste.
- Department of Communications, Climate Action and Environment (DCCAE), Waste Action Plan for the Circular Economy - Ireland's National Waste Policy 2020-2025 (Sept 2020).
- DCCAE, Whole of Government Circular Economy Strategy 2022-2023 'Living More, Using Less' (2021)
- Environmental Protection Agency (EPA) 'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021)
- Department of Environment, Heritage and Local Government, Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects (2006).
- FÁS and the Construction Industry Federation (CIF), Construction and Demolition Waste Management – a handbook for Contractors and site Managers (2002).
- South Dublin County Council (SDCC), South Dublin County Council Development Plan 2022 – 2028 (2022).
- South Dublin County Council (SDCC) South Dublin County Council Household & Commercial Waste Bye-Laws (2018)
- BS 5906:2005 Waste Management in Buildings – Code of Practice
- Planning and Development Act 2000 (No. 30 of 2000) as amended
- Environmental Protection Agency (EPA), Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous (2018)
- Council Decision 2003/33/EC, establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC.

- Environmental Protection Agency (EPA), National Waste Database Reports 1998 – 2020 and the Circular Economy and National Waste Database Report 2021 -.
- US EPA, Characterisation of Building Uses (1998);
- EPA and Galway-Mayo Institute of Technology (GMIT), EPA Research Report 146 – A Review of Design and Construction Waste Management Practices in Selected Case Studies – Lessons Learned (2015)

RECEIVED: 22/10/2025

13.0 MATERIAL ASSETS – TRAFFIC

13.1 Introduction

This Chapter of the EIAR has been prepared by NRB Consulting Engineers Ltd and describes the likely significant effects in relation to Traffic & Transportation issues arising from the proposed development works at Greenhills Road, Walkinstown, Dublin 12. It should be read in conjunction with the more detailed Traffic and Transport Assessment Report (TTA) and Travel Plan that have been submitted with the application.

This chapter was completed by Brian McMahon, a Chartered Engineer and Director of NRB Consulting Engineers Ltd. Brian specialises in the field of Traffic, Transportation & Roads Design - assessing the infrastructure needs of development. He is expert in the provision of advice to both private sector and public sector clients on all aspects of roads, traffic and transportation, and mobility management. Brian is also expert in the use of Traffic Engineering Modelling Software (TRICS, ARCADY, PICADY, LINSIG, PARAMICS and Micro-Simulation Techniques).

The preparation of the EIAR included discussion and liaison between members of the Design Team, all of whom are experienced in the individual areas of expertise.

Consultation has also taken place with SDCC regarding the project scope and NTA / TII regarding the Site Access and site frontage along the Greenhills Road. The proposed site access junction has been designed to accommodate the future BusConnects proposals and has been set back to accommodate a future cycle lane and pedestrian footpath within the applicant's lands.

13.2 Methodology

13.2.1 Scoping

At the time of writing the scope and extent of the study area and the assessment has been determined based on experience, and in consideration of the low levels of traffic generated by the development.

13.2.1.1 Detailed Methodology

This chapter has been prepared in accordance with TII's Traffic & Transport Assessment Guidelines and addresses the worst-case traffic impact of the proposal.

We commissioned and undertook new traffic surveys of the adjacent road network which formed the basis of the study. This represents industry-standard procedure

The analysis includes the effects of the existing traffic on the local roads and assesses the impact of the additional traffic associated with the development during the traditional peak commuter periods in accordance with TII's Traffic & Transport Assessment Guidelines.

13.3 Population

13.3.1 Receiving Environment (Baseline Scenario)

The subject site, was a long-established destination, containing office, commercial, and warehousing developments, but has been closed for a number of years. The proposed development on zoned lands, identified for enterprise and/or residential-led regeneration in the SDCC LAP, should be considered in this context. A site location plan for the site is included below as Figure 13.1.



Figure 13.1 Site Location

R819 Greenhills Road - The road along the northern boundary of the site, the R819 Greenhills Road, is a Regional Road, one of Dublin City's main commuter routes also serving one of Dublin's largest suburbs to the southwest of the city, Tallaght. Adjacent to the site, the road is single carriageway, with a traffic lane and advisory cycle lane in each direction. The road width is approximately 7.6m-7.8m wide. A footpath is provided on the northern side of the road, but none is provided on the southern side. There is a change in the speed limit from 60km/hr to 50km/hr on Greenhills Road to the west of the proposed site access, with the site access located in the 50km/hr zone.

The Greenhills Road carries a weekday AM Peak Hour 2-way flow of approximately 1,278 PCUs and a weekday PM Peak Hour 2-Way flow of approximately 1,343 PCUs, and in these terms, it can be considered as moderately trafficked.

Site 1: Walkinstown Roundabout: This is a 60m diameter roundabout, famously with 6 arms. These include the R819 Greenhills Road, Ballymount Road, R112 Walkinstown Avenue, R819 Walkinstown Road, R818 Cromwellsfort Road, R112 St. Peter's Road. Each entry arm has a flared approach, the majority with 3 lanes at the entry to the roundabout, apart from the Ballymount Road, which has 2 lanes. Currently, there are uncontrolled pedestrian crossings on all arms. There are no cycle facilities on any of the approaches. The AM peak hour shows a total AADT of 4,084 PCU, while the PM is slightly lower at 3,621 PCU.

Site 2: Greenhills Road / Mulcahy Keane Estate: This a 3-arm priority junction which provides access to the Mulcahy Keane Industrial Estate. The R819 Greenhills Road has one traffic lane and advisory cycle lane in each direction, approximately 10.0m wide. There is a westbound bus layby to the west of the junction. The Mulcahy Keane Industrial Estate has a single lane exit. Footpaths are provided on the northern and southern sides of this junction.

Site 3: Greenhills Road / Greenhills Industrial Estate / Builders Suppliers Access: This a 4-arm staggered junction which provides access to a Builders Suppliers on the northern arm and access to the Greenhills Industrial Estate to the south. The R819 Greenhills Road has one traffic lane and an advisory cycle lane in each direction, approximately 9.0m wide. The minor arms have a single lane approach to the major arm. Footpaths are provided on the northern and south-eastern sides of this junction, but not on the south-western side.

Site 4: Internal Greenhills Industrial Estate Junction: This a 3-arm priority junction. There is a sharp turn on the major arm at the junction. The road width is approximately 7.0m wide. The minor road has a single lane exit.

Site 5: Calmount Road / Calmount Avenue Priority Junction: This a 3-arm priority junction, with Calmount Road having one lane in each direction, approximately 9.0m wide. Calmount Avenue has a single lane approach to Calmount Road. Footpaths are provided on all arms, located behind a wide verge. There are no cycle facilities at this junction.

Site 6: Calmount Road / Ballymount Avenue Roundabout: This is a 4-arm 40m diameter roundabout. These includes the Calmount Road (east and west) and Ballymount Avenue (north and south). Each entry arm has a single lane approach. There are uncontrolled pedestrian crossings on all arms. There are no cycle facilities on any of the approaches.

The location of these local road network junctions is highlighted in Figure 13.2 below.



Figure 13.2 Local Network Junctions

At present, pedestrian activity to the existing site is served by an extensive network of footpaths connecting the site to Walkinstown and providing direct links to the high-quality public transport services locally and within the wider area.

Cycle traffic at/to the existing site is served by an extensive network of dedicated cycle lanes/facilities, including the cycle lane on Greenhills Road. These facilities are continually improving, and of course the nature of the area and current practices by the Dublin Local Authorities is that the GDA cycle network will be rolled out within a short timeframe.

The site is located off the Greenhills Road, located in Walkinstown, 350m south-west of the Walkinstown Roundabout, within easy walking distance of Dublin Bus Stops (200m), and is therefore ideally placed to accommodate the Transportation Demands associated with this scale of development.

In the short term there are bus stops located immediately at the site, with service numbers 27 and 77a passing the site. For reference, at the time of writing, Service No. 27 is a cross-city service (Clarehall-Jobstown-Clarehall), with a commuter peak hour frequency of c. 10 mins. Service No. 77a (Ringsend-

Citywest-Ringsend) also has a commuter peak hour frequency of c. 10 mins. These bus services combined represent a high frequency service.

In addition, the site is within an approximate 350m distance of Walkinstown Roundabout, which is a transport node that is crossed by a number of additional existing bus services, including the No. 9 and 56a Dublin Bus Routes. The frequency of each bus route is shown below in Table 13.1, and Figure 13.3.

Table 13.1 Existing Public Transport Frequency

Service Number	Operator	Peak Frequency (2-way services per hour)	To / From
9	Dublin Bus	10	From/To Charlestown to/from Limekiln Ave
27	Dublin Bus	12	From/To Clarehall to/from Jobstown
56a	Dublin Bus	1	From/To Ringsend Road to/from Tallaght
77a	Dublin Bus	8	From/To Ringsend Road to/from Citywest
Total		31	To / From City Centre

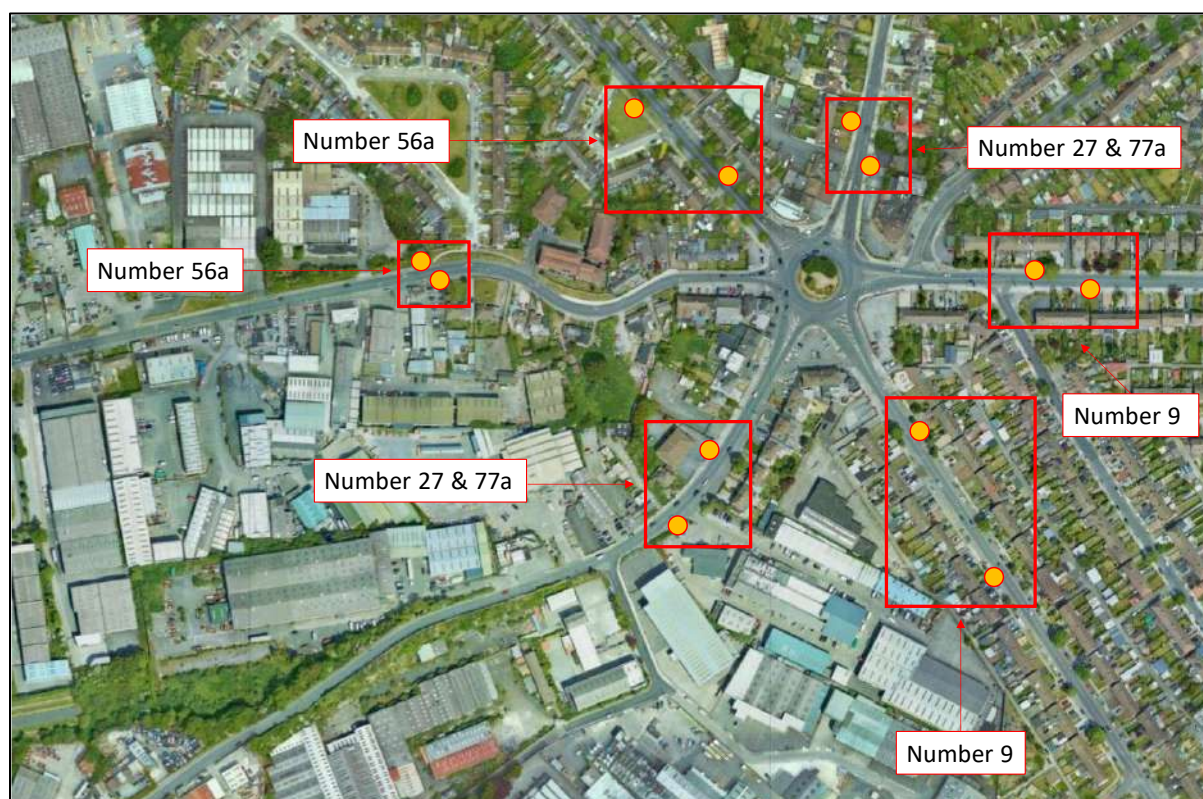


Figure 13.3 Bus Stop Locations

Details of the survey data used as part of this study are included within Appendix B of the submitted TTA.

We commissioned and undertook new traffic surveys of the adjacent road network at a time when schools were fully open. This represents industry-standard procedure. This traffic survey data formed the basis of the study.

13.3.2 Receiving Environment (Future Scenario)

The site is situated within the immediate vicinity of the National Transport Authority's BusConnects scheme, Tallaght to City Centre along the Greenhills Road, as illustrated in Figure 13.4. The NTA has received notification of planning approval by An Bord Pleanála for the Tallaght/Clondalkin to City Centre Scheme¹. The proposed objectives of BusConnects are to “provide a continuous bus lane in each direction as well as maintaining two general lanes”. In addition, “to provide safe cycling facilities, segregated where possible from other vehicular traffic”. The benefits of the NTA scheme are noted as follows:

- Journey Time Savings;
- Accessibility for All;
- Better Cycling Facilities
- Pedestrian and Local Urban Centres; and,
- Building a sustainable city and addressing climate change.

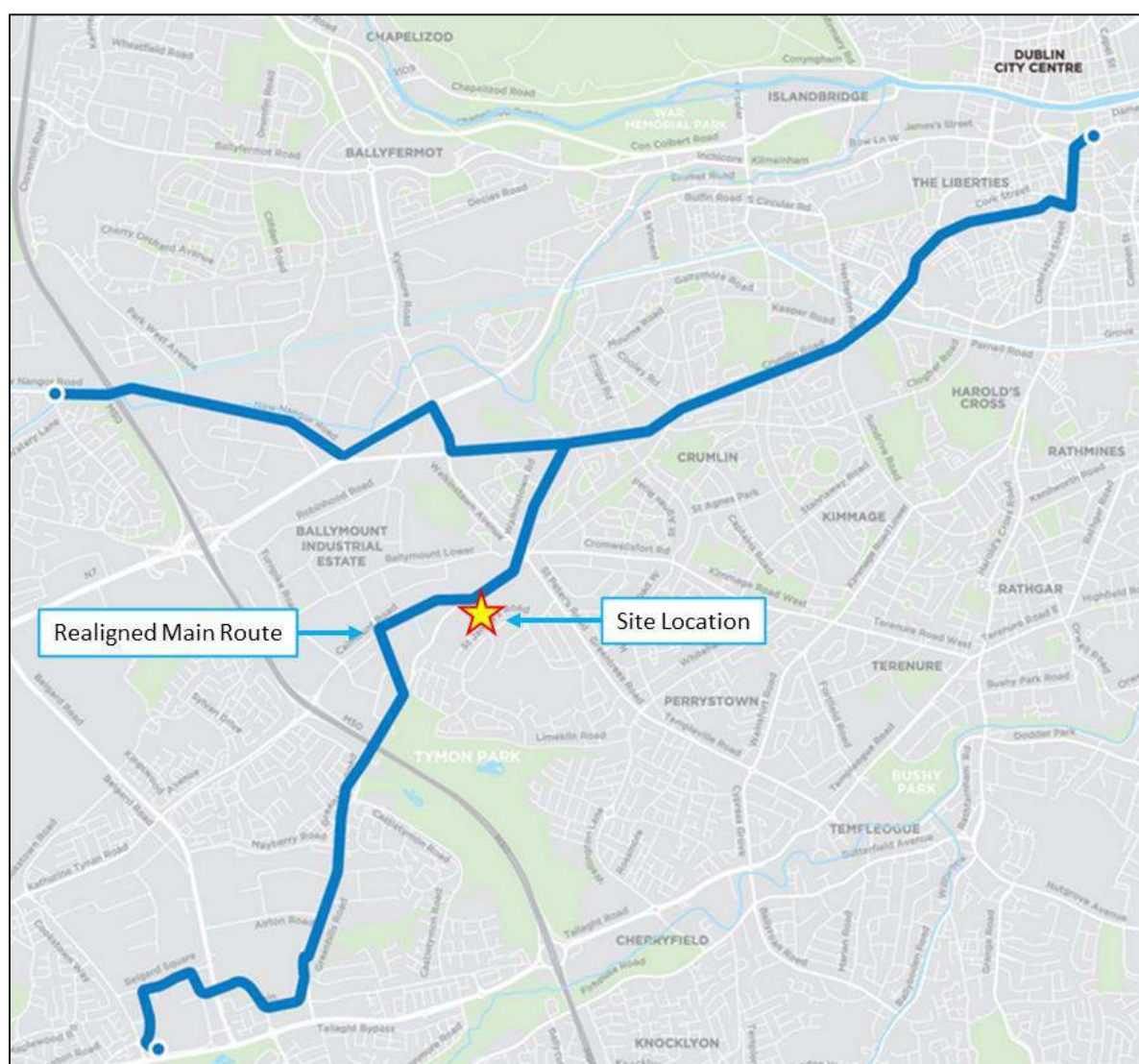


Figure 13.4 Proposed BusConnects Route

¹ <https://busconnects.ie/planning-approval-received-for-tallaght-clondalkin-to-city-centre-core-bus-corridor-scheme/>

It is proposed to realign the existing Greenhills Road through the Ballymount Industrial Estate by way of extending both Ballymount Avenue and Calmount Road to connect to the existing Greenhills Road. Mainline traffic will be directed via the new link to Ballymount Avenue. The new link road will connect back into the existing road network at Greenhills Road, adjacent to the proposed site.

The Ballymount Avenue / Calmount Road junction will be upgraded from a roundabout to a signal-controlled junction. The Calmount Road / Calmount Avenue junction will be upgraded from a priority junction to a signal-controlled junction. Both the Ballymount Avenue and the Calmount Road are intended to be widened to incorporate bus and cycle lanes. The proposed changes to the road network, due to the BusConnects proposals is highlighted in Figure 13.5 below.



Figure 13.5 Proposed Upgraded Road Network

As noted above, the new link road will connect back into the existing road network at Greenhills Road, adjacent to the proposed site, with the current BusConnects Proposals shown in Figures 13.6 and 13.7 below, with the proposed site highlighted.



Figure 13.6 Proposed BusConnects Route (Source: Tallaght to City Centre Sheet 17)

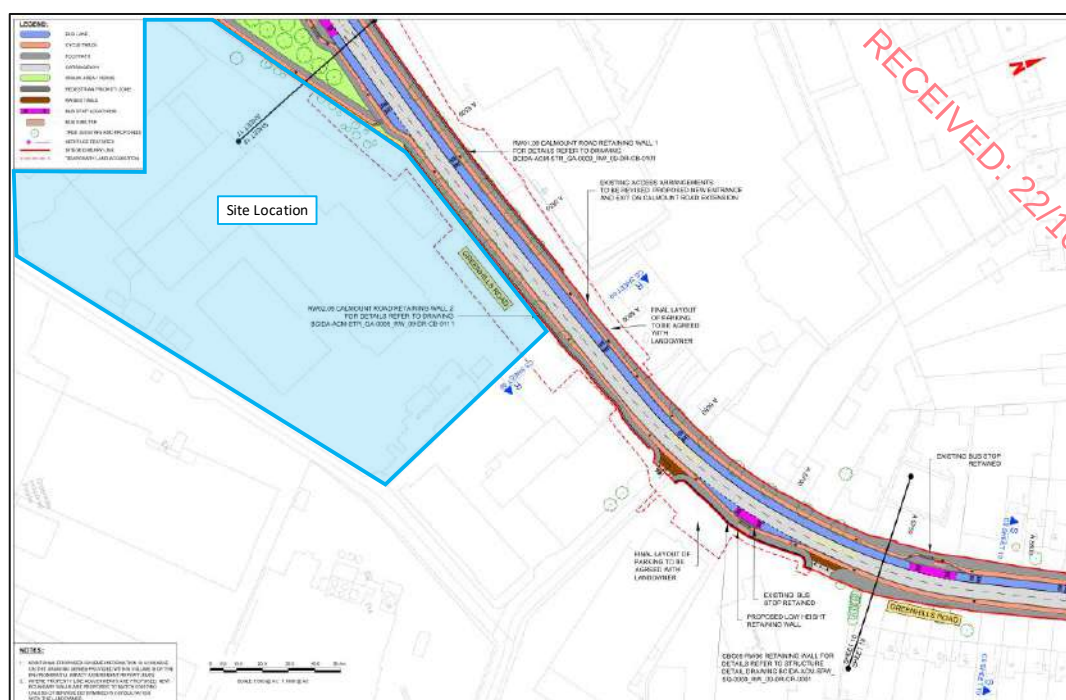


Figure 13.7 Proposed BusConnects Route (Source: Tallaght to City Centre Sheet 18)

In the longer term, the site is ideally placed to both benefit from, and contribute to, services on Corridor 9 Greenhills to City Centre. This Core Bus network plan shows that the site's accessibility to bus services will be further enhanced, with a high frequency and permeable service passing the site. The site will be served by very frequent services, with Spines D2, D3 and D4 passing the site. In addition to Spine Route F3 & Feeder Service 71 which are planned to cross the Walkinstown Roundabout.

The planned frequency of service for the D Spine Routes is a bus every 4 minutes. Extracts from the NTA Bus Frequency Tables are included below as Figure 13.8 & Figure 13.9. The number in each box is the expected time in minutes between buses.

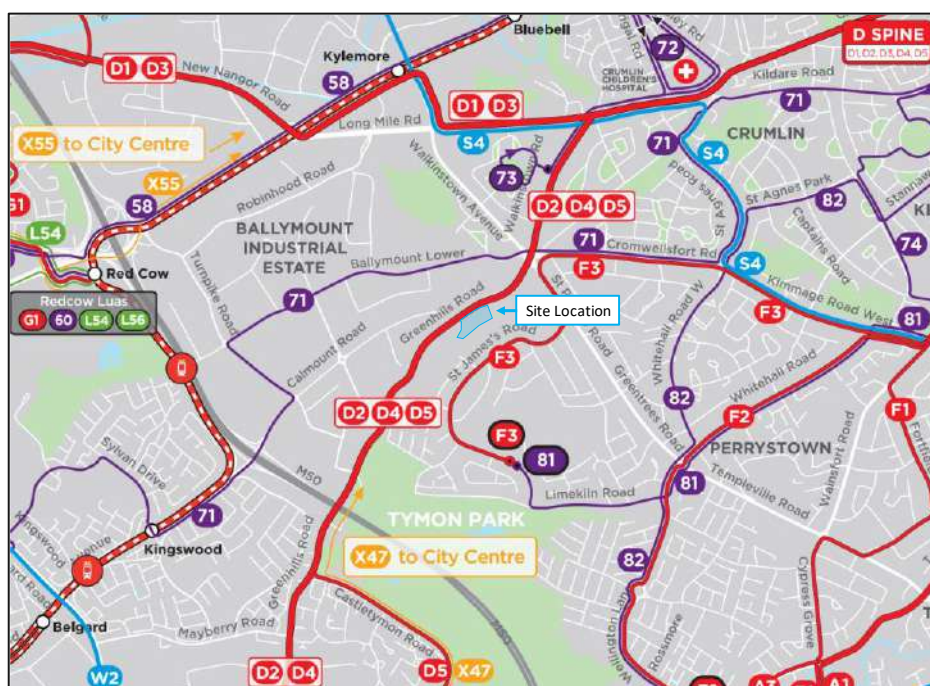


Figure 13.8 Bus Connects Revised Bus Network

Spine frequency tables

The number in each box is the expected time in minutes between buses. It is subject to adjustment in

Spines & Branches		Weekday																					
Route no.	To and From	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11			
D-SPINE	Malahide Rd - City Centre - Crumlin	8	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	8			
D1	Clongriffin - City Centre - Grange Castle	30	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	30			
D2	Clare Hall - City Centre - Citywest	30	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	30			
D3	Clongriffin - City Centre - Clondalkin	30	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	30			
D4	Swords Road - City Centre - Killinarden	60	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	60			
D5	Edenmore - City Centre - Tallaght	60	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	60			
F-SPINE	Finglas - City Centre - Kimmage	10	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	10			
F1	Charlestown - Finglas Bypass - City Centre - Tallaght	30	15	10	10	15	15	15	15	15	15	10	10	10	15	15	15	15	15	30			
F2	Charlestown - Finglas NW - City Centre - Templeogue	30	15	10	10	15	15	15	15	15	15	10	10	10	15	15	15	15	15	30			
F3	Charlestown - Finglas SW - City Centre - Greenhills	30	15	10	10	15	15	15	15	15	15	10	10	10	15	15	15	15	15	30			
Radial Routes		Weekday																					
Route no.	To and From	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11			
71	Tallaght - Ballymount - Warrenmount - East Wall		30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	60			

Figure 13.9 NTA Core Bus Extract –Route Frequency

The site is therefore ideally placed in terms of current and future high frequency bus availability.

13.4 Characteristics of the Proposed Environment

13.4.1 Development Description

Chapter 2 of the EIAR contains a detailed development description, with the following provided for ease of reference in this chapter.

The Proposed Development, as set out on the Architects layout Plans, comprising a mixed-use residential and commercial development comprising 588 no. residential apartment units (291 no. one-beds, 238no. two-beds and 59 no. three-beds), 1 no. 570.91sqm (443sqm indoor space) childcare facility and 6no. commercial/retail units in 4 no. blocks (A-D) ranging in height from 5 to 12 storeys as follows:

- Block A comprises 170 no. apartments (103 no. 1 bed-units, 59 no. 2 bed-units and 8 no. 3-bed units) measuring 8 storeys in height.
- Block B comprises 197 no. apartments (89 no. 1 bed-units, 92 no. 2 bed-units and 16 no. 3 bed-units) measuring 10 storeys in height.
- Block C comprises 81 no. apartments (44 no. 1-bed units, 16 no. 2-bed units and 21 no. 3-bed units) measuring 12 storeys in height.
- Block D comprises 140 no. apartments (55 no. 1 bed-units, 71 no. 2 bed-units and 14 no. 3 bed-units) measuring 8 storeys in height.

All apartments will be provided with private balconies/terraces. The development includes provision of indoor communal residential amenity (614.14 sq.m.) at ground and first floors of Block A, B, C, and the construction of 1 no. childcare facility of c. 443 m2 with dedicated outdoor play area located at ground floor of Block B.

The commercial elements of the development have been carefully considered to entice and engage the public to utilize the public spaces and aid in stimulating movement and permeability across the scheme. Approximately 6 units, totally c.1,814m² are proposed. These spaces are intended as business spaces

(ranging from mixed light industrial, storage, offices, innovation, workshops and business startups), as opposed to retail opportunities, offering local employment.

The application site involves the Former Chadwick's site which is located south of Greenhills Road. The site forms part of the Greenhill Industrial Estate. There are existing low-rise disused warehouse units on the subject site which are proposed for demolition as part of the subject proposal. The site is currently accessed off a road within the Greenhill Industrial Estate, with 3 no. vehicular accesses featuring along the site's southern boundary. This site had significant traffic/transportation demands as both an employment and retail destination. The transportation demands identified herein associated with the now-proposed residential scheme should be considered in this context, being a replacement for established busy uses.

The site is located off the Greenhills Road in Walkinstown, 350m south-west of the Walkinstown Roundabout.

It is proposed that the access is provided to the east of the site, via a simple priority junction, with a Toucan Crossing. This junction has been designed to facilitate access off the current Greenhills Road, with appropriate visibility provided, while also facilitating the proposed BusConnects Scheme in the future scenario. The proposed road, cycle and pedestrian infrastructure do not compromise the BusConnects Scheme in any way.

An access road is proposed on the eastern section of the site, which connects to the Greenhills Industrial Estate Road, with three entrances provided on this existing road (as shown in Figure 13.10).

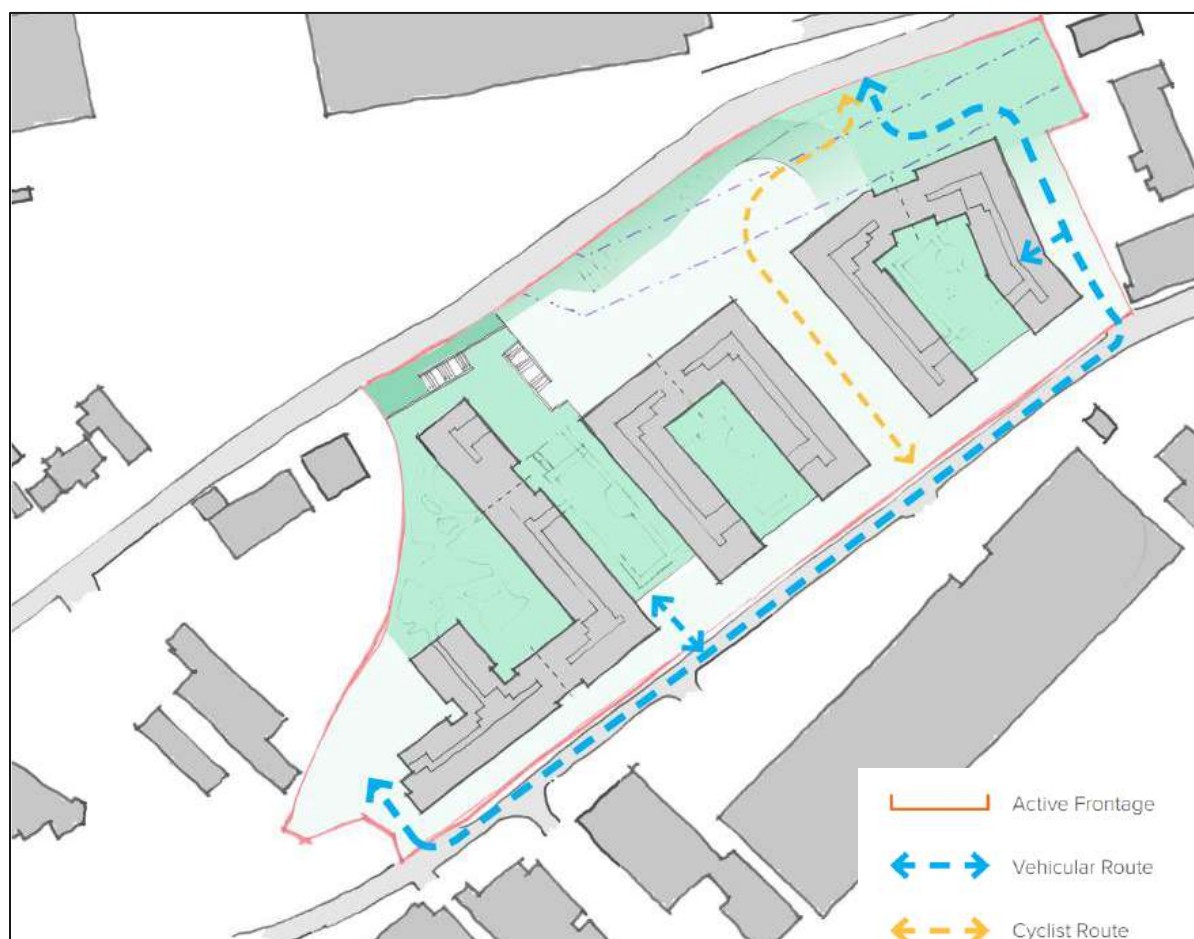


Figure 13.10 Proposed Access Strategy

The applicant has provided for pedestrians and cyclists along the southern boundary, by providing a minimum 2.0m wide footpath (average 3.0m and up to 4.2m), a 2.0m wide cycle track, and a landscape buffer, within the applicant's site boundary. The new footpaths and cycle track deliver significant

improvements to the existing Active Travel provision on the southern boundary, which currently only include a pedestrian footpath on the northern side of the Beechlawn Industrial Estate Road.

The existing road width of the Beechlawn Road will not be impacted by the proposed development, with the current 5.5m wide road, and 1.5m wide footpath remaining in place, except where vehicle access is proposed.

Due to the reductions in the parking provision requested by SDCC (with a parking ratio of 0.43 requested), the applicant has included removal of the parking on the Beechlawn Industrial Estate Road. The proposed landscaping strip, within the applicant's site, can be upgraded to car parking in the future, as part of the City Edge Scheme.

One loading bay is provided on the Beechlawn Industrial Estate Road, with delivery vehicles, such as Panel Vans will access. TRACK swept path drawings of Fire Tenders, Refuse Vehicles and Panel Vans are provided in Appendix A of the submitted TTA.

The proposed site access junction off the Greenhills Road is located on the eastern side of the site. The proposed site access junction has been designed to accommodate the future BusConnects proposals and has been set back to accommodate a future cycle lane and pedestrian footpath within the applicant's lands.

Given that the proposed development site, is located adjacent to the proposed BusConnects Tallaght to City Centre CBC scheme, the applicant's Design Team has worked closely with the NTA to ensure that the proposed layout responds to the existing Greenhills Road layout but also does not impact on the future BusConnects Scheme. All drawings have been carefully co-ordinated in line with BusConnects scheme drawings to ensure the widening of Greenhills Road can be accommodated.

A site layout plan showing the development arrangement in relation to the proposed access and existing Greenhills Road is included herein as Appendix A of the submitted TTA along with further details. The proposed development site access junction is provided below in Figure 13.11, is a simple priority junction off the Greenhills Road. The applicant will upgrade the existing footpath on the opposite side of Greenhills Road for 80m. Furthermore, as requested by SDCC, the design has been updated to provide a controlled Toucan Crossing. The proposed access road has a proposed dwell area, and a flat section at the junction, 12m long. This will also facilitate the proposed land-take required by the BusConnects scheme, which will require 5m of land taken from the site frontage, so in the future situation, there will be a dwell area of c.7m at the development access, the design of which is in accordance with TII standards. The site facilitates and does not compromise the BusConnects Plans.

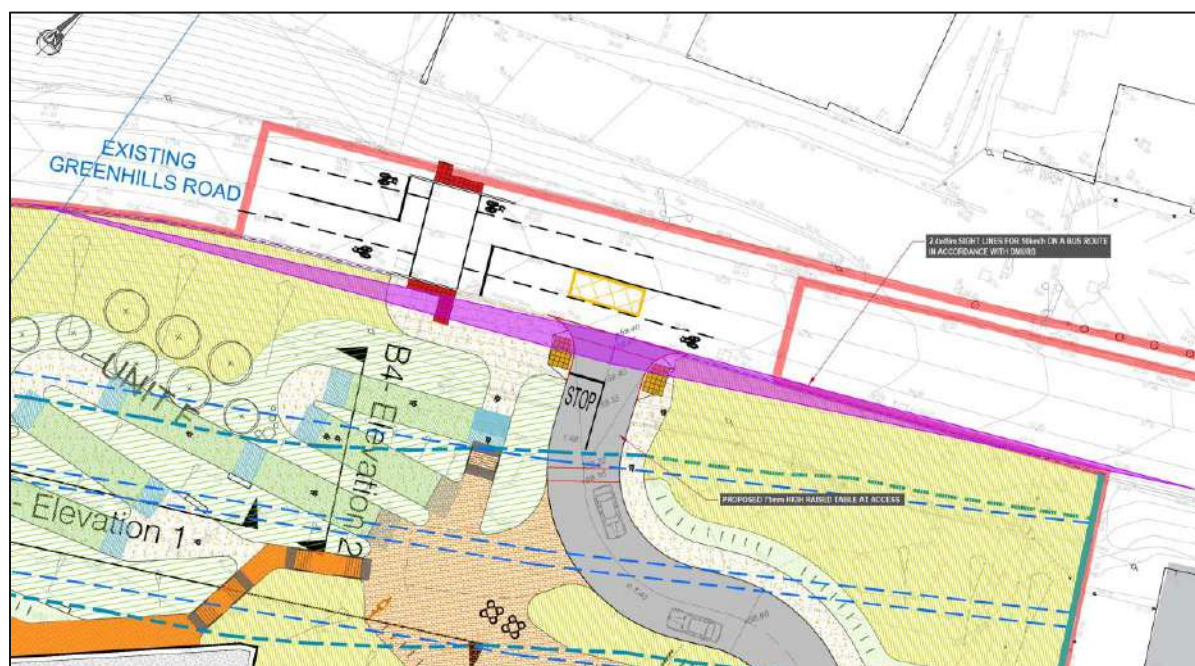


Figure 13.11 Proposed Greenhills Road Site Access Junction (NRB-TA-002)

This vehicular access arrangement includes for tactile paving and dropped kerbs. The vehicle lanes and geometry internally have been designed in line with the Design Manual for Urban Road and Streets (DMURS) to provide shorter crossing distances and a safer environment for cyclists and pedestrians.

A site layout plan showing the development access arrangement with the future BusConnects Proposals are included herein as Appendix A of the submitted TTA. The proposed development site access junction is provided below in Figure 13.12 and shows how the site access will tie in with the Bus Lane, footpath and cycle track link of the future BusConnects scheme. The proposed site access junction has been set back to accommodate a bus lane. Importantly, no retaining infrastructure has been proposed as part of the site access junction, which would later require removal for the BusConnects Scheme.

The access junction has been designed in accordance with DMURS, the National Cycle Manual and the BusConnects design standards and will be to the same standard and design as all the other priority junctions along the BusConnects route.

A raised table is proposed for pedestrians and a raised cycle track is proposed for cyclists passing the site access. These road safety features will provide an increased level of protection for vulnerable road users (VRUs) past the site and will provide a safe junction layout.

The applicant has future-proofed the site, by designing the access road and pedestrian and cycle infrastructure to tie into the approved Core Bus Corridor alignment. Letters issued to the NTA are provided in **Appendix O, Appendix P & Appendix Q**, of the submitted TTA, with the NTA noting by email that they “are satisfied that the drawings now reflect the current approved Core Bus Corridor alignment for the Tallaght/ Clondalkin to City Centre Scheme”, as attached in **Appendix R** of the submitted TTA.

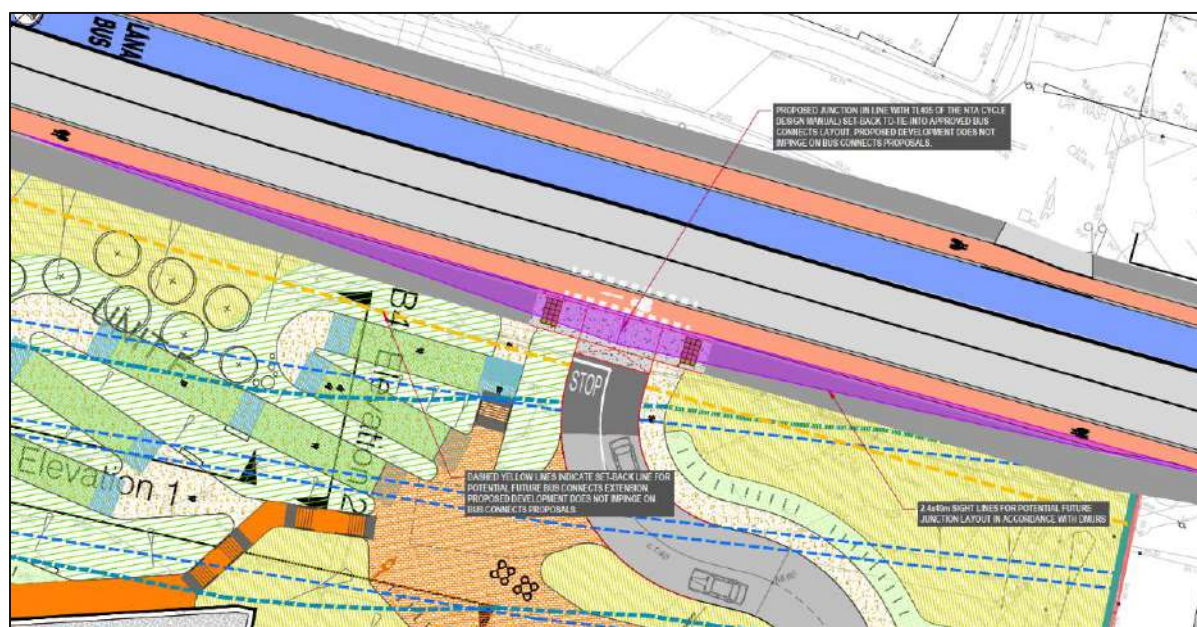


Figure 13.12 Proposed Future Greenhills Road Site Access Junction (NRB-TA-008)

The applicant has demonstrated a major commitment to helping deliver the proposed BusConnects scheme. As seen in Figure 13.13, Sheet 18 of the Tallaght/Clondalkin to City Centre Core Bus Corridor Scheme, a proposed new boundary is required in order to deliver the road width required to provide the BusConnects proposals. The Applicant has agreed to allow the bus, cycle and pedestrian facilities within their development site boundary, in order to deliver the required road width, and has designed the access road and pedestrian and cycle infrastructure to tie into the future BusConnects Scheme.

A separate cycle access has been proposed, which integrates into the landscaping design adjacent to Greenhills Road. This provides cyclists with a direct access to a secure parking facility located within the site.

The cycle access and ramp to the bicycle parking store is highlighted in Figure 13.13 below.

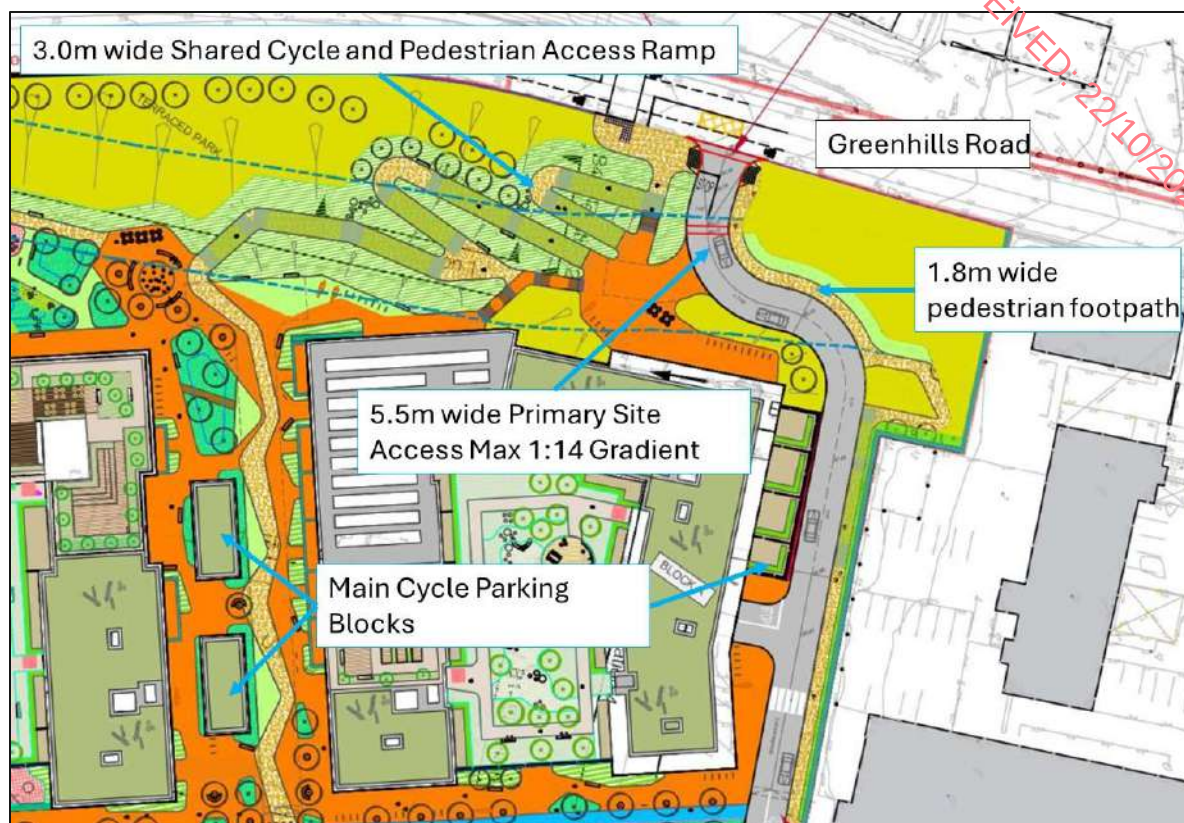


Figure 13.13 Proposed Cycle Access and Primary Site Access (NRB-TA-001)

13.4.2 Vehicular Traffic

The traffic generated by the proposed development has been calculated based on the Trip Rate Information Computer System (TRICS) database is ordinarily used to ascertain vehicular trip generation associated with the use of any particular site. This represents industry standard practice for Traffic and Transport Assessments in Ireland. In this case the worst-case assessment is based on Residential Apartment Developments, Office (Commercial Units), and a Creche from within TRICS.

A robust and onerous assessment has been undertaken of the impact along the Greenhills Road Corridor in order to ensure that we thoroughly assess the impact, in terms of stress testing the access junction and the road capacity impact of the scheme on the important local link to and from the city. The Trip Rates applied for the development in this case are as set out below as Table 13.2. It should be noted that the ancillary offices (Commercial) and Creche have been considered. The majority of these trips will be linked to the residential apartments, but they have been assigned as 100% primary trips for the purposes of an onerous and robust assessment.

Table 13.2 Trip Generation

588	per unit	Arrivals (PCUs)		Departures (PCUs)		Total 2-Way Vehicular Traffic Generated
Network Hour		per unit	Dev	per unit	Dev	
Weekday AM Peak Hr 8-9		0.069	41	0.210	123	163
Weekday PM Peak Hr 5-6		0.168	99	0.091	54	152
24 Hours		1.121	659	1.216	715	1374
1814	Commercial	Arrivals (PCUs)		Departures (PCUs)		Total 2-Way Vehicular Traffic Generated
Network Hour		per unit	Dev	per unit	Dev	

Weekday AM Peak Hr 8-9	1.006	18	0.153	3	21
Weekday PM Peak Hr 5-6	0.102	2	0.892	16	18
24 Hours	3.825	69	3.789	69	138
347 Creche	Arrivals (PCUs)		Departures (PCUs)		Total 2-Way Vehicular Traffic Generated
Network Hour	per unit	Dev	per unit	Dev	
Weekday AM Peak Hr 8-9	3.559	16	2.864	13	28
Weekday PM Peak Hr 5-6	2.807	12	3.597	16	28
24 Hours	16.539	73	17.305	77	150

Total Scheme	Arrivals (PCUs)		Departures (PCUs)		Total 2-Way Vehicular Traffic Generated
Network Hour	per unit	Dev	per unit	Dev	
Weekday AM Peak Hr 8-9	75		139		214
Weekday PM Peak Hr 5-6	113		86		199
24 Hours	802		860		1662

We have included herein as Appendix C of the submitted TTA the TRICS data output for Residential Apartments, ancillary offices (Commercial) and Creche upon which the above is based.

We have used industry standard hand assignment techniques, with the worst-case traffic as outlined assigned to the roads based on the observed established traffic patterns.

The standard methodology applied was to firstly ascertain the base background traffic conditions for both the weekday AM and weekday PM Commuter Peak periods. We then used the TII PE-PAG-02017 Project Appraisal Guidelines for National Roads Unit 5.3 to establish selected completion/opening year 2026 and design year 2041 traffic conditions on the local road network.

13.4.3 Future Year Scenario with Bus Connects

For the future year scenario (2041) we have assigned 100% of all traffic onto the extended Calmount Avenue. We have reduced through-traffic in each direction, based on the assumptions in the BusConnects traffic modelling. The BusConnects modelling predicts a significant reduction in road traffic with the Core Bus Corridor in place, as shown in Figure 13.14.

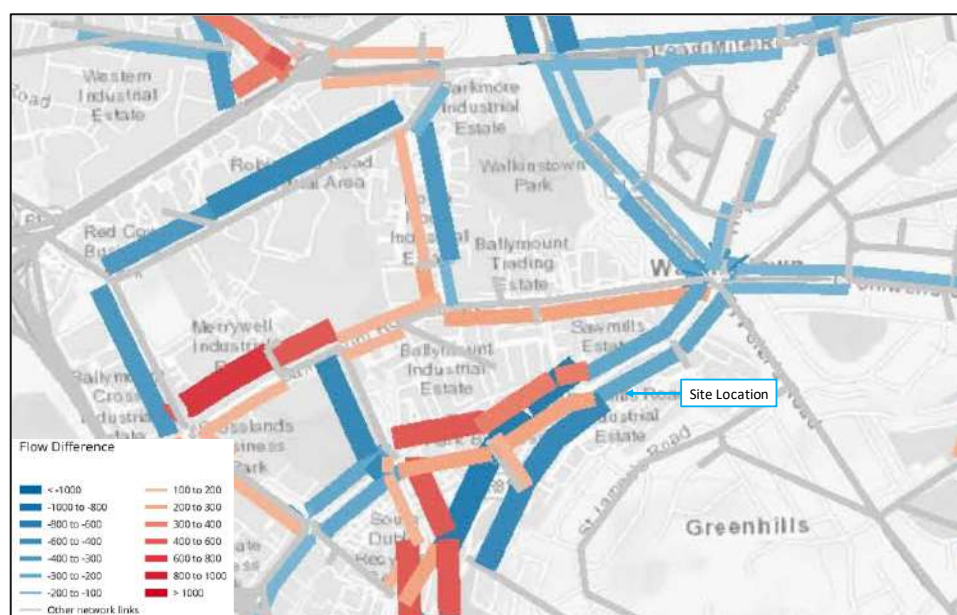


Figure 13.14 Greenhills to City Centre Draft Transport Modelling Report (November 2020)

13.4.4 Cycle Parking

The key to cycle accessibility is convenient safe links, with secure and carefully sited cycle parking. The proposed development consists of a mix of internal & secure bike storage within the buildings or in secure external bicycle stores, and visitor cycle parking. (Refer to Architects Drawings illustrating same and the annotated site layout drawing included herein as Appendix A of the submitted TIA).

It is expected that a significant number of residents of the proposed development will be willing to cycle to work with safe links and secure parking put in place, and that is reflected in the provision of a total of 1,269 new dedicated cycle parking spaces. There are 962 no. secure long-term bicycle spaces at ground level (including 10 no. cargo spaces) and 307 short-term bicycle spaces located throughout the development's public realm (including 16 no. non-standard cycle spaces including cargo spaces etc.), with the bicycle parking allocation and distribution as outlined in Table 13.3 below.

Table 13.3 Bicycle Parking Allocation Throughout Site

TOTAL BICYCLE PARKING SPACES PROVIDED				
	BLOCK A	BLOCK B	BLOCK C-D	Total
Resi (Standard Provided)	245	321	386	952
Resi (cargo Provided)	2	2	6	10
Visitor (Provided)	307 (294 [apartments]+5 [creche]+8 [commercial])			

The 'Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities' and the SDCC Development Plan have the same standards for the minimum number of bicycle standards, which requires a provision of 1 residential bicycle parking space per bedroom PLUS 1 visitor bicycle parking space per 2 residential units. In this case there are a total of 944 bedrooms, requiring 944 residential (or long term) bicycle parking spaces and with 588 units, requiring 294 visitor bicycle parking spaces. This is a total requirement of 1,238, for the residential units.

There are additional cycle parking requirements for the Creche and the Commercial elements of the proposed scheme. A Creche requires a provision of 1 staff bicycle parking space per 5 staff members, plus a short-term visitor cycle parking per 10 children. Estimating there will be a total of 12 staff members, given the number of classrooms proposed, this requires 2 staff (or long term) bicycle parking spaces and estimating there will be approximately 50 children, this will require 5 visitor (short term) bicycle parking spaces.

An office requires a provision of 1 staff bicycle parking space per 200sqm, plus a short-term visitor cycle parking per 200 sqm. In this case there are a total of 1,814sqm of Commercial Space, requiring 9 staff (or long term) bicycle parking spaces and 9 visitor bicycle parking spaces.

No provision has been made for the proposed Communal Space within the site, as this communal space is for the local residents and therefore, the provision for residents has already been included. In total, the bicycle requirement for the apartments, creche and commercial elements is 962 long-term spaces (including 10 no. cargo spaces), and a total of 307 short term spaces. With a total of 1,269 bicycle spaces proposed, this meets the minimum guideline.

13.4.5 Car Parking and Accessibility

The development includes a provision of 270 No. dedicated Car Parking spaces, divided between Surface and Under-croft car parking, with the breakdown as shown in Table 13.4 below.

Table 13.4 Car Parking Allocation Throughout Site

Parking Spaces Provided (Excluding Accessible):	240	Accessible Parking Spaces:	13
Loading Bays	2	Commercial/ Dropoff/ Parking	15
Total:	270		
Motor Bike:	8		

13 no. mobility impaired spaces are provided, being 5% of the total. The parking will include 6no. spaces dedicated to Car Sharing. 1 no. loading space has been provided for the commercial uses on the Beechlawn Industrial Estate Road, with a further 16no. spaces provided on the access road between Blocks B&C (including 1 for loading (amazon vans etc., and 15no. for commercial, drop off and creche parking). A total of 54 EV charging spaces are shown distributed around the site, being 20% of the total number of residential spaces. Notwithstanding, all of the car parking spaces have been provided with electrical ducting to allow for the provision of future charging points and can easily be upgraded to allow conversion for Electric Vehicles. Within the undercroft parking areas, conduits will be run on the walls where charging points can also be mounted.

13.4.6 Maximum Car Parking Standards

The Car Parking standards to be applied in new residential developments in South Dublin County Council are set out in Table 12.26 of the County Development Plan (2022-2028). These standards are defined as "Maximum" requirements, with parking rates divided into two main categories, Zones 1 and 2. Zone 2 (residential) has a more restrictive rate for "lands zoned REGEN, and brownfield / infill sites within Dublin City and Suburbs settlement boundary within 400-500 metres of a high-quality public transport service (includes a train station, Luas station or bus stop with a high-quality service)".

In the case of the subject site, there are 588 quality residential apartments proposed immediately beside an existing high frequency bus route and the future Greenhills to City Centre Core Bus Corridor. In addition, there are high quality walking and cycling links between the site and the city centre. In these terms, the development site location is considered to be very highly sustainable. Therefore, the proposed development falls under the more restrictive parking Zone 2.

A total of 270 private car parking spaces are being provided as part of the development for the residential units, with 17no. spaces provided for visitors and 253no. provided for residents. With 588 apartments, this represents a car parking 'Ratio' of 0.43 parking spaces per unit. This level of parking is considered appropriate given the highly sustainable location characteristics of the apartment scheme, and in consideration of National Guidance.

The 'Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities', updates previous guidance 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.

These guidelines address Apartment Design Parameters, including car and cycle parking. Under Car Parking - Section 4.20 the guidelines acknowledge 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.

Under Section 4.21 the guidelines note that in 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 wholly eliminated or substantially reduced. Specifically, Paragraphs 4.21 and 4.22 state; -

Central and/or Accessible Urban Locations

In 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.

These locations are most likely to be in cities, especially in or adjacent to (i.e. within 15 minutes walking distance of) city centres or centrally located employment locations. This includes 10 minutes walking distance of DART; commuter rail or Luas stops or within 5 minutes walking distance of high frequency (min 10-minute peak hour frequency) bus services.

Furthermore, under Section 4.23, the guidelines note that in higher density developments (greater than 45 dwellings per hectare), close to town centres or employment areas, the default policy is for planning authorities to consider a reduced overall car parking standard. Specifically, Paragraph 4.23 states; -

Intermediate Urban Locations

In suburban/urban locations served by public transport or close to town centres or employment areas and particularly for housing schemes with more than 45 dwellings per hectare net (18 per acre), planning authorities must consider a reduced overall car parking standard and apply an appropriate maximum car parking standard.

In terms of the stated Policy, the subject site meets all the requirements for significantly reducing the provision of Private Car Parking, under the headings;

- ✓ High Density Development
- ✓ Comprising Wholly of Apartments
- ✓ Proximity to Town Centre
- ✓ Well Served by Public Transport
- ✓ High Frequency Bus Services
- ✓ Implementation of Travel Plan

The National Apartment Guidance states (Paragraph 4.25);

For all types of location, where it is sought to eliminate or reduce car parking provision, it is necessary to ensure, where possible, the provision of an appropriate number of drop off, service, visitor parking spaces and parking for the mobility impaired. Provision is also to be made for alternative mobility solutions including facilities for car sharing club vehicles and cycle parking and secure storage. It is also a requirement to demonstrate specific measures that enable car parking provision to be reduced or avoided.

These requirements are now supplemented by Table 3.1 of the recent Compact Settlement Guidelines (CSG) which set out the three different areas and density categories for Dublin City, namely City Centre, City- Urban Neighbourhoods and City - Suburban / Urban Extension. Having reviewed the site location we believe that the site, falls within a City- Urban Neighbourhoods (as defined in Table 3.8).

The relevant extract is included below as Figure 13.15.

Table 3.1 - Areas and Density Ranges Dublin and Cork City and Suburbs

City - Centre

The city centres of Dublin and Cork, comprising the city core and immediately surrounding neighbourhoods⁶, are the most central and accessible urban locations nationally with the greatest intensity of land uses, including higher order employment, recreation, cultural, education, commercial and retail uses. It is a policy and objective of these Guidelines that residential densities in the range 100 dph to 300 dph (net) shall generally be applied in the centres of Dublin and Cork.

City - Urban Neighbourhoods

The city urban neighbourhoods category includes: (i) the compact medium density residential neighbourhoods around the city centre that have evolved overtime to include a greater range of land uses, (ii) strategic and sustainable development locations⁷, (iii) town centres designated in a statutory development plan, and (iv) lands around existing or planned high-capacity public transport nodes or interchanges (defined in Table 3.8) – all within the city and suburbs area. These are highly accessible urban locations with good access to employment, education and institutional uses and public transport. It is a policy and objective of these Guidelines that residential densities in the range 50 dph to 250 dph (net) shall generally be applied in urban neighbourhoods of Dublin and Cork.

City - Suburban/Urban Extension

Suburban areas are the lower density car-orientated residential suburbs constructed at the edge of cities in the latter half of the 20th and early 21st century, while urban extension refers to the greenfield lands at the edge of the existing built up footprint that are zoned for residential or mixed-use (including residential) development⁸. It is a policy and objective of these Guidelines that residential densities in the range 40 dph to 80 dph (net) shall generally be applied at suburban and urban extension locations in Dublin and Cork, and that densities of up to 150 dph (net) shall be open for consideration at 'accessible' suburban / urban extension locations (as defined in Table 3.8).

Figure 13.15 Extract Table 3.1 – Areas and Density Ranges from the CSG

Examination of the frequency of both Existing and Proposed Bus Services confirms that the site can best be described as an "Urban Neighbourhood" solely in the context of the CSG definitions for calculating appropriate car parking provision. We include below the associated Parking Provision SPPR – Car Parking extract from the CSG as Figure 13.16.

Table 3.8 defines 'Accessible', 'Intermediate' and 'Peripheral' Locations. These definitions should form the basis for the approach to car parking.

SPPR 3 - Car Parking

It is a specific planning policy requirement of these Guidelines that:

- (i) In city centres and urban neighbourhoods of the five cities, defined in Chapter 3 (Table 3.1 and Table 3.2) car-parking provision should be minimised, substantially reduced or wholly eliminated. The maximum rate of car parking provision for residential development at these locations, where such provision is justified to the satisfaction of the planning authority, shall be 1 no. space per dwelling.
- (ii) In accessible locations, defined in Chapter 3 (Table 3.8) car- parking provision should be substantially reduced. The maximum rate of car parking provision for residential development, where such provision is justified to the satisfaction of the planning authority, shall be 1.5 no. spaces per dwelling.
- (iii) In intermediate and peripheral locations, defined in Chapter 3 (Table 3.8) the maximum rate of car parking provision for residential development, where such provision is justified to the satisfaction of the planning authority, shall be 2 no. spaces per dwelling

Applicants should be required to provide a rationale and justification for the number of car parking spaces proposed and to satisfy the planning authority that the parking levels are necessary and appropriate, particularly when they are close to the maximum provision. The maximum car parking standards do not include bays assigned for use by a car club, designated short stay on-street Electric Vehicle (EV) charging stations or accessible parking spaces. The maximum car parking standards do include provision for visitor parking.

This SPPR will not apply to applications made in a Strategic Development Zone until the Planning Scheme is amended to integrate changes arising from the SPPR. Refer to Section 2.1.2 for further detail.

Figure 13.16 NRB Annotated Extract SPPR of CSG Parking Provision

Note that the parking provision in the CSG does NOT include car club spaces, set down spaces, public EV Spaces or Accessible spaces, but does include visitor provision. Based on the above, applying the CSG to the Apartments would strictly allow a maximum of the following:

- 1 x Car Parking Space per Residential Apartment (588 Spaces)

Conscious that the scheme is intended to be actively marketed as Reduced Car Dependency, the layout has been designed with the above issues in mind. For the proposed development it is anticipated that there will be an associated lower car ownership and dependency. Given the restrictions on the number of spaces being provided, the entire scheme will be actively marketed and promoted as a "Reduced Car Dependency" scheme, and this will be communicated from the outset as part of sales and marketing. The development will also be managed on an on-going basis to ensure that the Reduced Car Dependency nature of the development is continually promoted and enhanced.

The development will be managed and operated by a Management Company. Car parking will not be an automatic entitlement with the apartments. Parking will be allocated to residents mainly on a first come first served basis by the Management Company and will be continually managed in these terms. Some parking spaces will be reserved for visitors. The allocation of car parking spaces will reviewed/renewed on an annual/ongoing basis to suit demand.

In terms of specific measures to enable car parking provision to be reduced to the level proposed, with a parking ratio of 0.43 (Residential Car Parking to Apartment Ratio), the specific measures are:

- The Active Management and Marketing of the Development from the outset as 'Reduced Car Dependency',
- Restricted Dedicated Car Parking is intended to be provided to Residents and will be specifically associated with specific private rental properties (and same will be Specified in associated Rental Agreements),
- The Location within walking/cycling distance of a wide range of services, amenities, shops and schools,
- Associated Employment Opportunities locally,
- Bus Services 'on the doorstep' of the site,
- Being on a Core Bus Corridor,
- 6 No. Dedicated Car Share spaces/cars can be provided within the development,
- Plentiful Cycle Parking and Cycle Storage (Refer Above),
- On site security & management by permanent staff and by way of CCTV that will ensure the car parking areas are monitored and policed (with a clamping system in operation, so that the car parking restrictions are closely controlled and enforced), and,
- The Implementation of a working Travel Plan / Mobility Management Plan.

Following our review of the scheme design and location, in light of the above and our interpretation of National Policy, we believe that the provision of 270 managed parking spaces to serve the residential elements of this development is appropriate.

13.5 Potential Impacts of the Proposed Development

13.5.1 Construction Phase

There is a potential for construction operations to cause an unreasonable amount of excessive impact on the operational performance of the road network, resulting in a traffic safety or capacity issue arising.

It is anticipated that the proposed development would be constructed over a period of approximately 30 months.

The construction works associated with the development will be undertaken in three phases (A - C). There will also be excavation phases associated with removing excavating for site services, along with reprofiling spoil onsite. The proposed phasing plan can be seen in Figure 13.16 below.

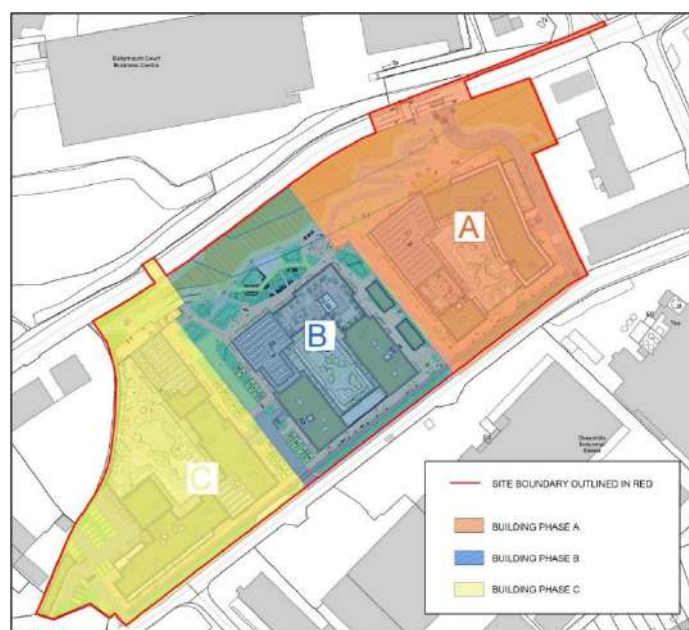


Figure 13.17 Proposed Phasing

Following the completion of the initial site clearance works, the generation of HGV movements during the build period will be evenly spread throughout the day and, as such, will not impact significantly during the peak traffic periods. It is expected that HGV vehicle movements will not exceed 5-6 vehicles per hour maximum during the busiest period of 'build' works. An appropriate control and routing strategy for HGVs can also be implemented for the duration of site works, if necessary, as part of the Contractor's Construction Traffic Management Plan.

Based on our assessment of traffic generated, we believe that the operational phase traffic will be equivalent to or will exceed the levels generated during construction. In these terms, the operational assessment represents very much a worst case. It is therefore concluded that construction traffic will not give rise to any significant traffic concerns or impede the operational performance of the local road network and its surrounding junctions.

13.5.2 Construction Traffic Generation

13.5.2.1 Principal Construction Traffic

The major construction items include excavation and fill, substructure and superstructure construction, and the fit out. It is expected that the construction traffic to and from the site shall reach a peak during the preliminary earthworks of the construction. There will be topsoil, made ground and clay excavated to facilitate construction of new foundations, and installation of underground services. The project Engineers (J. B. Barry and Partners Limited) have estimated c. 24,008 m³ of material will need to be excavated to facilitate the proposed development. It is expected that c. 1,200m³ of the excavated material will be re-used on site with the remaining c. 22,808 m³ of excavated material will be removed off site for appropriate offsite reuse, recovery, recycling and / or disposal. Therefore, the total number of HGV trips throughout project duration is approximately 1,900 trips based on an average HGV load of 12 cubic metres. The final programming and scheduling of this material transfer shall be determined by the lead contractor appointed to the project.

In addition to HGV traffic, periodic deliveries of materials to site shall be made by light good vehicles. To the extent possible, these shall be scheduled to take place outside of peak traffic hours. Such trips are also unlikely to occur frequently during the stages of construction that require bulk excavation or the importation of fill material; LGV trips are therefore unlikely to occur in significant numbers at the same time as HGV trips take place.

13.5.2.2 Construction Personnel Commuting Trips

It is estimated that there will initially be 40-60 staff on site on a typical day, however during peak construction periods this is expected to fluctuate up to 80-100 staff and contractors on site per day.

It is anticipated that up to approximately 30 vehicular trips shall be therefore made to and from the site each day by construction personnel commuting to and from work. However, as the site working hours are expected to be from 7:00 to 18:00 (subject to planning condition), the majority of these trips are expected to fall outside the background traffic peak hours. As outlined section 13.3.1 above the primary commuter routes in the vicinity of Greenhills Road experience Peak period traffic flows of 1,278 PCUs-1,343 PCUs vehicles. The construction personnel vehicle trips amount to a 2.3% increase of the traffic on the roads, assuming all 30 construction vehicle trips are in the same direction on the same road. The impact of the construction personnel vehicles is therefore not considered significant.

13.5.3 Operational Phase

The Assessment has been undertaken of the Operational Phase of the development, i.e. with all of the permitted proposed developments locally and with the subject development fully occupied and operational. There is the potential for the operation and occupation of the development itself to have an adverse impact upon the safety, capacity & operation of the adjacent road network. In these terms, the assessment undertaken was to determine whether there was likely to be an adverse or significant impact, with the assessment of impact during a selected opening year and an assessment during the associated design year 15 years following opening.

13.5.4 Do-Nothing Scenario

A Do-Nothing Scenario would result in no change whatsoever in the existing established Traffic & Transportation demands or conditions.

13.6 Mitigation Measures

13.6.1 Construction Phase

A Construction Traffic Management Plan (CTMP) has been prepared as part of the Construction Management Plan (CMP) and is included as a separate document. In the event of a grant of Planning Permission, the contractor will adopt and refine the CTMP for agreement with the Local Authority prior to commencement, as per normal best practice.

The contractor CTMP will be prepared in accordance with the principles outlined below and shall always comply with

- Chapter 8 of the Department of Environment Traffic Signals Manual, current edition, published by the Stationary Office and available from the Government Publications Office, Sun Alliance House, Molesworth Street, Dublin 2;
- The Guidance for the Control and Management of Traffic at Road Works (June 2010) prepared by the local Government Management Services Board;
- The Construction Site Traffic Management Plan (CSTMP) Guidance prepared by the Health and Safety Authority; and
- Any additional requirements detailed in TII standards or in the Design Manual for Urban Roads and Street (DMURS).

Issues addressed in the CTMP shall include:

- Public, Staff & Patients Safety
- Construction Traffic Routes
- Deliveries Schedules
- Special Deliveries (Wide and Long Load)
- Traffic Flows
- Signage and Lighting
- Road Opening Requirements
- Road Closures
- Lighting

A liaison officer will be appointed as a point of contact with the local residents, SDCC and the Gardai. Specific mitigation measures suggested for the inclusion in the CTMP include:

- Securely fencing off the site from adjacent properties, public footpaths and roads during the pre- construction phase;
- Providing signage on the surrounding road network to define the access and egress routes for the development;
- Strictly controlling the traffic generated by the construction phase of the development in order to minimise the impact of this traffic on the surrounding road network;
- Adequately signposting and enclosing all road works to ensure the safety of all road users and construction personnel;
- Accommodating all unavoidable employees' and visitors' vehicle parking demands on site or within designated off-site parking areas;
- Implementing a programme of street cleansing as required;
- Making arrangements to facilitate the delivery of abnormal loads to the site; and
- Implementing measures to avoid queuing of construction traffic on the adjoining road network.

13.6.1.1 Vehicular Access to the Site

Vehicular Access to the site for the construction traffic shall be primarily via the main entrance road to the Northeast of the Site.

All vehicular construction traffic arriving and departing to/from the site during the first stages of the development will be required to travel along a new temporary access road that shall be constructed as

part of the site set-up. This temporary construction access road shall follow the eastern boundary of the site directly into the contractor's compound. This access arrangement shall maintain the level of safety for pedestrians and cyclists, as well as the operational efficiency of the access as the construction traffic movements shall be more consistent and predictable.

The arrangement of the site's vehicular access provisions may be further refined as part of the final Construction Traffic Management Plan (CTMP) to be prepared by the lead Contractor appointed to the project.

13.6.1.2 Vehicular Access Control Measures

Security personnel will be present at the entrance/ exit of the site to ensure all exiting traffic will do so safely. A wheel wash may be installed at the exit from the site to prevent any dirt being carried out into public roads. If necessary, a road sweeper will be used to keep public roads around the site clean. The vehicular access to the construction site shall include the following design elements:

- Sufficient entrance width to permit two rigid body vehicles to pass one another (i.e., one can enter while another waits to leave).
- An entrance gate set back a minimum of 18m from the public road edge, to ensure that vehicles may leave the road completely before having to stop.
- Appropriate sight lines for vehicles exiting from the site to be ensured by removing existing visual obstructions and by appropriate design of perimeter hoarding.
- Directional signage for site traffic and advance warning signage for all other road users. Any works on the public road (e.g. for services connections) will require an application for a Road Opening Licence and will be submitted by the contractor to the Local Authority which will include a full detailed Construction Traffic Management Plan prepared in accordance with Chapter 8 of the Traffic Signs Manual for pre-approval by the Local Authority.

Access measures may be refined further as part of the final Construction Traffic Management Plan (CTMP) to be prepared by the contractor.

13.6.1.3 HGV Access Routes

Heavy Good Vehicle traffic (Vehicles 3.5t or over) to and from the construction site shall comprise primarily 3-axle and 4-axle lorries for the removal and delivery of spoil and aggregate.

All HGV construction traffic shall follow the same designated routes in place for all other construction traffic.

- Arrivals- From the M50 (north and south) via Junction 10
- Departures- From the Subject Site to the M50 via Junction 10

These designated HGV and Construction Traffic Routes ensure that the traffic can travel between the development site and the national primary roads/ motorways without:

- Passing through residential areas;
- Travelling via roads with weight limits;
- Passing beneath low bridges
- Travelling in both directions along any single-carriageway road; or
- Entering the Dublin City restricted cordon area

13.6.1.4 Minimisation of Construction Vehicle Movements

Construction vehicle movements will be minimised through:

- Consolidation of delivery loads to/ from the site and management of large deliveries on site to occur outside peak periods.
- Use of Pre-cast/ Prefabricated materials where possible.
- Reuse on site 'Cut' material generated by the construction works, where possible, through various accommodation works.
- Provision of adequate storage space on site.
- Development of a strategy to minimise construction material quantities as much as possible; and

- Minimisation of construction staff' vehicle movements by promoting car sharing and the use of public transport.

13.6.1.5 Site Parking

Approximately 30 car parking spaces for construction personnel are to be provided on site during construction works. The parking will be located within the contractor's compound. Usage of this shall be strictly controlled and limited to those workers for whom no alternative mode of transport is practical. All construction personnel shall be encouraged to use public transport or to cycle to site, and shall be supported in this. It is also expected that the lead Contractor and/ or individual subcontractors shall arrange bus transport to site for a proportion of their works. No parking by construction personnel shall be permitted within the Leopardstown Park Hospital car parks.

All construction personnel shall be encouraged to use public transport or to cycle when travelling to site, and all contractors shall be required to make reasonable provision for shared transport of workers to site (e.g., charter buses or car-sharing arrangements). Information on local transportation services shall be posted on site.

13.6.1.6 Cycling

Cycle parking spaces will be provided on the site for construction staff. In addition, lockers will be provided to allow cyclists to store their clothes.

13.6.1.7 Public Transport

The development site is advantageously located with respect to public transport accessibility, in particular its position adjacent to the adjacent Bus Routes on the Greenhills Road. Construction staff will therefore be encouraged to use public transport for travel to and from the site. An information leaflet will be provided to all staff as part of their induction on site highlighting the location of various public transport services in the vicinity on the construction site.

13.6.1.8 Car Sharing

The contractor will provide organisational support and encouragement for car sharing amongst staff, particularly those for whom end-to-end public transport journeys are impractical. To the extent possible, the contractor will endeavour to arrange staff shift patterns to facilitate shared journeys by staff who would drive similar routes.

13.6.1.9 Deliveries & Storage Facilities

It is proposed that unloading bays be provided for deliveries to the site within the hoarding perimeter. These should be accessible by crane and teleporters. Appropriately demarcated storage zones will be used to separate materials.

All deliveries to site will be scheduled to ensure their timely arrival and avoid need for storing large quantities of materials to site. Deliveries will be scheduled outside of peak traffic hours, to avoid disturbance to pedestrian and vehicular traffic in the vicinity of the site.

13.6.2 Operational Phase

The assessment demonstrates the negligible traffic impact of the operational (full completion and occupation) stage of the development. The construction traffic volumes have been assessed and are expected to be equivalent to or below the operational stage traffic volumes. In these terms the effects of the construction traffic volumes are expected to be negligible and unnoticeable on the local road network. The implementation of the mitigation measures and Construction Traffic Management Plan will ensure that the effects are further minimised and controlled.

13.7 Predicted Impacts of the Proposed Development

13.7.1 Operational Phase

Both the Institution of Highways and Transportation (IHT) Guidelines for Traffic Impact Assessment and the TII Traffic and Transport Assessment Guidelines sets out a mechanism for assessment of developments of this nature and determining whether further assessment is indeed required.

The TII Traffic and Transport Assessment Guidelines requires a Threshold Assessment of the impact on the local roads to be provided in order to determine whether further, more detailed modelling and assessment of critical junctions is necessary. This is important in this case as the development is located in proximity to an important arterial route for the city.

The professional guidance referenced above sets out specific increases in traffic volume associated with new development, which, if breached, requires further detailed analysis to be undertaken. The recommendation is that, if the expected increase is 5% for networks that are considered heavily trafficked or congested, then further analysis is warranted. In this case, given the proximity to the Greenhills Road, the 5% threshold has been applied.

In this regard, it is demonstrated herein that the proposed addition of the occupation of the residential development, with very low volumes of traffic added to a busy network, will not result in any significant level of new trips on the local roads, with all anticipated traffic increases at and beyond the site access expected to be well below the Industry-Standard levels above which further assessment is required.

Our assessment has been undertaken under two road network scenarios including the existing road network and the future road network with the BusConnects road proposals in place.

Our assessments, included within Appendix D of the submitted TTA (Refer Pages 6 & 13 of Appendix D) & E of the submitted TTA (Refer Pages 7 & 15 of Appendix E), confirms that the absolute worst case traffic increase at the adjacent road network and at the priority controlled access junction (with all traffic considered as "New" and ignoring and linked/shared trips for robustness) is as summarised below as Table 13.5 and Table 13.6.

Table 13.5 Threshold Assessment, Worst-Case Impact of Development – Existing Network

Assessed Junction	Traffic Increase %		COMMENT
	AM Pk Hr	PM Pk Hr	
Site 1 Walkinstown Roundabout	2.7%	2.8%	<5% No Further Assessment Required
Site 2 Greenhills Rd/Mulcahy Keane Est	8.1%	7.1%	>5%, Assessment Required
Site 3. Greenhills Road / Greenhills Industrial Estate / Builders Suppliers Access	7.7%	7.0%	>5%, Assessment Required
Site 4. Internal Greenhills Industrial Estate Junction	0.0%	0.0%	<5% No Further Assessment Required
Site 5. Calmount Road / Calmount Avenue Priority Junction	0.0%	0.0%	<5% No Further Assessment Required
Site 6. Calmount Road / Ballymount Avenue Roundabout	0.5%	0.4%	<5% No Further Assessment Required

Table 13.6 Threshold Assessment, Worst-Case Impact of Development - Future Network

Assessed Junction	Traffic Increase %		COMMENT
	AM Pk Hr	PM Pk Hr	
Site 1 Walkinstown Roundabout	2.7%	2.8%	<5% No Further Assessment Required
Site 2 Greenhills Rd/Mulcahy Keane Est	8.1%	7.1%	>5%, Assessment Required
Site 3. Greenhills Road / Greenhills Industrial Estate / Builders Suppliers Access	7.7%	7.0%	>5%, Assessment Required
Site 4. Internal Greenhills Industrial Estate Junction	0.0%	0.0%	<5% No Further Assessment Required
Site 5. Calmount Road / Calmount Avenue Signal Controlled Junction	5.3%	4.9%	>5%, Assessment Required
Site 6. Calmount Road / Ballymount Avenue Signal Controlled	3.7%	3.9%	<5% No Further Assessment Required

13.7.2 Capacity of Existing Road Network

13.7.2.1 Capacity of Proposed Greenhill Roads - Site Vehicular Access Priority Controlled Junction

We have used the TII-approved software package 'Junctions 10' PiCADY' (Priority Intersection Capacity And Delay) software package (as part of the TRL Package 'Junction 10') to assess the capacity of the junction. PiCADY produces results based on a ratio of flow to capacity (RFC) and queue length. An RFC greater than 1.00 indicates that a junction is operating at or above capacity, with 0.85 considered to be the optimum RFC value.

We have undertaken the detailed assessment of the capacity of the site access junction, with the entire subject development in place and fully occupied. The detailed output of the models are included herein as Appendix F of the submitted TTA, and is summarised below as Table 13.7.

Table 13.7 Greenhills Road / Site Access Junction - Summary PICADY Results

Modelled Scenario	Period Max RFC	Period Mean Max Q (PCUs)
Opening Year 2026 AM Peak Hr	0.50	1.0
Opening Year 2026 PM Peak Hr	0.36	0.5
*Design Year 2041 AM Peak Hr	0.56	1.2
*Design Year 2041 PM Peak Hr	0.42	0.7

*While the BusConnects Proposals are planned to be in place by 2041, these results are provided for completeness

The results of the modelling clearly show that the junction will have more than adequate capacity to accommodate the worst-case traffic associated with the fully complete and occupied scheme in opening and design years.

13.7.2.2 Capacity of Greenhill Roads / Greenhill Industrial Estate / Builders Suppliers Priority Controlled Staggered 4-arm junction

We have used the TII-approved software package 'Junctions 10' PiCADY' (Priority Intersection Capacity And Delay) software package (as part of the TRL Package 'Junction 10') to assess the capacity of the junction. PiCADY produces results based on a ratio of flow to capacity (RFC) and queue length. An RFC greater than 1.00 indicates that a junction is operating at or above capacity, with 0.85 considered to be the optimum RFC value.

We have undertaken the detailed assessment of the capacity of the junction, with the entire subject development in place and fully occupied. The detailed output of the models is included herein as Appendix G of the submitted TTA, and is summarised below as Table 13.8.

Table 13.8 Greenhills Road / Greenhill Industrial Estate - Summary PICADY Results

Modelled Scenario	Period Max RFC	Period Mean Max Q (PCUs)
Opening Year 2026 AM Peak Hr	0.33	1.3
Opening Year 2026 PM Peak Hr	0.51	1.0
*Design Year 2041 AM Peak Hr	0.42	2.1
*Design Year 2041 PM Peak Hr	0.66	1.8

*While the BusConnects Proposals are planned to be in place by 2041, these results are provided for completeness

The results of the modelling clearly show that the junction will have more than adequate capacity to accommodate the worst-case traffic associated with the fully complete and occupied scheme in opening and design years.

13.7.2.3 Capacity of Greenhill Roads / Mulcahy Keane Estate Priority Controlled T-Junction

We have used the TII-approved software package 'Junctions 10' PiCADY' (Priority Intersection Capacity And Delay) software package (as part of the TRL Package 'Junction 10') to assess the capacity of the junction. PiCADY produces results based on a ratio of flow to capacity (RFC) and queue length. An RFC greater than 1.00 indicates that a junction is operating at or above capacity, with 0.85 considered to be the optimum RFC value.

We have undertaken the detailed assessment of the capacity of the junction, with the entire subject development in place and fully occupied. The detailed output of the models are included herein as Appendix H of the submitted TTA, and is summarised below as Table 13.9.

Table 13.9 Greenhills Road / Mulcahy Keane Estate - Summary PICADY Results

Modelled Scenario	Period Max RFC	Period Mean Max Q (PCUs)
Opening Year 2026 AM Peak Hr	0.08	0.1
Opening Year 2026 PM Peak Hr	0.28	0.4
*Design Year 2041 AM Peak Hr	0.10	0.1
*Design Year 2041 PM Peak Hr	0.36	0.6

*While the BusConnects Proposals are planned to be in place by 2041, these results are provided for completeness

The results of the modelling clearly show that the junction will have more than adequate capacity to accommodate the worst-case traffic associated with the fully complete and occupied scheme in opening and design years.

13.7.3 Capacity of Future Road Network

13.7.3.1 Capacity of Proposed Future Site Access Priority Controlled Junction

We have used the TII-approved software package 'Junctions 10' PiCADY' (Priority Intersection Capacity And Delay) software package (as part of the TRL Package 'Junction 10') to assess the capacity of the junction. PiCADY produces results based on a ratio of flow to capacity (RFC) and queue length. An RFC greater than 1.00 indicates that a junction is operating at or above capacity, with 0.85 considered to be the optimum RFC value.

We have undertaken the detailed assessment of the capacity of the site access junction, with the entire subject development in place and fully occupied. The detailed output of the models are included herein as Appendix F of the submitted TTA, and is summarised below as Table 13.10.

Table 13.10 Future Greenhills Road / Site Access Junction - Summary PICADY Results

Modelled Scenario	Period Max RFC	Period Mean Max Q (PCUs)
*Opening Year 2026 AM Peak Hr	0.53	1.1
*Opening Year 2026 PM Peak Hr	0.39	0.6
Design Year 2041 AM Peak Hr	0.39	0.6
Design Year 2041 PM Peak Hr	0.27	0.4

*While the BusConnects Proposals are planned to be in place by 2041, these results are provided for completeness

The results of the modelling clearly show that the junction will have more than adequate capacity to accommodate the worst-case traffic associated with the fully complete and occupied scheme in opening and design years with the BusConnects proposals in place.

13.7.3.2 Capacity of Future Greenhill Roads / Greenhill Industrial Estate / Builders Suppliers Priority Controlled Staggered 4-arm junction

We have used the TII-approved software package 'Junctions 10' PiCADY' (Priority Intersection Capacity And Delay) software package (as part of the TRL Package 'Junction 10') to assess the capacity of the junction. PiCADY produces results based on a ratio of flow to capacity (RFC) and queue length. An RFC greater than 1.00 indicates that a junction is operating at capacity, with 0.85 considered to be the optimum RFC value.

We have undertaken the detailed assessment of the capacity of the junction, with the entire subject development in place and fully occupied. The detailed output of the models are included herein as Appendix G of the submitted TTA, and is summarised below as Table 13.11.

Table 13.11 Greenhills Road / Greenhill Industrial Estate - Summary PICADY Results

Modelled Scenario	Period Max RFC	Period Mean Max Q (PCUs)
*Opening Year 2026 AM Peak Hr	0.33	1.3
*Opening Year 2026 PM Peak Hr	0.51	1.0
Design Year 2041 AM Peak Hr	0.26	0.8
Design Year 2041 PM Peak Hr	0.46	0.8

*While the BusConnects Proposals are planned to be in place by 2041, these results are provided for completeness

The results of the modelling clearly show that the junction will have more than adequate capacity to accommodate the worst-case traffic associated with the fully complete and occupied scheme in opening and design years with the BusConnects proposals in place.

13.7.3.3 Capacity of Future Greenhill Roads / Mulcahy Keane Estate Priority Controlled T-Junction

We have used the TII-approved software package 'Junctions 10' PiCADY' (Priority Intersection Capacity And Delay) software package (as part of the TRL Package 'Junction 10') to assess the capacity of the junction. PiCADY produces results based on a ratio of flow to capacity (RFC) and queue length. An RFC greater than 1.00 indicates that a junction is operating at or above capacity, with 0.85 considered to be the optimum RFC value.

We have undertaken the detailed assessment of the capacity of the junction, with the entire subject development in place and fully occupied. The detailed output of the models are included herein as Appendix H of the submitted TTA, and is summarised below as Table 13.12.

Table 13.12 Future Greenhills Road / Mulcahy Keane Estate - Summary PICADY Result

Modelled Scenario	Period Max RFC	Period Mean Max Q (PCUs)
*Opening Year 2026 AM Peak Hr	0.10	0.1
*Opening Year 2026 PM Peak Hr	0.36	0.5
Design Year 2041 AM Peak Hr	0.08	0.1
Design Year 2041 PM Peak Hr	0.28	0.4

*While the BusConnects Proposals are planned to be in place by 2041, these results are provided for completeness

The results of the modelling clearly show that the junction will have more than adequate capacity to accommodate the worst-case traffic associated with the fully complete and occupied scheme in opening and design years with the BusConnects proposals in place.

13.7.3.4 Capacity of Future Calmount Road / Calmount Avenue Signal Controlled Junction

We have used the TII-approved software package LiNSIG (Linked Signal Design) software package to assess the capacity of the proposed junction with the entire completed development. LiNSIG produces results based on a Degrees of Saturation (DoS) and Mean Max Queues. A DoS greater than 100% indicates that a junction is operating at or above maximum capacity, with 90% considered to be the optimum DoS value for signal junction operation.

We have undertaken the detailed assessment of the capacity of the junction, with the entire subject development in place and fully occupied. The detailed output of the models are included herein as Appendix I of the submitted TTA, and is summarised below as Table 13.13.

Table 13.13 Calmount Road / Calmount Avenue - Summary LiNSig Results

Modelled Scenario	Period Max DoS	Period Mean Max Q (PCUs)
Opening Year 2026 AM Peak Hr	77.4%	22.6
Opening Year 2026 PM Peak Hr	78.2%	24.2
Design Year 2041 AM Peak Hr	66.4%	15.0
Design Year 2041 PM Peak Hr	67.7%	17.6

The results of the modelling clearly show that the junction will have more than adequate capacity to accommodate the worst-case traffic associated with the fully complete and occupied scheme in opening and design years with the BusConnects proposals in place

13.7.4 Additional predicted Impacts

Following the Assessment, the residual impacts are actually expected to be positive, with increased pedestrian and cyclist activity, with an increased demand for public & alternative transport created through contributing to a vibrant sustainable active Employment Destination.

13.7.5 Do-Nothing Scenario

Given that the Do-Nothing Scenario results in no change whatsoever in the existing established Traffic & Transportation demands or conditions, there are no predicted impacts considered applicable.

13.8 Monitoring

The following monitoring measures will be put in place for the development:

- A visual condition survey (VCS) will be carried out of all surrounding streets prior to any site works commencing.

- The lead contractor will liaise with the Environment & Transportation Department of South Dublin County Council to agree any changes to load restrictions and construction access routes for the site as part of the contractor refinement of the CTMP.
- All site entrances and temporary roads will be continuously maintained for emergency vehicle access.
- The following measures will be taken to ensure that site, public roads and surroundings are kept clean and tidy:
 - A regular program of site tidying will be established to ensure a safe and orderly site.
 - Scaffolding will have debris netting attached to prevent materials and equipment being scattered by the wind.
 - Food waste will be strictly controlled on all parts of the site;
 - Mud spillages on roads and footpaths outside the site will be cleaned regularly and will not be allowed to accumulate.
 - Wheel wash facilities will be provided for vehicles exiting the site.
 - In the event of any fugitive solid waste escaping the site, it will be collected immediately and removed.
- Normal post-planning consultation and liaison with the Local Authority will be undertaken to ensure that any adverse impacts of the proposed development are minimised and reviewed.

13.9 Reinstatement

There are no planned or proposed external traffic/transportation related works that will result in a requirement for reinstatement.

13.10 Interactions and Potential Cumulative Impacts

13.10.1 Interactions

Information was provided to AWN in terms of Operational Traffic and Construction Traffic to allow the Air and Noise Assessments to be undertaken. In addition, NRB were part of the design team that advised in relation to the layout and design of the proposed facility.

13.10.1.1 Material Assets: Waste Management

Local traffic and transportation will be impacted by the additional vehicle movements generated by removal of waste from the Site during the construction and operational phases of the proposed Development. The increase in vehicle movements as a result of waste generated during the construction phase will be temporary in duration. There will be an increase in vehicle movements in the area as a result of waste collections during the operational phase, but these movements will be imperceptible in the context of the overall traffic and transportation increase.

13.10.1.2 Air Quality & Climate

Interactions between air quality and traffic can be significant. With increased traffic movements and reduced engine efficiency, i.e. due to congestion, the emissions of vehicles increase. The impacts of the proposed development on air quality are assessed by reviewing the change in AADT on roads close to the site. In this assessment, the impact of the interactions between traffic and air quality during both construction and operational phases are considered to be imperceptible. Refer to Chapter 12 for Air Quality.

13.10.2 Potential Cumulative Impacts

Cumulative effects can be defined as the effects on the environment that result from incremental changes caused by the combination of the proposed development together with other past, present and reasonably foreseeable future developments. Cumulative effects may arise from:

- The interaction between the various impacts within a single project.
- The interaction between all the different existing and/or approved projects in the same area as the proposed project.

This section sets out the interaction that the proposed development has with different existing and / or approved projects in the same area.

13.10.2.1 Approved Plans / Projects

At the time of preparing this EIAR, there are currently no approved plans or projects in the vicinity of the Proposed Development which significantly interact with the proposed development with respect to Material Assets: Transportation.

13.10.2.2 Future Plans

The proposed site access junction has been designed to accommodate the future BusConnects proposals and has been set back to accommodate a future cycle lane and pedestrian footpath within the applicant's lands.

13.10.2.3 Operational Phase

The cumulative impact of the Operational Development has been assessed in accordance with the TII Guidelines for Traffic/Transport Assessment, based on a thorough traffic survey of the affected road network, and it has been determined to be negligible in the context of the established network flows.

14.0 MATERIAL ASSETS - UTILITIES

14.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) evaluates the potential impacts that the Proposed Development may have on a range of Material Assets as defined in the EPA Guidelines 'Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022).

The EPA Guidance (EPA, 2022) discuss material assets as follows: " In Directive 2011/92/EU this factor 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 transport infrastructure. Sealing of agricultural land and effects on mining or quarrying potential come under the factors of land and soils."

The EPA Guidelines (EPA, 2022) specifically lists and provides sample headings and topics for material assets that include: Roads and Traffic, (Construction Phase, Operational Phase, Unplanned Events [i.e. Accidents]), Built Services (Electricity, Telecommunications, Gas, Water Supply Infrastructure, and Sewerage), Waste Management (Construction Waste, and Operational Waste).

The impact assessment presented in this chapter aims to identify potential impacts that have not been previously addressed in other sections of the EIA report.

The purpose of this chapter is to identify and evaluate any potential significant impacts that the Proposed Development may have on these utilities, such as damage to infrastructure or disruptions to essential services. By conducting this assessment, appropriate mitigation measures can be developed and implemented to minimise any negative impacts and ensure that the development project is carried out in an environmentally responsible manner.

This chapter has been prepared by David Doran. David is a Senior Environmental Consultant with AWN Consulting. David has a MSc in Environmental and Energy Management (Hons). Recent roles include; project management of commercial and infrastructural EIARs, EIA Screening Reports, various EIAR Chapters, Operational and Resource Waste Management Plans for residential developments, office developments, logistics park developments and other, commercial, and industrial developments. David also works in the area of construction environmental compliance.

14.2 Research Methodology

In this EIAR, the impacts on the material assets described in the above guidance have already been considered in the following chapters and therefore these aspects will not be addressed in specific detail within this chapter.

- Chapter 4 – Population and Health;
- Chapter 6 - Land, Soils, Geology and Hydrogeology;
- Chapter 7 – Hydrology;
- Chapter 8 – Noise and Vibration;
- Chapter 9 - Air Quality;
- Chapter 10 – Climate;
- Chapter 12 – Material Assets – Waste
- Chapter 13 – Material Assets – Traffic.
- Chapter 15 – Archaeological, Architectural and Cultural Heritage;

This chapter assesses material assets major infrastructure and utilities which have not already been addressed elsewhere in this EIAR. The potential impacts, if any, are assessed in terms of the following:

- Land Use, Property, and Access.
- Power and Electrical Supply.
- Telecommunications.
- Surface water infrastructure.
- Foul drainage infrastructure.

- Potable Water infrastructure, and
- Natural Gas infrastructure

Detailed water supply and drainage design information and details of consultation with utility suppliers is provided in the *Engineering Services Report* prepared by Lohan and Donnelly Engineers which accompanies the planning application. The assessment of impact on utilities is considered with respect to the availability and capacity within the utility network(s) and consultation with ESB Networks, Telecommunication Companies and Uisce Éireann.

14.3 Receiving Environment

The proposed drainage infrastructure has been described in Chapter 2 (Project Description and Alternatives Examined) and Chapter 7 (Water and Hydrology). Detailed water supply and drainage design information is provided in the *Engineering Services Report* prepared by Lohan & Donnelly Consulting Engineers, which accompanies the planning application.

The associated built services and infrastructure in the vicinity of the site are summarised in the following sections.

14.3.1 Power and Electrical Supply

The proposed development site has an existing connection into the local ESB network.

There are no known existing ESB overground and underground infrastructure crossing through the proposed development site (Lohan & Donnelly, 2021). There are ESB 10 kV Underground Cables adjacent to the Site that will not be impacted by the proposed development.

There is an existing ESB Substation on the proposed development site. This Substation will be relocated as part of the proposed development works.

The power supply infrastructure for the operational development will require an extension of the existing power supply infrastructure that is currently in place. This planning application includes for the construction of a three ESB substations.

14.3.2 Telecommunications

The proposed development site currently has live telecommunications network supply around the perimeter of the site.

14.3.3 Surface Water Infrastructure

Uisce Éireann drainage record map shows an existing 225mm diameter surface water sewer located on the access road east of the development, parallel to the Chadwicks Plumb Centre. The sewer commences near the junction of the access road and Greenhills Road and continues towards the south-east direction. Uisce Éireann drainage record map can be found in the *Engineering Services Report* accompanying this application prepared by Lohan & Donnelly Consulting Engineers.

14.3.4 Foul Drainage Infrastructure

Uisce Éireann drainage record map shows an existing 225mm diameter foul water sewer located in close vicinity to the proposed development. The sewer originates from south-eastern direction, wraps around the outside of the southern and eastern site boundary and turns north-east, continuing towards the Walkinstown roundabout. Uisce Éireann drainage record map can be found in the *Engineering Services Report* accompanying this application prepared by Lohan & Donnelly Consulting Engineers.

14.3.5 Water Supply

Uisce Éireann drainage record maps indicate a 101.6mm uPVC water main inside the site boundary, situated within the western part of the development. The water main is shown to have two separate extensions, one extension connected perpendicularly to the existing water main parallel to the southern site boundary, the other connected to the existing water main south-west of the development.

The existing water main was serving the previous development which is to be demolished for the following reasons:

1. Existing water main layout is not compliant with Uisce Éireann's code of practice or the structural layout of the proposed development (i.e. existing water main is currently located under the proposed structures).
2. Existing water main does not have sufficient capacity to service the new proposed development.

Furthermore, another existing water main is present in the northern part of the development. This water main is 1200mm in diameter and traverses the site, entering from middle-north and exiting in the north-east corner of the development.

The layout of the development ensures that this existing pipe is protected, and adequate separation distances are provided between Uisce Éireann infrastructure and any structures on site. To achieve this a 7.5m, unobstructed wayleave either side of the pipe will be provided, to ensure that the existing water main is accessible for any potential future maintenance. For details, refer to drawing "20189-LDE-07-00-DR-SC-1C01a".

14.4 Characteristics of the Proposed Development

14.4.1 Construction Phase

Power and Electrical Supply

The current electricity facilities on the site of the proposed development are supplied by the ESB through a ring network. All electrical works, including connection to the ESB network will be carried out by a suitably qualified contractor.

Telecommunications

Telecommunications including fibre required during the construction phase will be provided via a mobile connection or temporary connection to the nearby telephone network.

Surface Water, Foul Drainage Infrastructure and Water Supply

Welfare facilities (canteens, toilets etc.) will be available within the construction compound and this will remain in place for the construction of the proposed development. Subject to agreement with SDCC, foul water from the offices and welfare facilities on the site will discharge into the existing sewer via a temporary connection from the proposed development site.

The works contractor will be required to apply for connection to discharge any contaminated surface water which collects in excavations, if it is required. The works contractor will be obliged to comply with any conditions of the discharge license to control discharge quality and rate of flow.

Before connections are established to the water supply it may need to be trucked onto site. As with electrical works, this will be carried out by a suitably qualified contractor. It will be necessary to service the site with a reliable and safe water supply. Approval for temporary connections to the water supply will be sought from Uisce Éireann by the contractor.

If any stormwater collects in the excavations during construction, it will need to be discharged to sewer. Any discharge water will be treated using a Siltbuster or similar to remove suspended solids prior to discharge.

14.4.2 Operational Phase

Power and Electrical Supply

As stated in Section 14.3.1, the power supply for the proposed development (once operational) will be provided via an extension of the existing power supply infrastructure currently in place. This planning application includes the construction of 3 no. new ESB substations. The proposed ESB substations will provide the power supply to the proposed development. A formal application to confirm the nature of the ESB supply is made once the formal address of the residential development is agreed with South

Dublin County Council. The power from the substation(s) will distribute underground to service the apartment blocks.

As per the *Building Life Cycle Report* prepared by Homan O'Brien Engineering, which has been submitted with the documents for the planning application, the proposed development will be constructed to high building standards and will provide a sustainable, energy efficient area for future occupants.

Telecommunications

New Telecom Distribution Ductwork will be installed on the site to facilitate Telecom Connections to the proposed development.

Surface water infrastructure

The surface water drainage infrastructure for the proposed development has been designed and will be constructed in accordance to "Greater Dublin Strategic Drainage Study (GDSDS) Regional Drainage Policies Technical Document – Volume 2, New Developments, 2005, "Greater Dublin Regional Code of Practice Works" and the Building Regulation requirements. It is proposed to provide a 225 mm diameter surface water pipe to service the proposed development. Surface water collected from hardstanding areas will ultimately discharge into an existing 225mm surface water sewer. For connection details, refer to drawing "20189-LDE-07-00-DR-SC-1C01a".

Lohan & Donnelly Consulting Engineers have estimated the peak dry weather flow (6DWF) is 20.064 l/s.

The proposed development will implement sustainable urban drainage systems (SuDS) as an approach to manage the surface water within the site in accordance with current guidance document for "Greater Dublin Regional Code of Practice for Drainage Works". These SuDS reduce, delay and purify the run-off from the site, hence lowering the strain and the pollution content on the existing public sewer. Measures being incorporated into the design include Extensive Green Roofs, Intensive Green Roofs, Permeable Paving, Porous Asphalt, Petrol Interceptor, a Attenuation Tank, Rain Gardens, Tree Pits and Hydrobrakes.

To ensure that the existing surface water sewer is not over capacitated, the flow of surface water leaving the last manhole "SW02" on site (as per Greater Dublin Regional Code of Practice for Drainage Works, Rev 6) will be limited to 8.021 l/s via a hydro-brake, a flow control device capable of managing the flow rate of water. Refer to Appendix E & F of the Engineering Services Report (Lohan & Donnelly, 2024) for Q-Bar and run-off calculations.

For full details refer to see the *Engineering Services Report* accompanying this application prepared by Lohan & Donnelly Consulting Engineers.

Foul drainage infrastructure

The foul water drainage infrastructure for the proposed development has been designed and is to be constructed in accordance to Uisce Éireann "Code of Practice for Wastewater Infrastructure (Document IW-CDS-5030-03)", "Wastewater Infrastructure Standard Details (Document IW-CDS-5030-01)" and the Building Regulation requirements.

To service the development, a 300mm diameter foul water pipe will be installed, commencing from the south-west corner of the site. The foul water flows towards the existing foul water main located south-east of the site, on the access road parallel to the southern site boundary, discharging all the foul water generated from the proposed development. For connection details, refer to drawing "20189-LDE-07-00-DR-SC-1C01a". Lohan & Donnelly Consulting Engineers have estimated the peak dry weather flow (6DWF) for the foul water as 20.064 l/s. For full flow rate calculations refer to the *Engineering Services Report* accompanying this application prepared by Lohan & Donnelly Consulting Engineers.

A pre-connection enquiry has been submitted to Uisce Éireann (Reference No. CDS23008409) on the 6th of November, 2023 for connection to the mains foul water. Uisce Éireann responded on 8th of January, 2024 to confirm that the connection is feasible subject to upgrades.

Water supply

The water main infrastructure for the proposed development has been designed and is to be constructed in accordance to Uisce Éireann's "Code of Practice for Water Infrastructure (Document IW-CDS-5020-01)", "Water Infrastructure Standard Details (Document IW-CDS-5020-03)" and the Building Regulation requirements.

To service the development, it is proposed to provide a 200mm MDPE (medium density polyethylene) type PE-80 water main. The water main will be connected to the plant rooms in each building where the water distribution system is located, distributing the water to the apartment complexes. To comply with guidance specification for fire hydrants, offline and on-line fire hydrants will be provided along the water main to provide full coverage of the proposed development in the event of a fire. The water main will exit the proposed development in the north-east corner and connect to the newly laid 200mm diameter water main as per the conditions set out in Uisce Éireann's confirmation of feasibility letter. Prior to exiting the site, a boundary box and telemetry kiosk will be installed to measure the water usage for the development.

A pre-connection enquiry has been submitted to Uisce Éireann (Reference No. CDS23008409) on the 6th of November, 2023 for connection to the mains water supply. Uisce Éireann responded on 8th of January, 2024 to confirm that the connection is feasible subject to upgrades.

In order to achieve a feasible water main connection for the development, a new 200mm ID ductile iron water main is to be laid for approximately 500 meters. The new water main is to be parallel to the existing 150mm uPVC water main located on Greenhills road. The newly laid water main will be used as a connection point for the proposed development.

The applicant will enter into agreement to contribute to the extension works, that will be undertaken by Uisce Éireann.

For further details on water supply please refer to the *Engineering Services Report* accompanying this application prepared by Lohan & Donnelly Consulting Engineers.

14.5 Potential Impact of The Proposed Development

14.5.1 Construction Phase

Power and Electrical Supply

During construction, contractors will require power for heating and lighting of the site and their onsite accommodation. In addition, some on site equipment/plant will require power.

A construction compound, including a materials and equipment storage area, a site office, and staff welfare facilities will be established for the construction phase. Electricity will be provided to the site via temporary connection. The power requirements for the construction phase will be relatively minor and therefore the power demand for the construction phase would have a potential **short term, neutral and imperceptible** impact.

Telecommunications

Telecommunications including fibre required during the construction phase will be provided via a mobile connection or temporary connection to the nearby telephone network.

The potential impact is **short-term, neutral and imperceptible** in respect of telecommunication supply for the construction phase.

Surface Water Infrastructure

During the construction phase, there is potential for an increase in run-off due to the introduction of impermeable surfaces and the compaction of soils. This will reduce the infiltration capacity and increase the rate and volume of direct surface run-off. The potential impact of this is a possible increase in surface water run-off and sediment loading which could potentially impact local stormwater networks if not

controlled adequately. Run-off containing large amounts of silt can cause damage to surface water systems and receiving watercourses.

It is not anticipated that there will be any interruptions to service in existing surface water sewers, but should interruptions be anticipated, they will be agreed in advance.

The potential impacts on surface water infrastructure are **moderate, negative, and short term** for the construction phase, and mitigation measures will be required.

Foul Drainage Infrastructure

Welfare facilities (canteens, toilets etc.) will be required for the construction crew. Portable toilets will be provided onsite for construction staff.

A temporary connection for foul water drainage to the public foul sewer during construction phase is anticipated. Prior to this, removal of foul waste from temporary portable toilets and welfare facilities will be undertaken by a licenced waste contractor. It not anticipated that the temporary connection would have any offsite impact, as foul water would be treated at Ringsend Waste Water Treatment Plant. The construction phase of the proposed development is anticipated to have a lessor impact that the operational phase therefore there it is anticipated would be sufficient capacity for the foul water drainage from the during construction, subject to temporary connection agreement.

The potential impact will be **short-term, neutral** and **imperceptible** in respect of foul drainage for the duration of the construction phase.

Water Supply

A temporary connection to the mains water supply will be established for the construction phase. The demand during the construction phase is not expected to be significant enough to affect existing pressures.

The potential impact will be **short-term, neutral** and **imperceptible** in respect of water supply for the proposed development for the duration of the construction phase.

14.5.2 Operational Phase

Power and Electrical Supply

During operations, the proposed development will be powered through the proposed onsite substation(s). It is anticipated that due the residential nature of the development that there would not be a significant demand for electricity, therefore it is assumed that there is sufficient capacity available in the network to accommodate the development.

It is not anticipated that the proposed connection will impact or reduce the capacity available within the local network to support the neighbouring area. A formal application to confirm the nature of the ESB supply is made once the formal address of the residential development is agreed with SDCC.

As per the *Building Life Cycle Report* prepared by Homan O'Brian Engineering, which has been submitted with the documents for the planning application, the proposed development will be constructed to high building standards and will provide a sustainable, energy efficient area for future occupants.

The potential impact is **long-term, neutral, imperceptible** with respect to with power and electrical supply for the proposed development for the operational phase.

Telecommunications

As stated in Section 14.4.2, the proposed development will make a connection to the existing public network at the site, and there is no perceptible impact on the existing telecommunications infrastructure.

It is assumed that there is sufficient capacity available in the network to accommodate the development, so there are **no potential impacts** associated with telecommunications for the proposed development for the operational phase.

Surface Water Infrastructure

The operational phase of the development represents an increase in hardstanding area that, if not properly mitigated, has the potential to cause an increase in surface water run-off and flooding offsite and downstream of the development site. In addition, silty water or water contaminated with hydrocarbons can arise from hardstand areas and carparks. During operations the potential exists for chemical spills or leaks during loading, unloading, movement of waste and their containers within buildings on the proposed development site.

The design of the proposed development includes design mitigation, as set out in Section 14.7.2 below, to address these potential impacts. In the absence of these designed mitigations, the potential impact associated with surface water for the operational phase is **moderate, negative** and **long-term**.

Foul Drainage Infrastructure

During the operational phase the foul water generated from the site will ultimately discharge to the Ringsend WWTP for adequate treatment. Uisce Éireann have confirmed through the PCE that there is a connection to the network is feasible, subject to upgrade works, and connection agreement.

There are **no potential impacts** associated with foul drainage for the proposed development for the operational phase.

Water Supply

If insufficient pressure is available in the public watermains network to accommodate the demand, existing customers in the area may experience a drop in water pressure below the service level required. However, this will not arise as addressed in Section 14.7.2.

The proposed network connection will be metered, with associated hydrants and valves as per Uisce Éireann requirements. As the connection works will be approved to ensure there is capacity for water supply to the proposed development, it is not anticipated that this would have any perceptible offsite impact.

Uisce Éireann have confirmed through the PCE that there is available supply within the network for the proposed development. Uisce Éireann is the National Authority for water management and should there have been an inadequate supply this would have been confirmed to the developer during consultation.

There are **no potential impacts** associated with water supply for the proposed development for the operational phase.

14.6 Do Nothing' Impact

If the proposed development did not proceed, there would be no use of material assets at the site. As such, there would be a neutral effect on the environment.

14.7 Mitigation Measures

14.7.1 Construction Phase

Ongoing consultation with Uisce Éireann, Eirgrid, ESB Networks and other relevant service providers will ensure a smooth construction schedule without disruption to local and business community. Best practice measures shall be put in place to ensure that there are no interruptions to these utilities, unless this has been agreed in advance.

Power and Electricity Supply

The power demand for the construction phase will be relatively minor and the connection works are entirely within proposed site boundaries.

The excavation of trenches within the vicinity of existing electrical services will be carried out in consultation with ESB Networks to ensure there is no impact on existing users.

Once the construction of the unit substations is completed, ESB Networks will complete the commissioning in accordance with the statutory requirements.

Telecommunications

The existing telecommunications will be extended from the perimeter of the site to the proposed development. Strict quality control measures will be undertaken while laying telecommunications cables. The connection into the wider telecommunications network will be undertaken by a statutory telecommunications operator.

Surface Water Infrastructure

A temporary drainage system shall be installed prior to the commencement of the construction works to collect surface water runoff by the site during construction. Run-off water containing silt will be contained on site to ensure adequate silt removal. It is not anticipated that there will be any interruptions to service in existing surface water sewers, but should interruptions be anticipated, they will be agreed in advance.

Should any discharge of construction water be required during the construction phase, discharge will be to foul sewer. Pre-treatment and silt reduction measures on site will include a combination of silt fencing, settlement measures (silt traps, 20 m buffer zone between machinery and watercourses/ stormwater sewer/ drainage ditch, refuelling of machinery off site) and hydrocarbon interceptors.

Strict quality control measures will be undertaken while laying pipes to minimise or eradicate infiltration (where existing water in the ground enters the surface water infrastructure) and ex-filtration (where water in the surface water infrastructure escapes into the ground).

Foul Drainage Infrastructure

Prior to temporary connection of the foul drainage to the public network, approval will be given to ensure there is enough capacity in the public network for the proposed development's foul water discharge.

The works contractor will be obliged to put a number of measures in place to ensure that there is no impact on the public network during the construction works. Foul drainage for the proposed development will be in accordance with the Building Regulations Technical Guidance Document H for design and construction. Strict quality control measures will be undertaken while laying pipes to minimise or eradicate infiltration and ex-filtration.

Water Supply

A temporary connection will be put in place for the construction phase.

The works contractor will be obliged to put best practice measures in place to ensure that there are no interruptions to service from the public watermain. It is not anticipated that there will be any interruptions to service from the public watermain, but should interruptions be anticipated, they will be agreed in advance.

Strict quality control measures will be undertaken while laying pipes to minimise or eradicate infiltration and ex-filtration.

14.7.2 Operational Phase

Power and Electricity Supply

In circumstances where consultation with ESB Networks, EirGrid or another relevant service provider has taken place, the proposed work will be in line with their requirements or guidelines. Therefore, no mitigation measures are required in relation to Power and Electricity Supply.

Telecommunications

The connection into the wider telecommunications network will be undertaken by a statutory telecommunications operator. In circumstances where statutory telecommunications operator is in compliance with their requirements and guidelines continues. Therefore, no mitigation measures are required in relation to telecommunications.

Surface Water Infrastructure

As mentioned in Section 14.4.2, the surface water drainage system for the proposed development incorporates the designed SuDS mitigation measures.

These measures include Extensive Green Roofs, Intensive Green Roofs, Permeable Paving, Porous Asphalt, Petrol Interceptor, a Attenuation Tank, Rain Gardens, Tree Pits and Hydrobrakes. Implementation of these measures will prevent an increase in surface water flow offsite.

The allowable runoff rate has been established by the project engineers, Lohan & Donnelly Consulting Engineers, using the methodology set out in the *Engineering Services Report*. To ensure that the existing surface water sewer is not over capacitated, the flow of surface water leaving the last manhole "SW02" on site (as per Greater Dublin Regional Code of Practice for Drainage Works, Rev 6) will be limited to 8.021 l/s via a hydro-brake, a flow control device capable of managing the flow rate of water. Refer to Appendix E & F of the Engineering Services Report (Lohan & Donnelly, 2024) for Q-Bar and run-off calculations.

Foul Drainage Infrastructure

As discussed in Section 14.4.2 above, Uisce Éireann have provided a CoF for the wastewater requirements for the development (which are detailed in the *Engineering Services Report* prepared by Lohan & Donnelly Consulting Engineers, which accompanies the planning application) can be accommodated, subject to upgrades.

Foul drainage for the proposed development will be in accordance with the relevant standards for design and construction, including the Uisce Éireann Code of Practice for Wastewater Infrastructure, The Building Regulations Technical Guidance Document (TGD) 'Part H' & the Regional Code of Practice for Drainage Works. It will be necessary to carry out further detailed study and investigations to confirm the available capacity and to determine the full extent of any upgrades which may be required to be completed to Uisce Éireann Infrastructure, prior to agreeing to the proposed connection.

No mitigation measures are required in relation to foul drainage infrastructure during the operational phase.

Water Supply

The proposed development will be connected to a 200mm MDPE (medium density polyethylene) type PE-80 water main. The proposed network connection will be metered, with associated hydrants and valves as per Uisce Éireann requirements. As the connection works will be approved to ensure there is capacity for water supply to the proposed development, it not anticipated that this would have any perceptible offsite impact.

As discussed in Section 14.4.2 above, Uisce Éireann have provided a CoF for the water requirements for the development (which are detailed in the *Engineering Services Report* prepared by Lohan & Donnelly Consulting Engineers, which accompanies the planning application) can be accommodated, subject to upgrades. No mitigation measures are required in relation to water supply during the operational phase.

14.8 Predicted Impacts Of The Proposed Development

14.8.1 Construction Phase

Power and Electricity Supply

The predicted impacts associated with power and electricity supply for the proposed development will be **short-term**, **neutral** and **imperceptible** for the construction phase.

Telecommunications

The predicted impacts associated with telecommunications for the proposed development will be **short-term, neutral** and **imperceptible** for the construction phase.

Surface Water Infrastructure

The works contractor will ensure appropriate actions are undertaken to ensure that there are no interruptions to service in public surface water sewers and private drains. It is not anticipated that there will be any interruptions to service in public surface water sewers and private drains, but should interruptions be anticipated, they will be agreed in advance.

After the implementation of mitigation measures as set out in section 14.7.1 above, the predicted impact will be **short-term, neutral** and **imperceptible** for the construction phase.

Foul Drainage Infrastructure

As detailed in Chapter 7 (Water and Hydrology), with the implementation of the construction mitigation measures no negative residual impacts to water quality are anticipated.

Strict quality control measures will be undertaken while laying pipes to minimise or eradicate infiltration and ex-filtration.

The predicted impact will be **short-term, neutral** and **imperceptible** for the construction phase.

Water Supply

A temporary connection will be put in place for the construction phase. As the connection works are approved to ensure there is capacity within the public watermain, there will be no offsite impact. The works contractor will be obliged to put best practice measures in place to ensure that there are no interruptions to service from the public watermain. It is not anticipated that there will be any interruptions to service from the existing water main, but should interruptions be anticipated, they will be agreed in advance with Uisce Éireann.

Strict quality control measures will be undertaken while laying pipes to minimise or eradicate infiltration and ex-filtration.

The predicted impact will be **short-term, neutral** and **imperceptible** for the construction phase.

Predicted Impact – Construction Phase

The implementation of mitigation measures detailed in Section 14.7.1 will ensure that the overall predicted impacts on the material assets described above will be **short-term, neutral** and **imperceptible** for the construction phase.

14.8.2 Operational Phase

Power and Electrical Supply

It is predicted that there will be a **long-term, neutral, imperceptible** effect on power and electrical supply during the operational phase of the proposed development.

Telecommunications

There are no predicted impacts associated with telecommunications for the proposed development for the operational phase.

Surface Water Infrastructure

With the implementation of mitigation as described in Section 14.7.2, the predicted impact on the existing surface water infrastructure will be **long-term, neutral** and **imperceptible** for the operational phase.

Foul Drainage Infrastructure

As discussed in Section 14.4.2 above, Uisce Éireann have provided a CoF for the wastewater requirements for the development (which are detailed in the *Engineering Services Report* prepared by Lohan & Donnelly Consulting Engineers, which accompanies the planning application) can be accommodated, subject to upgrades.

It is anticipated that no mitigation measures will be required in relation to foul drainage infrastructure as treatment is undertaken off site at Ringsend. There are no predicted impacts associated with foul water drainage for the proposed development for the operational phase.

Water Supply

As discussed in Section 14.4.2 above, Uisce Éireann have provided a CoF for the water requirements for the development (which are detailed in the *Engineering Services Report* prepared by Lohan & Donnelly Consulting Engineers, which accompanies the planning application) can be accommodated, subject to upgrades.

It is anticipated that no mitigation measures will be required in relation to water supply infrastructure as the connection with Uisce Éireann is feasible. There are no predicted impacts associated with water supply for the proposed development for the operational phase.

Predicted Impact – Operational Phase

The implementation of mitigation measures detailed in Section 14.7.2 will ensure that the predicted impacts on the material assets will be **long-term, neutral** and **not significant**.

14.9 Monitoring

During construction phase the following monitoring measures will be considered:

- Regular inspection of surface water run-off and sediments controls e.g. silt traps will be carried during the construction phase.
- Soil sampling to confirm disposal options for excavated soils in order to avoid contaminated run-off.
- Regular inspection of construction/mitigation measures will be undertaken e.g. concrete pouring, refuelling etc.

Maintenance of the surface water drainage system, including hydrocarbon interceptors, and foul sewers as per normal urban developments is recommended to minimise any accidental discharges to surface water.

14.10 Reinstatement

No reinstatement is required.

14.11 Cumulative Impacts Of The Proposed Development

This section considers the potential cumulative impacts or effects on the environment of the proposed development with other existing, planned and permitted developments in the locality.

Cumulative impacts or effects are changes in the environment that result from numerous human-induced, small-scale alterations. Cumulative impacts can be thought of as occurring through two main pathways: first, through persistent additions or losses of the same materials or resource, and second, through the compounding effects as a result of the coming together of two or more effects.

The cumulative impact (as far as practically possible) of the proposed development with any/all relevant existing or permitted developments as set out in Chapter 3 (Planning and Development Context). The likelihood of cumulative effects is discussed in Sections 14.11.1 and 14.11.2 below for construction and operational phases.

14.11.1 Construction Phase

The proposed development entails minimal use of material assets during construction therefore there is limited opportunity for the causation of cumulative impacts during the construction phase of the proposed development in combination with other planned or permitted developments (as described in Chapter 3 (Planning and Development Context)).

In summary, based on the consideration above cumulative impact of the proposed development will be **neutral, imperceptible, and short term** for the construction phase.

14.11.2 Operational Phase

Once operational, the proposed development will result in minimal impact on telecommunications, surface water, foul drainage and water infrastructure.

The proposed development will connect to existing telecommunications, surface water, foul drainage and water supply infrastructure adjacent or in close proximity to the proposed development site (refer to the *Engineering Services Report* prepared by Lohan & Donnelly Consulting Engineers).

The existing and permitted projects set out in Chapter 3 (Planning and Development Context), are considered as part of the exiting baseline environment in respect of material assets considered within this chapter.

As state above Uisce Éireann have confirmed through the PCE (ref: CDS23008409) that there is available supply within the network foul water and potable water for the proposed development. Uisce Éireann is the National Authority for water management and should there have been an inadequate supply this would have been confirmed to the developer during consultation.

The location of the proposed has access to existing utilities and, through confirmation by utilities suppliers the proposed will not have an impact on capacity for off site development. Therefore, the proposed development will result in **imperceptible** impacts on material assets therefore there is limited potential for cumulative impacts with any other developments within the study area. In summary, based on the consideration above, it is predicted that the cumulative impact of the proposed development with other existing and or permitted developments is considered to be **long-term** and **imperceptible** during the operational phase.

14.12 Interactions

Interactions are addressed in Chapter 16 of this EIA Report.

Adherence to the mitigation measures outlined in Section 14.7.1 and 14.7.2 will ensure that there are no significant impacts on material assets as a result of the construction or operational phases of the proposed development.

14.13 Difficulties Encountered In Compiling

There were no difficulties encountered during the production of this chapter of the EIAR.

14.14 References

- Directive 2014/52/EU of the European Parliament and of 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
- Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment
- Environmental Protection Agency (EPA) 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' (2022)
- Lohan & Donnelly. Engineering Services Report. 2024.

15.0 ARCHAEOLOGY, ARCHITECTURAL AND CULTURAL HERITAGE

15.1 Introduction

Cultural Heritage has been defined by UNESCO as “the legacy of physical artefacts and intangible attributes of a group or society that are inherited from past generations, maintained in the present and bestowed for the benefit of future generations” (Tangible Cultural Heritage, UNESCO <http://www.unesco.org/new/en/cairo/culture/tangible-cultural-heritage>). Cultural Heritage is assumed to include all humanly created features on the landscape, including portable artefacts, which might reflect the prehistoric, historic, architectural, engineering and/or social history of the area. Where appropriate, it also includes for non-physical aspects of heritage, such as history, linguistics, folklore, etc.

The Heritage Act (1995) contains a list of various aspects of heritage, including archaeological monuments and objects, architectural heritage, fauna, flora, geology, heritage gardens and parks, heritage objects, inland waterways, landscapes, monuments, seascapes, wildlife habitats, and wrecks. This chapter discusses the receiving environment from a Cultural Heritage perspective. It provides information with respect to previously identified baseline data and assesses the impact of the proposals on identified sites and areas of Cultural Heritage interest and/or potential.

This chapter has been prepared by Martin Byrne, Byrne Mullins & Associates, who has in excess of 30 years' experience in preparing Archaeological and Cultural Heritage Assessments. Martin Byrne holds a BA (UCC) in Archaeology and History and an MA (UCC) in Archaeology, together with a Diploma in EIA Management (UCD) and was a member of the National Monuments Service Expert Advisory Committee (2009-2010) tasked with reviewing the proposed National Monuments (Consolidated) Act with respect to the area of Monument Protection and to bring forward proposals for associated statutory regulations; he is founding Board Member and former Chairperson of the Institute of Archaeologists of Ireland (IAI) and represented the IAI on the Royal Irish Academy Standing Committee for Archaeology (2014-2018). He is currently a company member of The Discovery Programme – Centre for Irish Archaeological Research, representing the IAI.

15.1.1 Definition of Study Area

The subject development lands (red-line boundary) and an area of 500m surrounding such lands were determined to be the Study Area for Cultural Heritage. The extent of the Cultural Heritage Study Area was chosen to reflect an appropriate context for the development, beyond which it was considered that a development of this nature would have no direct/indirect impacts.

15.2 Research Methodology

The overall Cultural Heritage components of the study comprise the results of a survey and evaluation of sites of archaeological and architectural heritage architectural potential within, and in the immediate environs of, the proposed development area, together with historical research of the subject area and environs. The work consists of the results of a paper survey and site inspection

15.2.1 Paper Survey

As part of a documentary/cartographic search, the following principal sources were examined from which a list of sites and areas of Cultural Heritage interest/potential was compiled:

- Record of Monuments and Places – Co. Dublin (RMP)
- Sites and Monuments Record of the Archaeological Survey of Ireland (SMR) – www.archaeology.ie
- Topographical Files of the National Museum of Ireland
- Annual Archaeological Excavations Bulletin – www.excavations.ie
- Aerial Photographic & Cartographic Archive of the Ordnance Survey of Ireland – www.osi.ie
- National Inventory of Architectural Heritage (NIAH) – www.buildingsofireland.ie
- Placenames Commission – www.logainm.ie
- Documentary and cartographic source material (see Appendix 14.1)
- South Dublin County Development Plan 2022 – 2028
- Heritage Council Heritage Maps – www.heritagemaps.ie
- National Folklore Collection (The School's Collection) – www.duchas.ie

15.2.1.1 Site Inspection

A detailed survey of the site was undertaken in November 2021.

15.2.1.2 Difficulties Encountered

No significant difficulties were encountered with respect to the preparation of the Paper Survey or subsequent Site Inspection Survey.

15.3 Receiving Environment

15.3.1 Local Historical Background

The subject development lands form part of the townland of Greenhills, in the civil parish of Crumlin and barony of Uppercross (6-inch Historic Map: Dublin Sheet 22). The Irish form of the name is *Na Glaschnoic* and is validated by the Placenames Commission (www.logainm.ie).

The name Crumlin occurs frequently in the local nomenclature of Ireland, and in an Irish poem entitled "The Battle of Gabrha" it is mentioned as being the residence in his advanced years of the Fenian hero Ossian. This poem has been published in the Transactions of the Ossianic Society and the editor gives the meaning of the word Crumlin as the "the lake of Crom" (or Crum), who was a pagan deity who received the offerings of the husbandmen for the fruits of the earth. However, it is unclear whether this poem refers to the subject parish area.

Ní Mharcaigh (1997, 246) notes that in the seventh century, the general area had largely been the home of the *Uí Dúinchada*, whose family name at the time of the Anglo-Norman invasions was *MacGiolla Mo-Cholmóg* and that an ecclesiastical foundation was established at Kilnamanagh at this time.

The earliest reference to Crumlin is in 1169, at the time of the Anglo-Norman invasions, when William de Harptry possessed the advowson of Crumlin, which he conferred on his clerk, Robert. There appears to have been a church in existence at Crumlin by this time, as one of the privileges granted was permission to appropriate sixteen acres most convenient to the church. In 1193, this church was given by King John (then Prince of Morton) to form a prebend in the collegiate church of St. Patrick and in 1215 was transferred to the economy of St. Patrick's Cathedral.

Before the close of King John's reign the lands at Crumlin had been constituted as a royal manor. Ball (1905, 136) notes that the system of tenure of this manor was different from other manors, as the tenants themselves took the place of a middleman and held the demesne lands in addition to their own farms.

Early in the thirteenth century, at a time that the populace of Crumlin were largely Anglo-Norman settlers, steps were taken by the Crown to erect a castle at Crumlin for the protection of the inhabitants, who had been subjected to attacks by Irish raiders from the Wicklow Hills. Towards the end of the thirteenth century, Edward I decided to leave the manor of Crumlin to Henry de Compton, a lessee of the profits of the manor courts of Saggart and Newcastle Lyons, and who had rendered valuable service to the Crown in the Irish Chancery. However, due to considerable opposition to this act, the King considered it more prudent to leave the manor in the possession of 'his poor men of Crumlin'. The principal families of Crumlin at this time were 'Le Crumlin', Le Reves', Russell and 'Le Monte and the area was known as Crum or Trum.

The O'Tooles, following a raid on Tallaght in 1331, ambushed a number of prominent residents of Crumlin who were not sheltering in the castle at the time. As a consequence of this, and other similar raids, the King granted to populace 122 acres of land on the condition that within ten years, at their own expense, they enclosed the town against attack. However, no evidence of this enclosure remains and it is possible that it was never constructed.

During the fourteenth and fifteenth centuries the Abbey of St. Thomas, the Priory of the Holy Trinity and the Guild of St Anne in St. Audeon's Church all appear as owners of property in Crumlin, and amongst the local families there occur the names of Stephens, Whitbred, Gillane, Stafford, Hay, Arthur and Says. During the latter part of the fifteenth century an important local person is mentioned as Robert Walsh, who is styled as 'parish clerk', and an important landowner in the area was Joan Drywer.

The fees paid to several Government officials in the sixteenth century were drawn from the taxes of the manor of Crumlin, and at the end of the century it appears that the greater portion of the lands continued to be held under the Crown by small farmers. In addition to the Religious Houses mentioned above, the Convent of St. Mary de Hogges, the Cathedral of St. Patrick and the Abbot of St. Marys also held lands in Crumlin prior to the dissolution of 1547 under Henry VIII. Their holdings were afterwards known under various names, including Cromwell's Land, Mustocke's Land, Giffards Grove and Kevin's farm. At the time of his attainder, Gerald, ninth Earl of Kildare, was in possession of some lands at Crumlin which were forfeited to the Crown and we subsequently find Chief Baron Bathe and his descendants and the families of Sutton and Talbot holding these as well as the former monastic lands, under the Crown. At this time there were several stone houses in or near the village of Crumlin. These were plundered and burned in December 1594 by the Irish under the command of Gerald Fitzgerald, the assailants escaping 'without wounded or bloodshed', but having taken lead from the roof of the church to melt down for bullets. The village was subsequently rebuilt before it was again destroyed in 1559 by another raid, this time under the command of Fiach MacHugh O'Byrne of Glenmalure.

At the end of the sixteenth century the Purcell family, who were resident near the village until the nineteenth century, are first mentioned as resident at Crumlin; and in 1609 Edmund Purcell was leased land then belonging to the church. However, at this time the most important resident was Sir Patrick Fox, sometime Clerk of the Council, who, in the early seventeenth century, acquired much property in Crumlin and occupied what was later the manor house.

A branch of the Ussher family had also settled at Crumlin during the reign of James I – Robert Ussher, who was then engaged in the wine trade was living there. His son, Robert the younger, was granted in 1646 licence to hold two fairs annually at Crumlin, and a few years later his children, Airlander and Mary, were recorded as living there. During the Cromwellian Commonwealth period, the manor house and lands, which had been forfeited by the Fox family, and other lands were granted to Capt. John Blackwell, although other notable families appear not to have been disturbed. The censuses of 1641 and 1670 record that the lands at Greenhills, though not named, totalled 135 plantation acres owned by John Brice; at this time the parish of Crumlin formed part of the barony of Newcastle and Uppercross (www.downsurvey.tcd.ie). The lands at Crumlin are indicated in maps of 1656-8 and 1670 (Figures 15.1 and 15.2 below), the latter of which indicates a land division to Kilnamanagh.

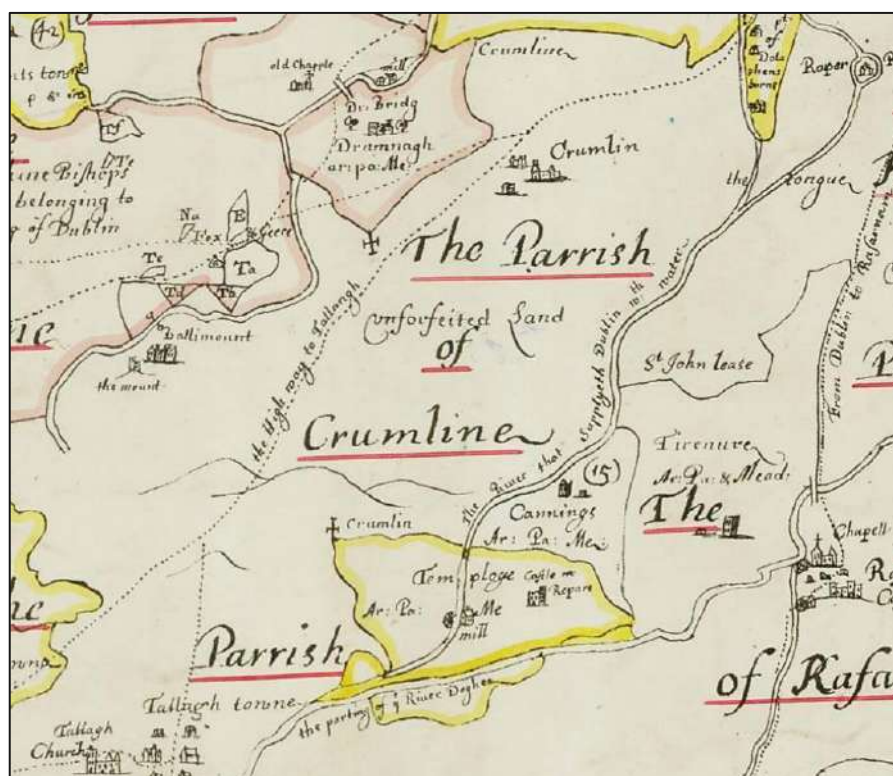


Figure 15.1 Extract from Civil Survey Map of 1656-8



Figure 15.2 Extract from 1670 Map

The greater portion of lands, in the latter half of the seventeenth century, came into the possession of Major Joseph Deane, who was also an owner of Terenure at this time. He was also the MP for Inistioge, Co. Kilkenny at this time and, presumably led the manor house and former lands of the Fox family. Immediately after the Battle of the Boyne (1690), King William and his army camped at Crumlin for two days before proceeding to Castlemartin (Kilcullen, Co. Kildare) and thence to the south of the country. In 1699 Major Deane was succeeded at Crumlin by his godson, the Right Hon. Joseph Deane, Chief Baron of the Exchequer, who built a red brick house in the village (Crumlin House) as his country residence. After his death in 1715, the house was offered for sale but was not initially sold; consequently, it was occupied for a time by the Baron's representative, Richard Allen.

Roque's map of 1760 indicates lands at Green Hills (Figure 15.3) and it is again mentioned by Rutty in 1772. Ball (1906, 144) notes that in the middle of the eighteenth century a French visitor mentions that the neighbourhood of Crumlin was well inhabited by farmers and labourers and that the area of Green Hills had 'formerly been a great resort of highwaymen who took the lives as well as the property of their victims'. Horse racing took place in the Common of Crumlin at around this time before being outlawed in the 1790s. In a contemporary guide to Dublin, reference is made to the 'great traffic to Blessington and Baltinglass' which passed through the village, and it is stated that the village was no longer as fashionable as it had been.

Lewis (1837, 44) notes that the parish of Crumlin contained 958 inhabitants at that time, "of which number, 544 are in the village, which consists of 115 houses". The Ordnance Survey



Figure 15.3 Extract from Rocque
– 1760

Map of this time (Figure 15.4) indicates that the western site boundary serves as a townland boundary between Greenhills and Kilnamanagh, with the northern boundary formed by the road to Tallaght; the existing eastern and southern boundaries had not been formed by this time, with the site forming part of an overall landholding that extended further to the south and east. A number of structures are indicated in the north-eastern quadrant, with a garden plot, bounded by trees, to the west and a pump feature to the east; this complex appears to be accessed directly from the road. A gravel pit is indicated in the western area of the site round hillock is located immediately outside the eastern boundary; some internal land divisions are also indicated.

D'Alton (1838, 704) states that a "great part of the road from Drymnagh to Green Hills is over a portion of palpable 'esker' or elevated mound"; he further states that the 'village of Green Hills' is an "assemblage of neat cottages, surrounded by hilly pastures, that are let for about £5 per acre. These swells have pits of sand, or rather marle, abounding with limestone gravel, but are finely coated with verdure, and present many pretty situations for inland villas and summer residences".

Ua Broin (1942, 110) notes that Fox's Hill was the name of a remarkable esker of 300 feet elevation in the townland of Greenhills. The road to Tallaght climbed along its northern shoulder; much of the hill was subsequently removed, after which it comprised a low-lying area on the southern side of the road; in addition, in the early-mid-nineteenth century the road to Tallaght was subject to a toll payment, being part of the Dublin – Carlow Turnpike Road, which was abolished in 1855.

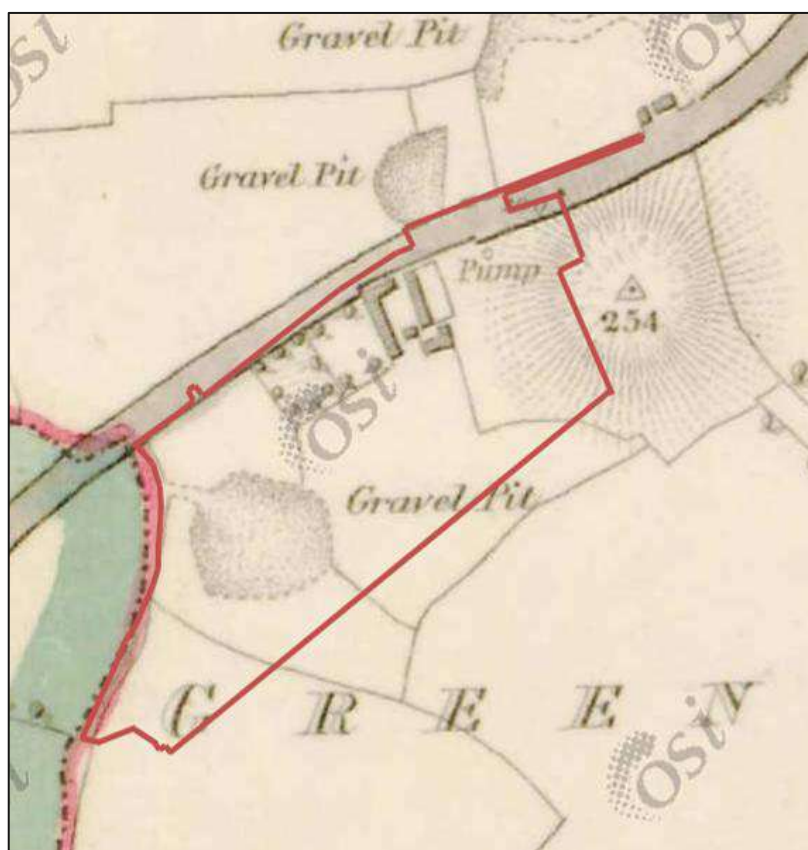


Figure 15.4 Extract from Ordnance Survey 6-inch Map of 1837

Griffiths Primary Valuation for Ireland was published in 1853 for County Dublin and notes that the extent of the subject lands formed part of two larger properties; one was owned by Sit Robert Shaw, which comprised lands of approximately 68 acres while the other was owned by Michael Keogh, extending over approximately 56 acres and containing houses and office (outbuildings; both properties were leased by Thomas Fox.

Healy (2004, 39) notes that the Greenhills Road was previously routed along a series of sand hills which were quarried away in the later nineteenth century, and by the end of the century the only section of

original ground was a ridge along which the road then passed across. This is indicated in the Ordnance Survey Map of 1907 below (Figure 15.5), which illustrates that almost the entire extent of the subject site had been quarried.

Similarly, the Ordnance Survey 6-inch map of 1936 (Figure 15.6) indicates the site as comprising part of a larger quarry pit, with a trackway routed through the south-eastern area.

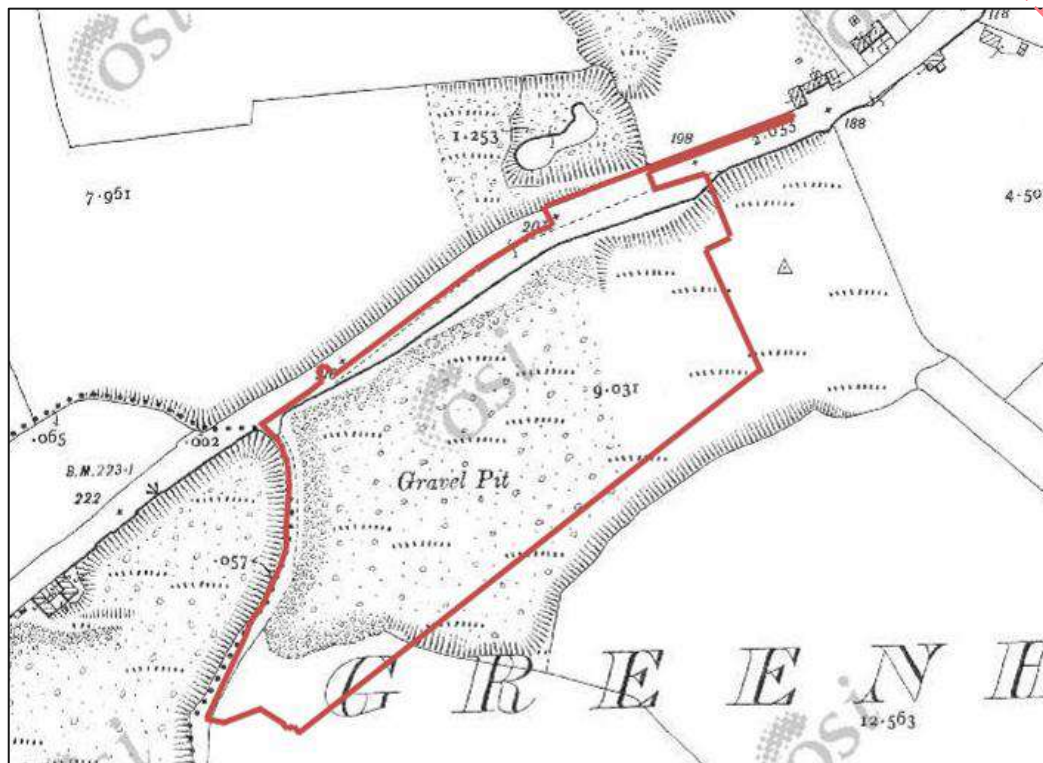


Figure 15.5 Extract from Ordnance Survey 25-inch Map of 1907

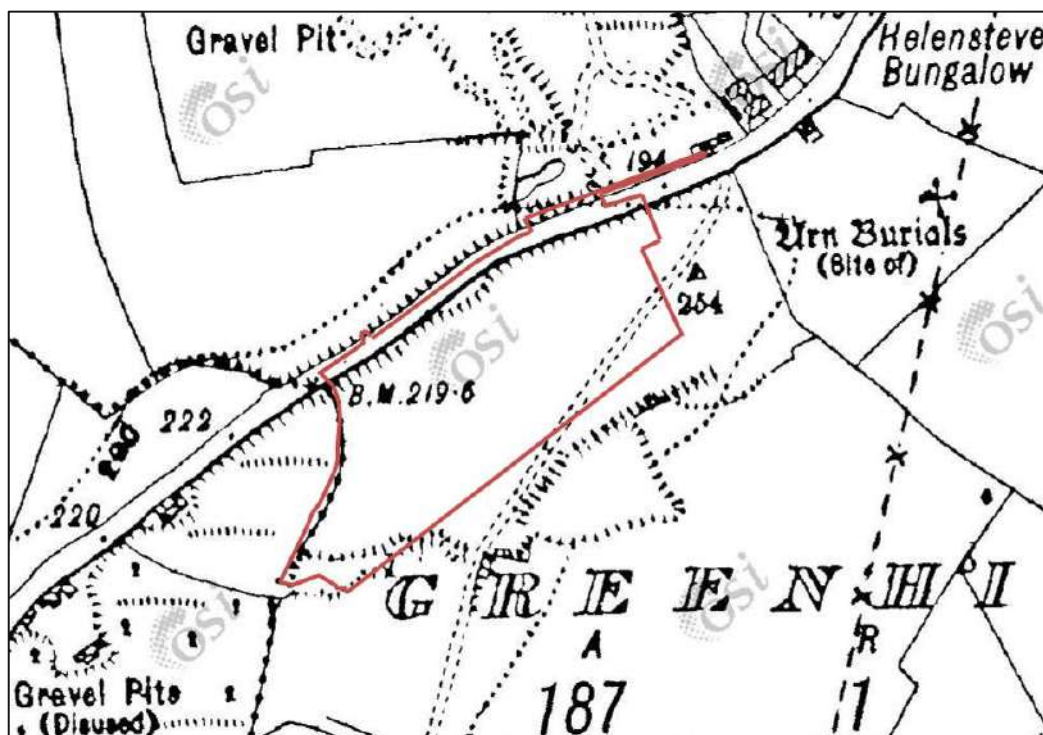


Figure 15.6 Extract from Ordnance Survey 6-inch Map of 1936

Parts of the parish of Crumlin were incorporated into the Dublin County Borough in 1941. Residential estates were constructed in the general area from the late 1930's into the 1940s and in the early 1950s, at which time new road infrastructure, including the nearby Walkinstown Roundabout, was constructed. In subsequent years, a number of industrial and commercial facilities were constructed in the area; Greenhills Industrial Estate was initially developed in the early 1960s, with further expansion within the existing site in the 1970s and thereafter (Figure 15.7).

The site was the subject of a Valuation Tribunal in 1994 in which it was described as containing offices, flat-roofed offices, obsolete storage buildings, a former vehicles garage, paint manufacturing buildings and various storage sheds.



Figure 15.7 Aerial View of Site and Immediate Environs – from south

15.3.2 Archaeological Heritage

15.3.2.1 Introduction

Archaeology is the study of past societies through their material remains and the landscapes they lived in. 'Archaeological Heritage consists of such material remains (whether in the form of sites and monuments or artefacts in the sense of moveable objects) and environmental evidence' (DAHGI, 1999, 9).

Archaeological heritage comprises all material remains of past societies, with the potential to enhance our understanding of such societies. It includes the remains of features such as settlements, burials, ships and boats and portable objects of all kinds, from the everyday to the very special. It also includes evidence of the environment in which those societies lived. The terms "site" or "monument" are used generally to refer to fixed structures or areas of activity, as opposed to particular moveable objects. Historic wrecks are also part of the archaeological heritage (DHLG&H, 2021, 3).

15.3.2.2 Statutory Protections

The statutory and administrative framework of development control in zone of archaeological potential or in proximity to recorded monuments has two main elements:

- (a) Archaeological preservation and licensing under the National Monuments Acts and
- (b) Development plans and planning applications under the Planning Acts

A. National Monuments Acts 1930-2004

Section 12 (1) of the National Monuments (Amendment) Act, 1994 provides that the Minister for the Environment, Heritage and Local Government shall establish and maintain a record of monuments and places where the Minister believes there are monuments, such record to be comprised of a list of monuments and relevant places and a map or maps showing each monument and relevant place in respect to each county of the State. This is referred to as the 'Record of Monuments and Places' (RMP), and monuments entered into it are referred to as 'Recorded Monuments'.

Section 12(3) of the National Monuments (Amendment) Act 1994 provides for the protection of monuments and places in the record, stating that

"When the owner or occupier (not being the Minister) of a monument or place which has been recorded under subsection (1) of this section or any person proposes to carry out, or to cause or permit the carrying out of, any work at or in relation to such monument or place, he shall give notice in writing of his proposal to carry out the work to the Minister and shall not, except in the case of urgent necessity and with the consent of the Minister, commence work for a period of two months after having given the notice".

B. Historic and Archaeological Heritage and Miscellaneous Provisions Act 2023

This Act (October 2023) repeals the National Monuments Acts 1930 to 2004 and replaces those Acts with provisions for the protection of historic heritage, provisions for the protection of archaeological heritage, provisions for the regulation of certain activities in the interests of such protection and provisions enabling the State to ratify or accede to certain international conventions which relate to such protection or regulation; to give effect to the EIA Directive and the Habitats Directive in relation to the carrying out of works at, on, in, under, to, or within the immediate surroundings of monuments; to give further effect to the Valletta Convention; to consequentially repeal or amend certain other enactments; and to provide for related matters.

The Act contains a range of provisions that seek to streamline and simplify existing systems and processes, including the automatic legal protection for finds of archaeological sites, a system of civil enforcement to be used as an alternative to, or to supplement criminal proceedings, and an appeal process for license applications.

In terms of monument protections, the key change will be the creation of a single Register of Monuments to replace the statutory Record of Monuments and Places (RMP) and the non-statutory Sites and Monuments Record (SMR); two levels of protection are provided, Special and General, and automatic protection will be afforded newly discovered monuments.

Although the Act has been signed into law, it will be enabled on a phased basis and the provisions of the National Monuments Acts 1930 – 2004 are still in force

C. South Dublin County Development Plan 2022 - 2028

The following relevant Archaeological Heritage Policies and Objectives are contained in Section 3.4.2 of the Plan:

Policy NCBH13	It is the policy of the Council to manage development in a manner that protects and conserves the Archaeological Heritage of the County and avoids adverse impacts on sites, monuments, features or objects of significant historical or archaeological interest.
NCBH13 Objective 1	To favour the preservation in-situ of all sites, monuments and features of significant historical or archaeological interest in accordance with the recommendations of the <i>Framework and Principles for the Protection of Archaeological Heritage</i> , DAHGI (1999), or any superseding national policy document.
NCBH13 Objective 2	To ensure that development is designed to avoid impacting on archaeological heritage that is of significant interest including previously unknown sites, features and objects.

NCBH13 Objective 3	To protect and enhance sites listed in the Record of Monuments and Places and ensure that development in the vicinity of a Recorded Monument or Area of Archaeological Potential does not detract from the setting of the site, monument, feature or object and is sited and designed appropriately.

15.3.2.3 Archaeological Inventory

The Archaeological Survey of Ireland (ASI) inventory database is known as the Sites and Monuments Record (SMR). The SMR contains details of all monuments and places (sites) where it is believed there is a monument known to the ASI pre-dating AD 1700 and also includes a selection of monuments from the post-AD 1700 period. The RMP (Section 15.3.2.2(A) above) is a subset of the SMR; monuments included in the RMP are legally protected and are generally referred to as "Recorded Monuments". The addition of a monument to the ASI SMR database does not, of itself, confer legal protection. The reclassification of a monument does not affect its legal status in any way.

There are no previously identified monuments of archaeological interest or features of archaeological potential interest located within the extent of the subject site; no features of interest were noted by documentary, cartographic or aerial photographic research or by the detailed site inspection survey.

There are two previously recorded monuments located within the wider Cultural Heritage Study Area, as illustrated in Figure 15.9. These are described as follows:

SITE CH-1 is the former site of a prehistoric Flat Cemetery (SMR Ref: DU022-002; Greenhills Td), first uncovered in 1892 during the quarrying of a sand and gravel ridge (NMI Reg: 1892:48; Figure 14.6 above). The remains comprised a burial with a bowl food vessel and an uncontexted vase food vessel. In 1898 there were further discoveries of two cists with two pit burials and two other possible pit burials (Plunkett 1898-190, 388). One contained an urn, the other a food vessel/urn (Waddell 1970, 116; 1990, 83). The remains were located approximately 195m from the eastern extent of the subject site, which is positioned approximately 115m outside the associated Zone of Archaeological Potential (Figure 15.8). The area of the former cemetery is now developed and forms part of the Mulcahy Keane Industrial Estate.

SITE CH-2 is a Holy Well (SMR Ref: DU011-001; Walkinstown Td) formerly situated in a Green off Walkinstown Crescent, approximately 350m to the north of the northern extent of the subject site. It was known as 'Toberacreena' and was regarded as a holy well. The water was thought to cure eye troubles. In former times a bush, with rags attached, had overhung the well (Ua Broin 1942, 109-110). There are no visible remains above ground.

15.3.2.4 Previously Discovered Artefacts

Aside with the remains and artefacts uncovered with respect to Site Ch-1 above, there are no reported 'stray finds' listed in the Topographical Registers of the National Museum of Ireland, as having been discovered from the site or wider Cultural Heritage Study Area.

15.3.2.5 Results of Previous Relevant Archaeological Investigations

A search undertaken of the annual Archaeological Excavations Bulletin (www.excavations.ie) indicates that no previous archaeological investigations have been undertaken within the subject site; one investigation is recorded for the wider Cultural Heritage Area, as follows:

Greenhills, Co. Dublin (Excavations.ie Ref: 2022:243)

Thaddeus Breen, Marion Sutton & Grace Fegan, Shanarc Archaeology Ltd – Licence No: 20E0622

Archaeological monitoring took place of Stage 1 detailed ground investigations relating to the National Transport Authority's Bus Connects Infrastructure Dublin project; the areas included Route 09: Greenhills to City Centre. Nothing of archaeological interest was uncovered.

15.3.3 Architectural Heritage

15.3.3.1 Introduction

Architectural heritage has several definitions and meanings for people. A useful rule of thumb (which is actually the legal situation) is set out in the Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 1999 which provides the following definition:

- a. Structures and buildings together with their settings and attendant grounds, fixtures and fittings,
- b. Groups of such structures and buildings, and
- c. Sites, which are of architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest

15.3.4 Record of Protected Structures (South County Development Plan 2022-2028)

Section 51 of the Planning and Development Act, 2000 (as amended) requires the Development Plan to include a record of structures. These structures form part of the architectural heritage of the County and are to be protected.

South County Council has drawn up this list, referred to as the Record of Protected Structures (RPS), in which each structure is given a reference number and is a constituent part of the County Development Plan.

There are no structures listed in the Record of Protected Structures (RPS) of the Development Plan as being located within the extent of the subject site or wider Cultural Heritage Study Area.

15.3.5 National Inventory of Architectural Heritage (NIAH)

The National Inventory of Architectural Heritage (NIAH) is a state initiative under the administration of the Department of Culture, Heritage and the Gaeltacht. It was established on a statutory basis under the provisions of the Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act 1999. Its purpose is to identify, record, and evaluate the post-1700 architectural heritage of Ireland, uniformly and consistently as an aid in the protection and conservation of the built heritage. It is intended that the NIAH will provide the basis for the recommendations of the Minister for Housing, Local Government and Heritage to the planning authorities. The NIAH includes structures and garden features but does not confer any statutory protections on such buildings or garden features.

There are no structures of Architectural Heritage interest listed by the NIAH as being located within the extent of the subject site; one structure is recorded within the wider Cultural Heritage Study Area, the location of which is illustrated in Figure 15.9 and described as follows:

SITE CH-3 is a milestone (NIAH Reg. No: 50080455) located on the western side of Walkinstown Road, and approximately 430m to the northeast of the subject site extent. It is a triangular-profile granite milestone, erected c.1780, inscribed on two sides; Inscriptions read 'DUB 2' and 'B TON 15' – Figure 15.8

This milestone is a historical reminder of the coaching era in Ireland, when the post office operated a coach-based system of postal distribution. The simple form and carving of the stone is similar to other such milestones which are found throughout Ireland. The north-east face reads 'B ton 15' and the south-east face reads 'Dub 2'. This would appear to refer to Blessington, 15 miles to the south-west and Dublin, some 3 miles to the east.



Figure 15.8 SITE CH-1 (from east)

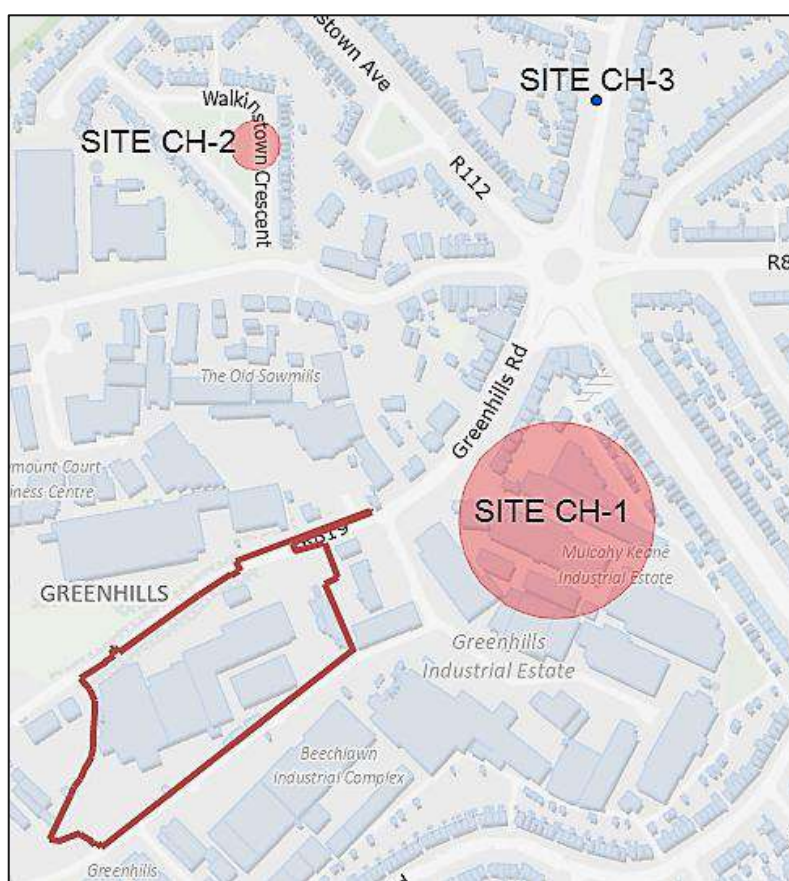


Figure 15.9 Locations of Archaeological Monuments/Architectural Heritage Structures within Defined Study Area

15.4 Characteristics of the Proposed Development

The development proposes the following:

- i. The demolition of the former Chadwicks Builders Merchant development comprising 1 no. two storey office building and 9 no. storage/warehouse buildings ranging in height from 3m – 9.9m*

as follows: Building A (8,764 sq. m.), Building B (1,293 sq. m.), Building C (two-storey office building) (527 sq. m.), Building D (47 sq. m.), Building E (29 sq. m.), Building F (207 sq. m.), Building G (101 sq. m.), Building H (80 sq. m.), Building I (28 sq. m.), and Building J (44 sq. m.), in total comprising 11,120 sq. m.;

- ii. The construction of a mixed-use residential and commercial development comprising 588 no. residential apartment units (291 no. one-beds, 238 no. two-beds and 59 no. three-beds), 1 no. 570.91sqm (443sqm indoor space) childcare facility and 6 no. commercial/retail units in 4 no. blocks (A-D) ranging in height from 5 to 12 storeys as follows: (a) Block A comprises 170 no. apartments (103 no. 1 bed-units, 59 no. 2 bed-units and 8 no. 3- bed units) measuring 8 storeys in height; (b) Block B comprises 197 no. apartments (89 no. 1 bed-units, 92 no. 2 bed-units and 16 no. 3 bed-units) measuring 10 storeys in height; (c) Block C comprises 81 no. apartments (44 no. 1-bed units, 16 no. 2-bed units and 21 no. 3-bed units) measuring 12 storeys in height; (d) Block D comprises 140 no. apartments (55 no. 1 bed-units, 71 no. 2 bed-units and 14 no. 3 bed-units) measuring 8 storeys in height; all apartments will be provided with private balconies/terraces;
- iii. Provision of indoor communal residential amenity (614.14 sq. m.) at ground and first floors of Block A, B & C;
- iv. The construction of 1 no. childcare facility with dedicated outdoor play area located at ground floor of Block B;
- v. The construction of 6 no. commercial units at ground floor level of Blocks A, B and D, and 1 no. commercial unit at first floor level of Block A as follows: Block A has 1 no. unit at ground floor comprising 455.8 sq. m. and 1 no. unit at first floor level comprising 160.79 sq. m., Block B has 1 no. unit at ground floor comprising 190.96 . and Block D has 4 no. units at ground floor comprising 361.6, 232.3, 238 and 174.9 sq. m.;
- vi. The construction of 4 no. vehicular entrances; a primary entrance via vehicular ramp from the north (access from Greenhills Road) and 3 no. secondary entrances from the south for access, emergency access and services (access from the existing road to the south of the site) with additional pedestrian accesses proposed along Greenhills Road;
- vii. Provision of 270 no. car parking spaces comprising 240 no. standard spaces (including 6 no. car club spaces) and 13 no. mobility spaces located at surface level and within undercroft car parks within Blocks A, B , C and D, 17 no. commercial/ unloading/ drop-off parking spaces at ground level.
- viii. Provision of 1,269 no. bicycle parking spaces comprising 952 no. residents' bicycle spaces, 10 no. cargo/accessible bicycle spaces in 14 no. bicycle storerooms in surface and undercroft parking areas and 307 no. visitors' bicycle spaces located externally at ground floor level throughout the development;
- ix. Provision of outdoor communal amenity space (3,130.3 sq. m) comprising landscaped courtyards that include play areas, seating areas, grass areas, planting and scented gardens located on podiums at first floor level; provision of communal amenity roof gardens in Block A & B with seating area and planting (746.1 sq. m.) and inclusion of centrally located public open space (6,6650 sq. m.) adjacent to Blocks A, B, C and D comprising grassed areas, planting, seating areas, play areas, water feature, flexible use space and incidental open space/public realm;
- x. Provision of toucan crossing and all associated road markings and signage from the subject site to a new footpath on northern side of Greenhills Road;
- xi. The development also includes landscaping and infrastructural works, foul and surface water drainage, bin storage, ESB substations, plant rooms, P.V. panels, boundary treatments, internal roads, cycle paths and footpaths and all associated site works to facilitate the development.

A layout of the development, as proposed, is illustrated in Figure 15.10.



Figure 15.10 Proposed Layout Plan

15.5 Potential Impact of the Proposed Development

15.5.1 Construction Phase

15.5.1.1 Local History

The general historical background to the subject development area was introduced above in Section 15.3.1. In summary, there are no significant historical events associated with the proposed development lands which have the ability to be impacted upon by the proposed development. Much of the western boundary is formed by a townland boundary, currently defined by a concrete wall, which will be retained as part of the development proposals. Consequently, it is considered that any potential impacts that might occur with respect to Historical Heritage during the proposed construction phase of the development are of unlikely probability, of neutral quality and of imperceptible significance.

15.5.1.2 Archaeological Heritage

There are no previously identified monuments or features of archaeological interest located within the subject development lands; two recorded monuments have been identified within the wider Cultural Heritage Study Area. A former prehistoric flat cemetery (SITE CH-1) was discovered in the nineteenth century to the east of the eastern extent of the subject lands; this site has now been removed and developed; the eastern site boundary is located approximately 115m outside the associated Zone of Archaeological Potential – Figure 15.9 above. A former holy well (SITE CH-3) is located approximately 350m to the north of the northern site boundary.

As noted above in Section 15.3.1, the site has been the subject of sand and gravel quarrying since the early nineteenth century, resulting in significant disturbance and ground reductions within the extent of the site, as illustrated in Figures 15.5 and 15.6 above; it is not deemed likely that any previously unrecorded subsurface archaeological features might be positioned within the subject site.

Consequently, given the above, it is considered that the development, as proposed, will not cause any direct impacts to any previously recorded archaeological monuments and that there are no potential for the discovery of any subsurface remains of archaeological interest within the site at construction phase, resulting in an impact (effect) of unlikely probability, of neutral quality and of imperceptible significance.

15.5.1.3 Architectural Heritage

As noted above in Sections 15.3.3.1 there are no structures listed in the Record of Protected Structures (RPS) of the South Dublin County Development Plan (2022 – 2028) as being located within the extent of the subject site or wider Cultural Heritage Study Area. Likewise, the NIAH do not record any structures of interest within the extent of the site but identify a Milestone (SITE CH-3) located approximately 430m to the northeast of the subject site extent (Section 15.3.3.2).

Given the foregoing, it is not envisaged that the development, as proposed, will cause any direct impacts to structures of architectural heritage interest during the construction phase of the project, resulting in an impact (effect) of unlikely probability, of neutral quality and of imperceptible significance.

15.5.2 Operational Phase

There are no extant monuments or structures of historical, archaeological or architectural heritage interest located within the subject site or wider defined Cultural Heritage Study Area, apart from a Milestone (SITE CH-3) located approximately 430m to the northeast of the subject site extent; given the position of the structure and the intervening distance, it is considered that the setting does not have the ability to be negatively impacted upon. Consequently, the overall proposed development will not impact on the views or setting of any monuments or structures of Cultural Heritage interest, resulting in an impact (effect) of unlikely probability, of neutral quality and of imperceptible significance.

15.6 Do-Nothing Approach

If the development does not proceed the site will remain in its current condition.

15.7 Remedial or Reduction Measures: Mitigation

15.7.1 Construction Phase

As noted above in Sections 15.5.1.1, 15.5.1.2 and 15.5.1.3, the impacts (effects) of the proposed development, at construction stage, with respect to any archaeological monuments or structures of historical, archaeological or architectural heritage interest is considered to be of unlikely probability, of neutral quality and of imperceptible significance; in addition given the developmental history of the site, it is not deemed likely that any previously unrecorded subsurface archaeological features might be positioned within the subject site. Consequently, no mitigation measures are deemed necessary.

15.7.2 Operational Phase

As noted above in Section 15.5.2, the overall proposed development will not impact on the views or setting of any monuments or structures of Cultural Heritage interest, resulting in an impact (effect) of

unlikely probability, of neutral quality and of imperceptible significance; consequently, no mitigation measures are deemed necessary.

15.8 Predicted Impact of the Proposal

There are no predicted impacts in terms of the overall Cultural Heritage of the site and immediate environs.

15.9 Cumulative Impact

The proposed development has been considered in terms of other permitted and existing developments within the defined study area. It is not envisaged that any negative cumulative effects will occur with respect to Cultural Heritage Assets as a results of the project proceeding as proposed.

15.10 Monitoring

No monitoring measures are required.

15.11 Reinstatement

No reinstatement measures are required.

16.0 LANDSCAPE AND VISUAL AMENITY

16.1 Introduction

16.1.1 Scope

This section of the EIAR assesses the townscape / landscape and visual impacts associated with the proposed Large-Scale Residential Development provides for the demolition of the former Chadwicks Builders Merchant development and the construction of a mixed-use residential and commercial development comprising of 588 no. apartment units, a childcare facility and 6 no. commercial/retail units in 4 no. blocks (A-D) ranging in height from 5 to 12 storeys) hereafter referred to as the proposed development on 2.8 hectares / 6.89 acres of land at the Chadwick's Site, Greenhills Road in Walkinstown, Dublin 12 (the "Application Site"). A detailed Project Description can be found in Chapter 2 of the EIAR with the Planning and Development Context set out in Chapter 3.

16.1.2 Statement of Authority

The Townscape and Visual Impact Assessment ("TVIA") has been prepared by Park Hood Chartered Landscape Architects on behalf of Steeplefield Limited. Park Hood is a Member of the Irish Landscape Institute and Landscape Institute UK with extensive experience in preparation of Landscape / Townscape and Visual Impact Assessments for large scale projects throughout Ireland and the UK.

The primary author is Andrew Bunbury BA DipLA CMLI. Director at Park Hood, who is a fully qualified Landscape Architect and Chartered Member of the Landscape Institute with over 25 years' consultancy experience in the profession across Ireland and the UK. He works between the Dublin, London and Belfast offices of Park Hood where there are 36 members of staff including a further thirteen Chartered Landscape Architects.

All work is undertaken in compliance with the *Landscape Institute's Code of Standards of Conduct and Practice for Landscape Professionals* and checked in accordance with Park Hood's ISO 14001:2015 and ISO 9001:2015.

16.1.3 Supporting Documents and Appendices

This Chapter is supported with Appendices as follows:-

- Appendix 16A: Generic TVIA Terminology
- Appendix 16B: Visualisations and Photomontages (3D Design Bureau)

The proposed development and mitigation section should also be read in conjunction with Drawing Nos. 7103-PHL-SW-XX-DR-L-2000-Landscape Site Plan - Stage 2, Drawing No. 7103-PHL-SW-XX-DR-L-2000-Landscape Site Plan - Stage 2 and the accompanying Landscape Design Statement that set out the landscape works associated with this proposed development.

16.2 Research Methodology

16.2.1 Guidance

The overall approach and methodology for this TVIA is based on the *Guidelines for Landscape and Visual Impact Assessment (3rd Edition)* by *The Landscape Institute and the Institute of Environmental Assessment (2013)* (GLVIA). Reference is also made to the following:-

- *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment published by the Department of Housing, Planning and Local Government (2018);*
- *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, published by the EPA (2022); and*
- *Technical Information Note on Townscape Character Assessment published by the Landscape Institute (2016).*

Further published guidance and reference documents including Development Plans, setting out landscape and planning designations relevant to the Study Area as listed below:-

- *The National Planning Framework (NPF) – Ireland 2040;*
- *South Dublin County Council Development Plan 2022-2028;*
- *Urban design manual - a best practice guide by the Department of Environment, Heritage and Local Government (2009);*
- *National Landscape Strategy 2015–2025;*
- *Sustainable Residential Development in Urban Areas and the accompanying Urban Design Manual: A Best Practice Guide (2009);*
- *Landscape Character Assessment of South Dublin County Draft Report May 2015 by Mirogue and Associates on behalf of South Dublin County Council;*
- *National Inventory of Architectural Heritage <http://www.buildingsofireland.ie>;*
- *www.myplan.ie;*
- *National Parks and Wildlife Service (NPWS) and Environmental Protection Agency - <https://gis.epa.ie/EPAMaps>;*
- *<https://www.heritagecouncil.ie>; and*
- *<https://walkinstownresidents.weebly.com>*

The baseline assessment included study of Ordnance Survey Ireland historical and recent mapping to assess how this part of Dublin has developed since the 19th century as well as assess approximate calculations of relevant distances or areas.

16.2.2 Summary of TVIA Objectives and Key Tasks

The objective of the TVIA is to evaluate the likely significance of townscape / landscape character and visual amenity effects to the Application Site and study area to assist the determining authority in considering the acceptability of this proposal. It is based on the interpretation of the physical and aesthetic characteristics following criteria and terminology partially drawn from *Principles and Overview of Processes (Chapter 3)* within the GLVIA. The Generic TVIA Terminology is contained within Appendix 16A. The TVIA focuses on key effects and issues as follows:

- The effect of the proposed development upon the townscape / landscape resource;
- The effect of the proposed development on the perception of the townscape; and
- The effects arising from the proposed development on visual amenity.

The TVIA methodology can be summarised as undertaking the following key tasks:-

- Site Visits in December 2024 and January 2025;
- Assessing the baseline Landscape / Townscape Setting and Conditions;
- Evaluation of key components of the proposed development based on site layouts, plans and elevations prepared by C+W O'Brien Architects and other members of the design team;
- Assessment of Townscape and Landscape Effects;
- Assessment of Visual Effects;
- Description of Mitigation and Enhancement Measures; and
- Summary of Significance of Townscape and Visual Amenity Effects.

16.2.3 Definition of Townscape/Landscape and Visual Effects

For the purpose of this assessment, this chapter adopts the definition of landscape presented in the European Landscape Convention and as such, the term 'landscape' refers equally to areas of rural countryside and urban – built up – areas (typically historically referred to as 'townscape'). The definition of landscape is:-

“An area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors.”

GLVIA states *“Townscape” is the landscape within the built-up area, including the buildings, the relationship between them, the different types of urban open spaces, including green spaces and the relationship between buildings and open spaces.*” (GLVIA3 paragraph 2.7)

The assessment process helps identify the effects of the proposed development on views and on the associated townscape and landscapes within the study area. The effects can be quite different and are assessed separately; although the process is similar, and effects ultimately arise as a result of combined impacts upon the townscape/landscape and visual amenity of a proposed development. Developments can have significant visual effects but no impact on townscape / landscape character and some can be vice versa.

Landscape Effects are the effects on landscape / townscape as a resource and defined as follows:

“An assessment of landscape effects deals with the effects of change and development on landscape as a resource. The concern ... is with how the proposal will affect the elements that make up the landscape, the aesthetic and perceptual aspects of the landscape and its distinctive character. ... The area of landscape that should be covered in assessing landscape effects should include the site itself and the full extent of the wider landscape around it which the proposed development may influence in a significant manner.” (GLVIA3 paragraphs 5.1 and 5.2)

Visual Effects are the effects on Views and Visual Amenity and summarised as follows:-

“...establish the area in which the development may be visible, the different groups of people who may experience views of the development, the places where they will be affected and the nature of the views and visual amenity at those points.” (GLVIA3 paragraph 3.13)

16.2.4 Photomontages and Visualisations

To support the visual assessment, photomontages, wirelines and graphics have been prepared from 11 no. representative viewpoints by 3D Design Bureau to allow assessment of its potential scale and nature in these views and these are contained in Appendix 16B.

Relevant projects were considered in the locality in terms of cumulative impacts and the baseline photography was undertaken in winter months to allow for maximum objectivity in terms of views (i.e., no leaves on vegetation). The viewpoint selection process and photomontage methodology is based on *Landscape Institute Technical Guidance Note 06/19: ‘Visual Representation of Development Proposals’* (2019).

16.2.5 Study Area

The study area includes the Application Site itself and the wider townscape where the proposed development may have an influence either directly or indirectly. There is no specific guidance on extents of study areas applicable to this type of development in Ireland. Viewpoints were identified following site surveys in the local townscape and landscape where open vantage is afforded in the direction of the Application Site and changes to its context or nature could be a factor in any appreciation of the areas character or visual amenity.

16.2.6 Consultation

A Large-Scale Residential Development (LRD) Meeting held on the 4th of December 2024. The subsequent LRD Opinion noted the “... *building lines of the scheme is of visual importance given its scale and the prominent location onsite addressing the southern boundary*” and that the “...*proposed materials are varied and provide a visual aide to the breaking up of the massing of the development*”.

It also suggested that “*CGI and verified view should include visuals of the proposal from Greenhills Road, accurately reflect levels within and adjoining the site, and include planting both with/without leaf*”. Three verified views from Greenhills Road are included in Appendix 16B.

16.2.7 TVIA Criteria

The objective of the TVIA is to evaluate the likely significance of townscape / landscape character and visual amenity effects to the application site and study area to assist the determining authority in considering the acceptability of this proposal. It is based on the interpretation of the physical and aesthetic characteristics following criteria and terminology described in the following tables. These are partially drawn from *Principles and Overview of Processes* (Chapter 3) within GLVIA. Mitigation

measures proposed to prevent/avoid, reduce and, where possible, offset or remedy any significant adverse townscape / landscape impacts or visual effects are described.

16.2.8 Baseline Townscape Character Assessment

The baseline studies extend to include to the wider context into which the proposed development will be introduced. The baseline description of existing conditions forms an objective evaluation of the townscape / landscape character and visual amenity of the study area. This forms the base against which the townscape / landscape and visual effects deriving from the proposed development can be identified, assessed and measured. It involves a desk-top analysis and review of material including:

- National and Regional Landscape Character or local Landscape Character Assessments;
 - Review of historical planning applications on the Application Site;
 - Existing National, Regional or Local Designations and relevant Planning Policy;
 - Current and historical Ordnance Survey Ireland (OSI) Maps evidence;
 - Aerial Photographs via Bing, Google and OSI; and
 - Relevant environment / ecology, cultural heritage, historical and archaeology evidence.
- As part of the baseline assessment, the combination of desk-top analysis and site survey allows a judgment to be made on the key elements that contribute to the townscape / landscape character and its wider condition (positive, neutral or negative) and wider value and sensitivity. Landscape value, quality and sensitivity are affected by factors including:
- (i) whether the resource is common or rare;
 - (ii) whether it is considered to be of local, regional, national or global importance;
 - (iii) whether there are any statutory or regulatory limitations / requirements relating to the resource;
 - (iv) the quality of the resource;
 - (v) the maturity of the resource, and
 - (vi) the ability of the resource to accommodate changes.

Table 16.1 Determination of Townscape Value and Sensitivity

Terminology	Definition	Summary
Highest Value Townscape	Nationally or regionally important townscape with high quality, highly valued rare or unusual features. Diverse, stimulating and thriving street level uses with high level of human comfort, interactive pedestrian environment and strong hierarchy of public amenity and civic spaces. National area / feature designation and assemblage of important listed historical and rich cultural features including Conservation Areas and Listed Buildings / Scheduled Monuments or valued modern buildings. Well maintained unified townscape with attractive visual detail and no detractors. Negligible pedestrian and traffic conflict.	Very vulnerable to change. High Sensitivity
Very Attractive Townscape	Locally distinctive development form with rich cultural associations using good quality locally characteristic materials. Harmonious relationship between buildings and hierarchy of publicly accessible spaces. Several Listed Buildings or local area / feature designations may apply including features of regional interest. Highly permeable, well maintained and no significant townscape detractors. A townscape that promotes social interaction and pedestrian movement dominates traffic circulation with few conflicts.	Some ability to absorb change in some situations without having significant effects. High to Medium Sensitivity
Good Townscape	Features with historical / cultural local value, possibly designated. Locally distinctive townscape, vernacular or planned layout often with ornamentation in good condition and well maintained. Possibly degraded by unsympathetic modern	Some ability to absorb change in some situations without having

	development but retaining essential characteristics with potential for enhancement. Townscape supports social interaction, and pedestrian movement co-exists with traffic movement with few conflicts.	significant effects. Medium Sensitivity
Ordinary Townscape	Development is primarily functional, incoherent development form or minimum design criteria being used in contemporary situations. Little indication of local distinctiveness, design expression or ornamentation. Remnant distinctive townscape features may persist but no longer in context. Few opportunities for social interaction, limited to specific 'community' locations. Traffic circulation usually controls pedestrian movement.	Able to accommodate change without significant effects. Low Sensitivity
Poor Townscape	Poorly designed development form using inappropriate materials and / or materials of limited lifespan. Unsympathetic scale, lacking structure, variety, coherence or clear communication links. Poor boundary definition and arbitrary 'un-owned' space, often vandalised, rarely used by community. Townscape in poor condition or decline, unwelcoming or even threatening, with a lack of opportunity for social interaction. Pedestrian movement may be inhibited / severely constrained by major transport barrier.	Damaged landscapes very capable of accommodating change. Very Low Sensitivity

16.2.9 Criteria for Townscape Character Impacts

This EIAR Chapter considers how the proposed development would impact on existing townscape / landscape elements and resources which are normally associated with the direct effects on the application site itself. The indirect impacts of the proposed development on the wider townscape / landscape are assessed with reference to individual types or character areas.

This is affected by factors including:

- (i) the physical extent and nature of the key elements that make up the proposal;
- (ii) the townscape / landscape context of these effects; and
- (iii) the time-scale of impact, such as whether it is temporary (short, medium or long term), permanent with reversible potentials, or irreversibly permanent.

Table 16.2 Magnitude Criteria for Landscape Character Effects

Terminology	Definition
Profound	Total loss or major alteration to key elements / features / characteristics of the baseline (i.e., pre-development) townscape or view and /or introduction of elements considered to be totally dominant when set within the attributes of the receiving townscape.
Major	A prominent change that may be large in scale and / or extent and include the loss of key townscape characteristics or the addition of new features or elements that would potentially change the overall townscape quality and character at a wider scale.
Moderate	Partial loss or alteration to one or more key elements / features / characteristics of the baseline (i.e., pre-development) townscape or view and / or introduction of elements that may be prominent but may not necessarily be considered to be substantially uncharacteristic when set within the attributes of the receiving townscape.
Slight	Minor loss or alteration to one or more) key elements / features / characteristics of the baseline (i.e., pre-development townscape or view and /or introduction of elements that may not be uncharacteristic when set within the attributes of the receiving townscape

Negligible Very minor loss or alteration to one or more key elements / features / characteristics of the baseline (i.e., pre-development) townscape or view and /or introduction of elements that are not uncharacteristic with the surrounding townscape - approximating the 'no change' situation.

In those instances where there would be no change to the landscape, the magnitude is recorded as 'zero' and the level of effect as 'no change.'

16.2.10 Visual Amenity Assessment

Visual Effects are concerned wholly with the effect of the development on views, along with the general visual amenity and are defined by the Landscape Institute in GLVIA3, Paragraph 6.1 which states: -

"An assessment of visual effects deals with the effects of change and development on views available to people and their visual amenity. The concern here is with assessing how the surroundings of individuals or groups of people may be specifically affected by changes in the context and character of views as a result of the change or loss of existing elements of the landscape and/or introduction of new elements."

The baseline studies establish the area from which the proposal may potentially be visible and the different groups of people ("visual receptors") who may experience views or changes to view context.

Viewpoints are usually identified in locations that are publicly accessible, such as roads, parks, public realm / domain areas, footpaths or publicly accessible open spaces. Selection is also based on a determination of the extent of visibility towards the Application Site or from locations where there may be significant numbers of visual receptors who will see the proposed development e.g., main roads. Viewpoints are chosen to be representative, specific or illustrative and cover as much of the study area as reasonable or necessary and address all areas where there may be changes in terms of views or visual amenity.

Viewer sensitivity is based on the nature of the visual receptor (resident, tourist, commuter etc.) and the visual quality or value attached to a particular view.

Table 16.3 Viewer Sensitivity and Types

Terminology	Definition	Summary
High	Notable views of heritage assets, quality, valued or historic townscapes. Views that may be in designated areas, feature in guidebooks, scenic tours, associated with culture, literature and art or an important contributor to experience	People whose interest is likely to be focused on an appreciation of townscape, culture, built form or particular views. e.g., tourists, cultural events. Residents / Communities living within close proximity of the proposal
Medium	Ordinary views where the reason for visual receptor to be in the area and does not involve or depend upon an appreciation of the views of the townscape or its character.	Commuters, travellers on road and rail. City centre / Public Building users including shopping / retail / commercial uses, recreational activity. Outdoor activity with focus on recreation. Residents / Communities living within close proximity of the proposal.
Low	Areas that may be viewed by the majority as incidental townscape where the focus of the viewer is on their work or activity and the setting is not important to the visual amenity or quality of working life.	Landowners for proposal. Workers with employment related to construction and management / maintenance activity in this part of the city and likely to have a low interest or appreciation of the view.

The visual effects deriving from the proposed development are based on the combined judgement of the anticipated change in nature, visual amenity and duration of the particular view (magnitude) and the nature of the visual receptor (sensitivity). The magnitude and nature of visual effects are based on a number of factors including:-

- Scale of change;
- Distance from proposed development site;
- Contrast in terms of mass, colour, form and texture deriving from new feature(s);
- Extent of intervening vegetation (and seasonality if deciduous) or buildings and topography;
- Speed of passing visual receptor (and how long view is experienced);
- Angle and elevation of view e.g., oblique, direct, perpendicular;
- Nature of backdrop or skyline; and
- Duration of change or effect.

Where mitigation measures are proposed or relevant, these are described as part of any judgement.

Table 16.4 Magnitude Criteria for Visual Effects

Terminology	Definition
Major	A major change or obstruction of a view that may be directly visible, appearing as a prominent and contrasting feature and/or appearing in the foreground / middle ground.
Moderate	A moderate change or partial view of a new element within the view that may be readily noticeable, directly or obliquely visible including glimpsed, partly screened or intermittent views, appearing as a noticeable feature in the middle ground.
Slight	A small level of change, affecting a small part of the view that may be obliquely viewed or partly screened and/or appearing in the background townscape landscape. May include moving views at speed. The proposal forms a minor component in the wider view which might be missed by the casual viewer / observer.
Negligible	The proposal is barely discernible or may be at such a distance that it is very difficult to perceive equating to a no-change situation.

16.2.11 Significance of Townscape and Visual Effects

The assessment process aims to be objective and quantify effects as far as possible. However, townscape and visual assessment has aspects of it that can be considered subjective. Magnitude of change to a view can be factually defined but any subsequent objective assessment should be based on professional training, experience, observation, evidence and informed opinion.

Table 16.5 Summary Scale of Significance

• Sensitive views or visual receptors; • Effects on recognised scenic, rare or distinctive townscapes; • Effects on mature or diverse landscape elements, features, characteristics, aesthetic or perceptual qualities; and • Large scale changes	More Significant

• Effects on poorer condition or degraded townscapes / landscapes; • Effects on low sensitivity visual receptors; and	Less Significant



• Small scale changes	

Significance of visual effects is not absolute and can only be defined in relation to each development and its specific location. Usually an effect is considered 'significant' if the level of effect is 'moderate/substantial' or 'substantial.' The significance of townscape and visual effects is determined by cross-referencing sensitivity of townscape / landscape or view with the magnitude of change.

Table 16.6 Assessment of Significance Matrix

Townscape and Visual Sensitivity	Magnitude of Impact			
	Negligible	Low	Medium	High
Negligible	Negligible	Negligible or minor	Negligible or minor	Minor
Low	Negligible or minor	Negligible or minor	Minor	Minor or moderate
Medium	Negligible or minor	Minor	Moderate	Moderate or major
High	Minor	Minor or moderate	Moderate or major	Major

16.2.12 Nature of Townscape and Visual Effects

Townscape / landscape and visual assessment has aspects of it that can be considered subjective. Magnitude of change to a view can be factually defined but any subsequent objective assessment is based on professional training, experience, observation, evidence and informed opinion.

Table 16.7 Nature of Townscape / Landscape Effects

Terminology	Definition
Positive	A change that improves the quality of the townscape character and fits very well with the existing townscape character.
Neutral	A change which does not affect the scale, landform or pattern of the townscape and maintains existing townscape quality.
Adverse	A change which reduces the quality of the townscape and cannot be fully mitigated.

16.2.13 Photomontages and Visualisations

Eleven photomontages from the representative viewpoints and in and around this part of Dublin are contained in the Photomontages booklet prepared by 3D Design Bureau (January 2025) that accompanies this planning application.

Park Hood based the viewpoint selection on the *Landscape Institute Technical Guidance Note 06/19: Visual Representation of Development Proposals*. The guidance also includes reference to

photographic technology, including camera selection, choice of lens and printing which were taken into account by 3D Design Bureau (who have set out further details on methodology and presentation at the outset of their booklet).

See Photomontages produced by 3D Design Bureau in Appendix 16B.

16.3 Receiving Environment

16.3.1 Site Location

The Application Site comprises 2.79 hectares / 6.89 acres of land off Greenhills Road in Walkinstown, Dublin 12. The city centre is located 6km to the north-east. See Figure 16.1

Figure 16.1 Existing Site Aerial Photograph



The site comprises an irregular landholding bound to the north by Greenhills Road (to which it has a 278m boundary) that is located to the west of the Walkinstown Roundabout. The site is bound by a service road within the industrial and commercial estates set off St James Road to the south with the boundary being 90m long to the east and 363m long to the south. A jagged boundary extending to 143m defines the site to the west.

16.3.2 Baseline Landscape Character

Landform, Topography and Drainage

The majority of the site has been subject to historic quarrying with grading and modifications undertaken to facilitate industrial scale buildings and yard areas with levels rising gradually from the east (+54.1m) to the west (+59.1) though large areas are graded flat. More significant gradients are to the north of the site where there is steep bank rising towards the Greenhills Road set on an embankment associated with a glacial esker where levels rise to +63.5m. The slope steepness varies but there are sections with 1:1 slopes set towards the road verge and a 50m long retaining wall has been constructed in this area.

Of note is 19th century OSI historical maps depicting both the esker and a circular mound rising to 254 feet (+77.4m) to the west of the site but the mound is no longer evident. The Greenhills Esker is formed by large deposits of sands and gravels deposited under the ice sheet and its margins as the ice retreated northwest across Dublin at the end of the last Ice Age. It was subject of historic quarrying activity in the 19th and early 20th century.

There are no notable or named watercourses on the site and drainage is managed via conventional gullies or natural drainage towards boundaries. No streams or waterbodies are depicted on current or historical maps.

Land-use and Vegetation

The site is dominated by large scale industrial sheds, warehouses and commercial units of varying condition that extend to a total of approximately 1.1 hectares (i.e., 40% of the site). The architecture is primarily functional or utilitarian with facades of red brick, render, corrugated metal or cladding with standalone and terraced buildings and interconnecting asbestos/metal deck roofed warehouses.

Photo 16.1 Existing Site Setting



Intervening lands are primarily set out in access roads, yards, loading areas and parking / storage facilities surfaced in a mix of hardcore types, primarily tarmac with concrete. The site has been subject to limited use recently as evidenced by the extent of colonising or unmanaged scrub growth and damaged paving.

There are no residential properties or used buildings on the Application Site. OSI historical maps indicate a couple of buildings were located towards the Greenhills Road in the 19th century that were probably related to quarrying activity, but no evidence remains on site.

The site can be accessed by two gateways on the east service road (to the existing Chadwick's Plumbing Centre and TC Matthews Carpets premises) and three splayed gateways on the south service road where the gates have been locked for some time. The site is bound by a combination of 2.5m high concrete block walls, steel palisade fences, high mesh security fences and barbed wire.

There is no access provision from the site onto Greenhills Road or to the west. The northern boundary to the (single carriageway 6m wide) Greenhills Road is defined by a concrete wall with a security fence. There is no footpath provision on the south side of Greenhills Road (aside the side boundary) but a footpath and cycle-lane are located on its northern side.

The service lane to the south of the site is approximately 5.5m wide and surfaced in concrete. A narrow footpath of c.1.2m is located along part of the north side of the road. On the property boundaries to the southside of the lane is a line of approximately 55 no. mature *Macrocarpa conifer* trees.

Photo 16.2 Existing Service Lane and Site Entrance to south of Application Site

Vegetation is limited to boundary areas or liner strips aside warehouses though much of this is scrub that has become established across the middle and west part of the site following the cessation of use. This includes Buddleia and Elders but also scrub trees and more ornamental shrubs such as viburnum and cotoneaster planted as part of historic landscape schemes that have been allowed to grow in an unmanaged manner since the site closed. Many of the former landscape areas have become swamped by brier as a consequence.

The bank to Greenhills Road extending to approximately 3,800m² has become swamped in thickets of scrub vegetation and with some trees, mainly ash and hawthorn, emerging. Many areas are subsumed in heavy ivy growth and brier which is also an evident component on and within the boundary mesh fence.

There are incidental trees and groups across the site including 5 no. mature Birch (*Betula pendula*), 3 no. maple (*Acer platanoides*) and ornamental conifers at the eastern service road boundary. Further trees and large shrubs are located internally within the site but none would be categorised as being significant in stature or amenity value or visible beyond the site. Ivy growth is a feature on internal boundaries and walls. The ecology survey identified no significant habitats, designated sites or individual or group of species on the Application Site.

Townscape History and Settlement

The area is part of a broader set of commercial estates and land-uses associated with the Greenhills Industrial Estate and Beechlawm Industrial Complex that are a notable component of the Dublin 12 townscape.

Greenhills Road to the north of the site links Walkinstown and Tallaght and runs, in part on the geological feature of a natural glacial esker that has been subject to centuries of quarrying activity on account of being a valued source of sand and gravel for building works. OSI historical mapping from the 19th century annotates several “gravel pits” and “quarries” in this area suggesting the area, while rural, has been characterised by commercial and industrial activity since that time. By the time of the Cassini maps in the mid-20th century, many of the quarries are annotated “disused” and while the area is still predominantly rural, the city is clearly encroaching with extensive housing development extending to the nearby Crumlin, Drimnagh and Kimmage areas.

The area remained mostly farmland until city expansion in the 1950s and 1960s comprising new housing estates which were built in the area as starter homes and social rented schemes as a response to the poor housing conditions in the inner city. The area on and around the Application Site became absorbed into the city with commercial estates attracted here by the nearby workforce. By the 1970's, the area was fully enveloped into the Dublin cityscape and any association with the rural landscape was gone having been replaced by a myriad of small housing estates, commercial / industrial zones and institutional lands.

Photo 16.3 *Greenhills Road on section adjacent to Application Site*



Adjacent Townscape Character

Greenhills (*Na Glaschnoic*) is a Dublin suburb named after the hills that make up the now partially hidden esker. It merges into Walkinstown (*Baile Bhailcín*) to the east which is a further suburb comprising extensive low-rise private and social housing estates and the dominant characteristic of the area is that of mid-20th century housing developments. The area also includes a library, residents' association, sports ground, community centre, schools, pubs, church and retail facilities. The population of Walkinstown was recorded as 6,819 in the 2016 Census.

Greenhills Road was part of an ancient highway called the Eiscir Riada and its alignment near the Application Site is the same as that depicted on the 1st Edition OSI Ordnance Survey Maps dating from the 1830s. It commences at the Walkinstown Roundabout, 235m to the north-east of the Application Site and runs 4km to the south-west crossing the M50 to the N81 in Tallaght. There are no existing accesses or linkages between the Greenhills Road and the Application Site.

Across the lands to the south, west and north, this part of Dublin is dominated by commercial estates and light industrial units extending across approximately 575 hectares including the Ballymount Industrial Estate, John F Kennedy Industrial Estate, Sunbury Industrial Estate, M50 Business Park, Greenhills Industrial Estate and Western Industrial Estate / Park. Off the service lane to the immediate south of the Application Site are further large-scale warehouses and premises including iron works, motor repairs and manufacturing industries.

The M50 and its Junction 10 Ballymount are located 1.3km to the west but is accessed from the site via the Walkinstown Roundabout and Calmount Avenue. Walkinstown Roundabout (or Walkinstown Cross) is a junction which serves as the conduit for seven roads and is known as one of the busiest junctions in the city.

Photo 16.4 Walkinstown Roundabout looking west towards Greenhills Road and the Application Site



There are few notable buildings or historic landmarks in the Greenhills and Walkinstown area. The Church of the Holy Spirit (1960-70) is located at St Pauls, 680m due south of the Application Site. The National Inventory of Architectural Heritage (“**NIAH**”) notes it is a “...fine example of mid twentieth-century church design...” and that the “...eye-catching roof profile acts as a landmark in this predominantly low-rise area.” The Church of the Assumption of the Blessed Mary (1955) is located at Walkinstown Green, 720m to the north-east. NIAH notes that its “...height and form make it a notable feature in the streetscape, and it forms a pleasing backdrop to the adjoining park to the south-west.” In reality, Walkinstown’s most notable feature is its large roundabout that dates from the 1950s and extends to nearly 1 hectare of land.

Public Amenities and Facilities

The site is privately owned and has no public accesses or rights of way. A review of information provided by Fáilte Ireland shows that there are no promoted tourism amenities, sites, routes or attractions in close proximity to the Application Site. There are no noted public amenities or public paths / rights of way in close proximity to the site. There are a number of public parks within 1km of the site including: -

- Beechfield Park located over 435m to the east in Walkinstown including sports pitches and a playground;
- Greenhills Park is located over 400m to the south near the Greenhills Community College and includes large areas of open grassland and some sports facilities;
- Walkinstown Park is located over 470m to the north off Walkinstown Avenue. The park has three football pitches, two GAA pitches and a tennis court; and
- Tymon Park is situated over 720m to the south-west in the old townland of Greenhills and is located to the south of the Limekiln estate. It extends to over 300 acres / 120 hectares including 29 sports pitches and a children’s adventure playground but is divided in two by the M50 motorway

Photo 16.5 Views to the east from Tymon Park include the roofscapes of the Greenhills and Walkinstown areas with the Application Site, over 700m distant, part of the panoramic view



16.3.3 Published Landscape / Townscape Character Assessments

Landscape Character Assessment of South Dublin County 2015 (LCA)

This assessment identified and categorised five primary landscape character areas in South Dublin. This provided a broad overview of the landscape character, description, condition and sensitivity for each area and is a useful research document in terms of baseline assessment of the study area. Within this, *Figure 19 Landscape Character Types* annotates the Application Site as being in the “Urban” area and states the following driver of this particular landscape character type: -

“Includes built land around historic settlements within the larger urban areas. Primarily composed of established nucleated villages and towns that have developed historically many of which saw significant improvements in the 19th century in terms of streetscapes. These are surrounded by residential development of various origins but primarily 20th century, with significant recent development in the past two decades.”

In terms of Relict Land Use Types, the LCA notes the following for the Application Site area: -

“Some areas in the region have little or no relict land use types at all visible and are defined by large scale high density developments such as housing and industrial estates, where neither the historical or archaeological evidence is sufficiently dominant to suggest a relict land use type. In these cases, they have been designated ‘none.’ This area corresponds broadly with the highly developed area to the east of the M50 routeway.”

The LCA shows the Application Site located in the “Urban South Dublin” landscape character area though notes, as this is a built-up sector, it “...would require a separate townscape assessment, to be undertaken at a smaller scale and provide a more detailed evidence base for townscape management issues in the future.” The “LCA retains little of historical significance and the setting of its primary settlements have been radically altered by built developments, notably through the 20th Century”. While there is no detailed published landscape character of this area at this time, it summarises the key characteristics as follows:-

- Built – up urban area with extensive housing estates and industrial /commercial parks. Variety of house styles and layouts dating from the late 19th century to late 20th century;
- Settlements of Rathfarnham, Templeogue and Clondalkin with important historical legacy and remnants;
- Major traffic corridors with M50 traversing north- south through the area, and LUAS line travelling north from Tallaght, parallel to the M50, to city centre;
- Corridors of natural and semi natural vegetation, notably along the River Dodder (a linear park) and the Camac River;
- Grass open spaces in gardens, industrial parks, golf courses, school playing fields, and miscellaneous spaces in housing areas;
- Street trees planting; and
- Recreational facilities – public parks and golf courses - provide amenities and ecological resources

16.3.4 Planning Guidance and Landscape / Townscape Designations

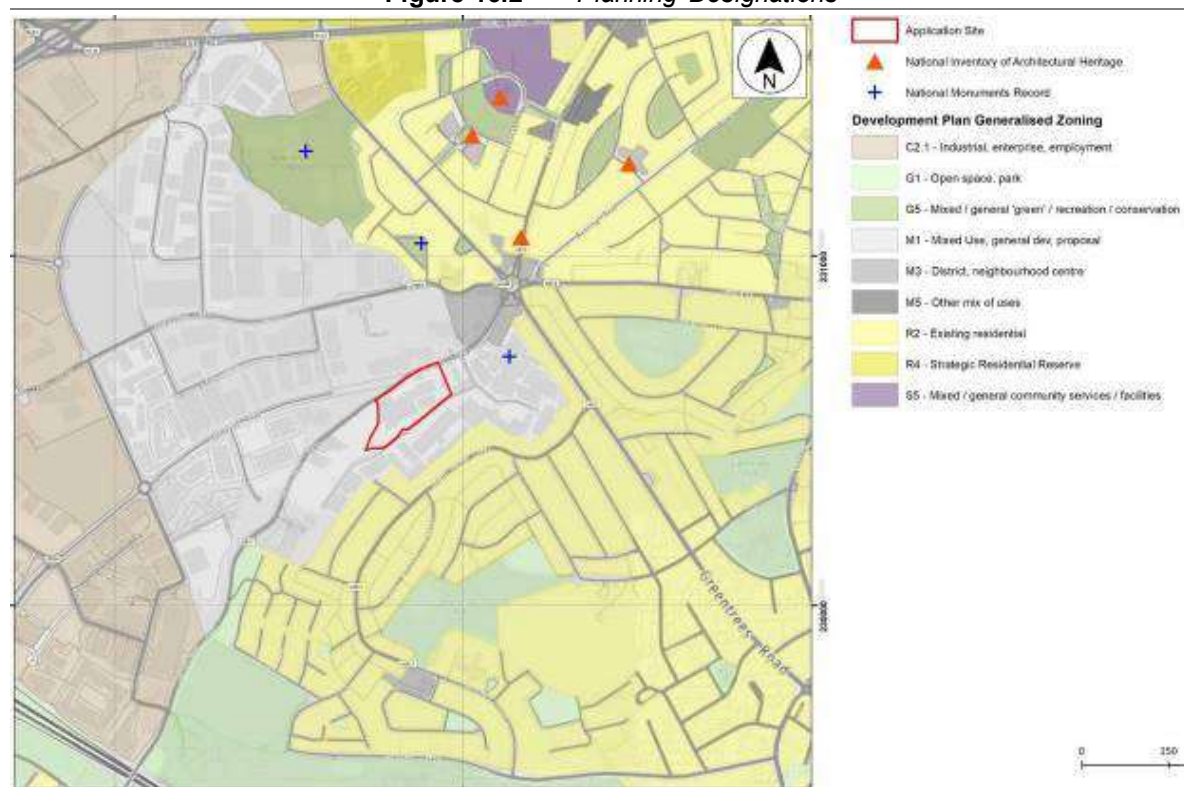
South Dublin County Development Plan (2022-2028)

The South Dublin County Development Plan 2022-2028 (SDCCDP) sets out the framework to guide future development within the county.

Designations and Objectives

SDCCDP Map No.5 annotates the Application Site as being in the Objective REGEN zone with the stated objective “To facilitate enterprise and/or residential-led regeneration subject to a development framework or plan for the area incorporating phasing and infrastructure delivery.”

Figure 16.2 Planning Designations



The map also identifies various other features or sites that can be related to landscape / townscape / visual matters including “Prospects”, “Protect and Preserve Significant Views” and “Tree Preservation Orders” but none of these are in proximity or close enough to be affected by any activity on the site.

In terms of Housing Land Capacity, Section 2.7.1 ‘Dublin City and Suburbs’ notes CS7 objective 2: “To

promote and support the regeneration of underutilised industrial areas designated with the regeneration Zoning Objective 'REGN' ('to facilitate enterprise and/or residential led development subject to a development framework or plan for the area incorporating phasing and infrastructure delivery'.

Section 3.3.7 'Geology' notes that the Greenhills Esker is a geological site for protection. Section 7.7.2 'New Street and Road Proposals' notes an objective to *"Upgrade of Greenhills Road from Airtown Road to Walkinstown Roundabout with new links to Ballymount Avenue, Limekiln Road and Calmount Road"* which includes the section passing the Application Site.

Relevant Policies

In terms of residential development and landscape related inputs, Section 6.7.2 'Private and Communal/ Semi-Private and Public Open Space' and 'Section 6.7.3 Private and Semi-Private Open Space' include the following:-

- **Policy H8:** *"Ensure that all residential developments is served by a clear hierarchy and network of high quality public open spaces that provide for active and passive recreation and enhances the visual character, identity and amenity of the area."*
- *"The provision of public open space that is appropriately designed, properly located and well maintained is a key element of high quality residential environments. Public open space should have active and passive recreational value and should enhance the identity and amenity of an area."*
- **Policy H9:** *"Ensure that all dwellings have access to high quality private open space and semi-private open space (where appropriate) and that such space is carefully integrated into the design of new residential developments."*
- *"The provision of adequate and well-designed private open space is crucial in meeting the amenity needs of residents. In schemes that include apartments and duplexes the more limited private open space provision for these units can be successfully augmented by high quality semi-private open spaces that are landscaped to a high quality and offer a range of active and passive uses for residents."*

Building Heights

Policy QDP8: noted that heights should *"Adhere to the requirements set out in the Urban Development and Building Height Guidelines (2018) issued by the DHLGH through the implementation of the Assessment Toolkit set out in the South Dublin County's Building Heights and Density Guide 2021."*

Section 5.2.7 'Density and Building Heights' notes that the *"...guidelines is not intended to introduce height for the sake of height, but to introduce and consider increased height and densities as a means of accommodating greater residential populations within the County's serviced and zoned land banks in particular where public transport, employment and other services are proximate to a development proposal in line with the principals of compact growth."*

Policy QDP9: *"Apply a context driven approach to building heights in South Dublin, as supported by South Dublin's Building Heights and Density Guide."*

Policy QSP3: *"Support and facilitate proposals which contribute in a positive manner to the character and setting of an area."*

QSP3 Objective 6: *"To ensure that higher buildings in established areas respect the surrounding context and take account of heights and their impact on light and the negative impact that they may have on existing communities to ensure consistency with regard to Healthy Placemaking."*

Local Area Plan

The Development Plan sets out CS2 Objective 1 to *"prepare a Local Area Plan or other appropriate mechanism for the zoned Regeneration (REGEN) lands and other Lands at Naas Road/Ballymount as defined by the City Edge project Boundary."* This would include the Application Site lands but this is not available as yet.

The Application Site sits within the draft Greenhills Priority Development Area (PDA) and as such is one of the locations where early development will be supported.

Urban Development and Building Height Guidelines for Planning Authorities (2018)

Specific Planning Policy Requirement (SPPR) 1 of these Guidelines states the following:-

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

Within Section 3.1 regarding Building Height and the Development Management Process, it notes there is a "...presumption in favour of buildings of increased height in our town/city cores and in other urban locations with good public transport accessibility."

The subsequent Development Management Criteria advises on assessment requirements and states planning applications within the city satisfies the following criteria:-

- *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.³ 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.*

National Inventory of Architectural Heritage

The National Inventory of Architectural Heritage (NIAH) identifies no monuments or historic sites on the Application Site.

Environmental Protection Agency

Maps available from the Environmental Protection Agency (EPA) indicate no protected landscapes, environment or ecology areas on or close to the Application Site.

16.3.5 Townscape Sensitivity

Sensitivity is based on the townscape's physical shape, scale, pattern, its visual environment / enclosure, any sense of heritage or architecture, sensitive or designated areas and the presence of rare or unique features, elements or components. Townscape sensitivity is ultimately an assessment of the ability of a surrounding landscape or townscape to accommodate and absorb change within the application site without affecting its character.

In visual amenity terms, the site is rated as having Low sensitivity on account of a limited visual envelope due to the historic and existing land-uses both on and around the Application Site. It is underutilized site with redundant buildings that has a post-industrial character. There is no nearby designated landscapes, conservation areas or listed buildings that would be affected by activity on the Application Site. The most sensitive landscape feature is the Greenhills Esker to the immediate north of the site but, as noted above, this has been subject to historic quarrying activity and the area is now characterised by road infrastructure and industrial parks which have substantially affected its nature and subsumed any presence it has in the landscape.

Longer views are afforded from elevated or exposed areas in parklands to the west, but these are of a distant or partial nature and, in overall terms, the Application Site is well concealed from public vantage points. From the majority of areas in the Greenhills and Walkinstown areas, it would be considered that

the site has a good ability to absorb changes without significant detriment to landscape / townscape character or visual amenity of this area.

Photo 16.6 Internal view of Application Site demonstrating existing setting and condition



16.3.6 Townscape / Landscape Quality and Value

The Application Site comprises an extensive area of commercial warehouses and functional buildings some of which are degraded, run-down and vacant with extensive areas of utilitarian parking provision. Bound by unsightly security fences and walls subject to graffiti and weed growth respectively, the site would be categorised as *poor* townscape in terms of quality and value and very capable of accommodating change in townscape / landscape and visual terms. It has been in a similar condition for some time and contributes adversely to the setting of Greenhills and Walkinstown.

The site carries no environment, amenity, heritage, visual amenity or landscape designations and possesses nothing that would be categorised as sensitive in terms of townscape character, features or vegetation. In general, the areas to the periphery of the Application Site are of a similar character and *poor* quality / value being made up of further commercial and industrialised landscapes comprising further functional and utilitarian buildings with little in terms of aesthetic or amenity provision.

Beyond the industrial park areas, the townscape of Walkinstown and Greenhills comprises a mix of good to ordinary townscape of *medium* sensitivity comprising extensive areas of low-rise mid-20th century housing estates and incidental parks. There are no heritage or conservation areas in this area.

The LCA notes that the key "*Landscape Value*" contributors in south Dublin are the public parks, the Dodder River Valley, 19th century industrial heritage and views out to Dublin (Wicklow) Mountains and agricultural hinterland. These are all sufficiently distant from the Application Site to be subject to any significant landscape or visual effects.

Photo 16.7 Aerial View of Application Site demonstrating existing land-use and townscape setting

16.3.7 Baseline Visual Evaluation

Site surveys were undertaken between December 2024 and January 2025 to establish locations where there are potential views of the proposed development or where key visual receptor groups might visit, work or stay and any general movement through the area. Built-up townscape, infrastructure and vegetation are features of the Greenhills townscape and this ensures that views consistently change in context, scale and extent with many views of the Application Site, even from close proximity locations closed off. Note that there was no or very limited leaf cover at this time of year that the baseline photography was undertaken for the photomontages, so views are at their most open and therefore appropriate for objective assessment.

Viewpoints were selected within publicly accessible areas based on the following criteria: -

- Site investigation to establish those locations where there was likely to be significant views (e.g., exposed and elevated locations);
- Site investigation to establish those locations where there was likely to be a significant number of visual receptors (e.g., commuter routes or public parks);
- Consultation and review with Cultural Heritage Consultants to identify key viewpoints in relation to listed buildings, conservation areas, landmark buildings and important local prospects, views and panoramas; and
- Ensuring that all townscape character areas potentially affected are covered to give representative likely visual effect.

A review was undertaken of the 18-no. designated "*Prospects to be reserved and protected*" (as per Section 9.2.1 in the SDCCDP) but this established none are in close proximity to the site or will be impacted by activity or land use on the Application Site.

Selected representative viewpoints for the visual assessment are taken from the following locations: -

- Viewpoint 1: Walkinstown Crescent;
- Viewpoint 2: R819 Greenhills Road;
- Viewpoint 3: Greenhills Road near Walkinstown Roundabout;
- Viewpoint 4: Walkinstown Roundabout;
- Viewpoint 5: Beechfield Park, Walkinstown;

- Viewpoint 6: St Joseph's Road;
- Viewpoint 7: Greenhills Park;
- Viewpoint 8: St James's Road;
- Viewpoint 9: Tymon Park;
- Viewpoint 10: R819 Greenhills Road;
- Viewpoint 11: Walkinstown Avenue Park; and
- Viewpoint 12: Greenhills Industrial Estate Service Lane

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Figure 16.3 Viewpoint Locations Map



Extract from Viewpoint Locations Map provided by 3DDB (2025)

16.4 Characteristics of the Proposed Development

16.4.1 Proposed Development Summary

The key components of this of this proposal on the Chadwick's Builders Merchants site involves demolition of the existing buildings and construction of a mixed-use development including the following:-

- The demolition of the former Chadwick's Builders Merchant development comprising 1 no. two storey office building and 9 no. storage/warehouse buildings ranging in height from 3m – 9.9m as follows: Building A (8,764 sq.m.), Building B (1,293 sq.m.), Building C (two-storey office building) (527 sq.m.), Building D (47 sq.m.), Building E (29 sq.m.), Building F (207 sq.m.), Building G (101 sq.m.), Building H (80 sq.m.), Building I (28 sq.m.), and Building J (44 sq.m.), in total comprising 11,120 sq.m;*
- the construction of a mixed-use residential and commercial development comprising 588 no. residential apartment units (291 no. one-beds, 238no. two-beds and 59 no. three-beds), 1 no. 570.91sqm (443sqm indoor space) childcare facility and 6no. no. commercial/retail units in 4 no. blocks (A-D) ranging in height from 5 to 12 storeys as follows:*
 - Block A comprises 170 no. apartments (103 no. 1 bed-units, 59 no. 2 bed-units and 8 no. 3-*

- bed units) measuring 8 storeys in height.*
- b. Block B comprises 197 no. apartments (89 no. 1 bed-units, 92 no. 2 bed-units and 16 no. 3 bed-units) measuring 10 storeys in height.*
 - c. Block C comprises 81 no. apartments (44 no. 1-bed units, 16 no. 2-bed units and 21 no. 3-bed units) measuring 12 storeys in height.*
 - d. Block D comprises 140 no. apartments (55 no. 1 bed-units, 71 no. 2 bed-units and 14 no. 3 bed-units) measuring 8 storeys in height.*
All apartments will be provided with private balconies/terraces;
- iii. provision of indoor communal residential amenity (614.14 sq.m.) at ground and first floors of Block A, B , C;*
 - iv. the construction of 1 no. childcare facility with dedicated outdoor play area located at ground floor of Block B;*
 - v. the construction of 6no. commercial units at ground floor level of Blocks A, B and D, and 1 no. commercial unit at first floor level of Block A as follows: Block A has 1 no. unit at ground floor comprising 455.8 sq.m. and 1 no. unit at first floor level comprising 160.79 sq.m., Block B has 1 no. unit at ground floor comprising 190.96 . and Block D has 4 no. units at ground floor comprising 361.6, 232.3, 238 and 174.9 sq.m;*
 - vi. the construction of 4 no. vehicular entrances; a primary entrance via vehicular ramp from the north (access from Greenhills Road) and 3 no. secondary entrances from the south for access, emergency access and services (access from the existing road to the south of the site) with additional pedestrian accesses proposed along Greenhills Road;*
 - vii. provision of 270 no. car parking spaces comprising 240 no. standard spaces (including 6 no. car club spaces) and 13 no. mobility spaces located at surface level and within undercroft car parks within Blocks A, B , C and D, 17 no. commercial/ unloading/ drop-off parking spaces at ground level;*
 - viii. provision of 1,269 no. bicycle parking spaces comprising 952 no. residents' bicycle spaces, 10 no. cargo/accessable bicycle spaces in 14 no. bicycle storerooms in surface and undercroft parking areas and 307 no. visitors' bicycle spaces located externally at ground floor level throughout the development;*
 - ix. provision of outdoor communal amenity space (3,130.3 sq.m) comprising landscaped courtyards that include play areas, seating areas, grass areas, planting and scented gardens located on podiums at first floor level; provision of communal amenity roof gardens in Block A & B with seating area and planting (746.1 sq.m.) and inclusion of centrally located public open space (6,6650 sq.m.) adjacent to Blocks A, B, C and D comprising grassed areas, planting, seating areas, play areas, water feature, flexible use space and incidental open space/public realm;*
 - x. provision of toucan crossing and all associated road markings and signage from the subject site to a new footpath on northern side of Greenhills Road; and*
 - xi. development also includes landscaping and infrastructural works, foul and surface water drainage, bin storage, ESB substations, plant rooms, pv panels, boundary treatments, internal roads, cycle paths and footpaths and all associated site works to facilitate the development.*

A water management strategy is designed into the project to capture storm water runoff from the site, using an integrated network of sustainable drainage systems (SUDS) including rain garden planting, wetland planting and Sedum green roofs.

A full description of the Proposed Development is contained within **Chapter 2** Project Description of this EIAR, and the Design and Access Statement (C+W O'Brien Architects) submitted with this Application and is not repeated here.

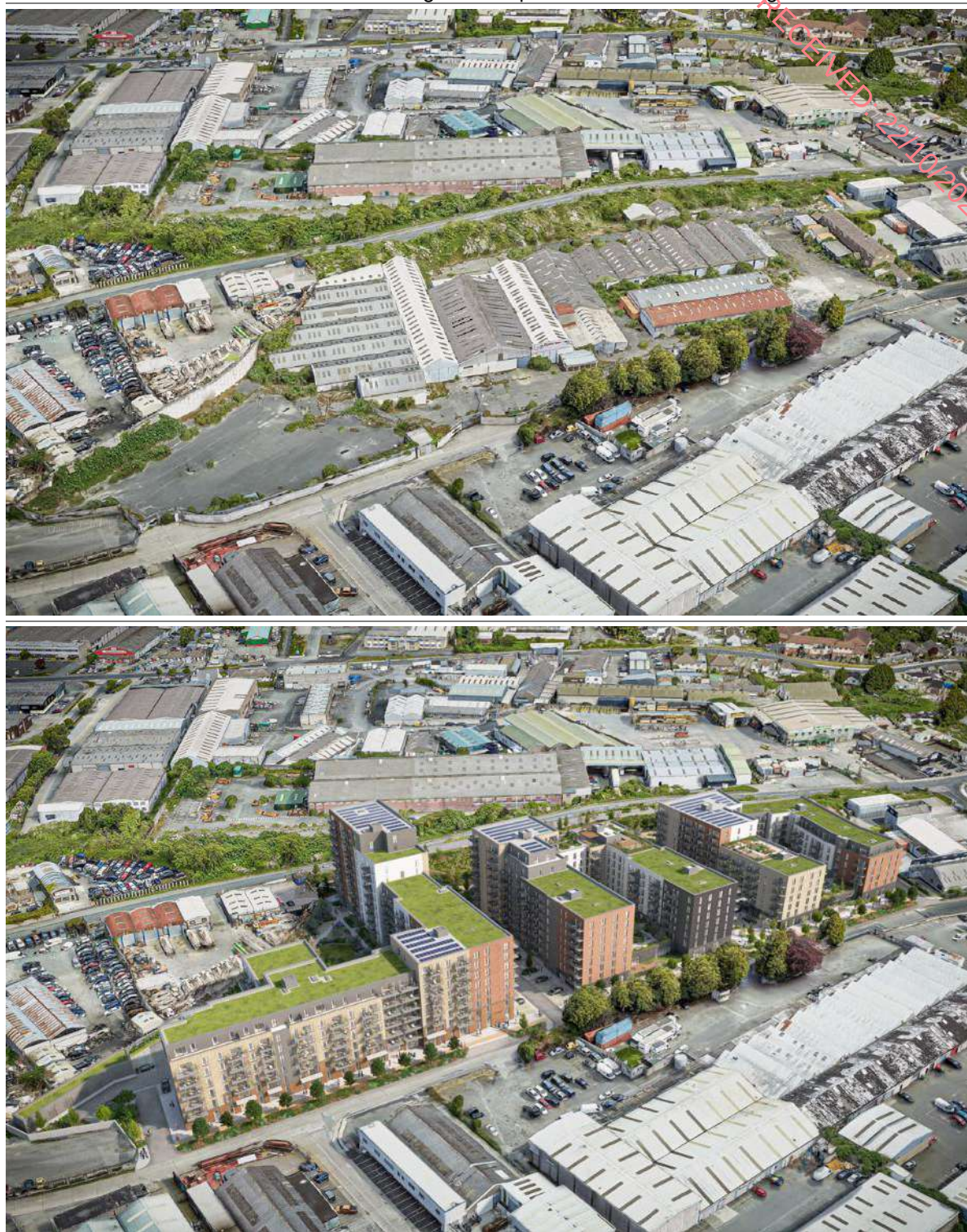
CGI 16.1**Existing and Proposed Aerial Photomontage**

Image courtesy of 3D Design Bureau (2025)

16.5 Potential Impact of the Proposed Development

The aim of the TVIA is to objectively and professionally assess how the Proposed Development will affect the landscape, townscape and visual amenity of this part of Dublin. The terminology and glossary used in this chapter to describe landscape and visual effects is based on a review of the Principles and Overview of Processes (Chapter 3) of the GLVIA. The TVIA Criteria and Terminology is outlined in **Section 16.1** above.

The magnitude and significance of any effect is determined by the scale and context of the Proposed Development and any resulting contrast between this and the existing townscape setting, visual quality and amenity. A further consideration is not just its proximity to adjacent townscape or areas but also the number of people who use or pass through this area who may feel that the visual and townscape quality of the area has been affected by this proposal.

Any assessment must be measured against that of the situation that pertains at present and the existing site possesses little in terms of a positive contribution to city character or quality. Impacts are not necessarily adverse and may be neutral (i.e., changes which make the existing situation neither better nor worse), or beneficial, following the development though effects may be categorised as substantial or significant.

16.5.1 Construction Phase

The construction operations will cause affects to local townscape and visual amenity though the following:-

- Removal / demolition of existing warehouses, buildings and internal infrastructure;
- Removal of scrub vegetation and internal colonising shrubs and trees;
- Site access and haulage routes using the existing road infrastructure off Greenhills Road;
- Fixed construction plant, including cranes and scaffolding and gantries;
- Mobile construction plant, such as excavators and lorries;
- Storage and compound areas;
- Erection of welfare facilities and retention of existing protective hoardings;
- Security and safety lighting; and
- The presence of evolving buildings.

Such is their condition, the removal of the existing buildings and vegetation would have no significant effects on local townscape character and demolition would have *neutral* effects (i.e., no better or worse) on the character of the site.

The site will be bound by hoardings to clearly delineate working areas. Where feasible existing walls and fences will be retained in situ for the construction period to also form this function. Publicity material may be displayed on the hoardings along Greenhills Road to inform the public and passer-by's about the proposal and programme for delivery. These will also obscure views from low-level street / road areas.

The construction works will represent an intensive change to the site character and result in direct effects to adjacent areas which will constitute a *slight adverse* effect comparative to the existing situation. These will be temporary and are not considered significant in context of the wider townscape given current site use and degraded quality.

As the construction of higher floors commences, there will be more visual exposure and this will continue to have *slight adverse* effects on local townscape areas including areas on the adjacent section of Greenhills Road and immediately adjacent areas within the Greenhills Estate. Being a heavily urbanised area and commercial / industrial location and in an area of significant transport corridors with several sites in degraded condition, effects deriving from construction traffic would not constitute a significant change from the existing situation. Construction traffic and materials can access from Greenhills Road which is busy road and any increased usage will not be significant in landscape and visual terms.

To areas across the wider city including Walkinstown, the construction phase will have *negligible* effects until the taller elements are being constructed and come into view. As these higher stories are constructed, the construction works will inevitably become more evident from incidental gaps or elevated areas in the Greenhills / Walkinstown area but given the context of built environment and distance, the effects would be of a *low magnitude* and not of a significant nature. Any significant effects are therefore limited to the Application Site itself and the immediately adjacent lands.

16.5.2 Operational Phase

On the basis the current site contributes very limited positive townscape or landscape influence, the TVIA's main consideration is the scale, height and mass of the proposed development in terms of the operational / completed phase. Note that tall buildings are commonly defined as those which are significantly taller than the generally prevailing height of buildings in the surrounding area.

The townscape and visual effects deriving from this proposal are deemed to be permanent changes (i.e., effects lasting over twenty five years and irreversible). On completion, it will be a significant addition to the Greenhills townscape forming a prominent set of buildings and public realm that will transform the sense of place and character of this area. In broad terms, a proposal of this nature and scale will become part of the integrity, legibility and identity of Greenhills with a distinctive or landmark status representing a major change as to how the townscape is perceived in this part of the city. The following reviews the likely impacts on key townscape areas as identified in the baseline assessment section above.

16.5.2.1 Application Site

In terms of the actual Application Site, there are no distinctive / notable built or natural features including vegetation, facades or architecture that will be lost; the key part of the assessment therefore relate to the scale and nature of the proposed development.

While the removal of the existing buildings would have no significant effects on local townscape character, the subsequent development will result in significant changes to the site character due to introduction of a series of taller buildings that will have *profound* effects on the baseline setting on completion. The effects on the Application Site are categorised as *high* magnitude but this is not something that should be seen as adverse in townscape / landscape character terms. The improved facades, architecture and frontages will reinvigorate and revitalise this part of Greenhills giving it a more productive use contributing to the immediate townscape character and sense of place.

CGI 16.2 Proposed Aerial Photomontage



Image courtesy of 3D Design Bureau (2025)

The road pattern to the periphery will be unaffected though the proposal offers the opportunity to broaden the constrained service road to the south and improve the associated public realm and

landscape works by widening that would have positive effects on its visual appearance, usability, amenity and function.

The proposed buildings will occupy approximately 8,050m² (29.5% of the site) which represents a 10.5% reduction in footprint comparable to the existing situation. The layout allows much of the remaining two-thirds of the site to be dedicated to landscape or designed public open spaces aside a central shared access route for the amenity of residents, visitors and other users that would constitute a positive effect in terms of site amenity. Further, the roofs of many of the proposed buildings will be in sedum and have a green character.

The open space works include significant planting that will substantially increase tree and vegetation cover with significant improvements to the species diversification across the site including on the slopes to the north of the site towards Greenhills Road. The collective landscape works will enhance the amenity, ecological worth and landscape character through introduction of amenity gardens, landscape treatments, courtyards and planting (selected from lists provided in the *All-Ireland Pollinator Code*) that will give the site a much "greener" character than it currently has or has had for centuries.

Further the proposal will have positive effects on its character and increase the street life during both day and night while enhancing linkages in the Greenhills / Walkinstown area through improved public accessibility via new public realm and linked open space as set out in Chapter 13.7 below

The proposal will also allow for a more sustainable drainage system across the site via green roofs and rainwater ponds that are integrated into the landscape works.

16.5.2.2 Greenhills and Walkinstown

There will inevitably be *substantial* and significant effects to areas immediately beside the proposed development site on Greenhills Road and towards the existing Industrial Estate due to the change in use from a commercial land use to a taller mixed-use scheme and residential complex. The key change will derive from the scale and mass of the new buildings rising above that of the existing townscape that would be set in areas of public realm that would have a very different character and context to what exists at present. While assessed as significant and of *high magnitude*, the proposal will include positive effects in terms of local landscape character in terms of improved streetscape, enhanced and improved tree and vegetation cover and a set of landmark buildings giving enhanced townscape variation and identity.

This site is framed to the south and west by the Greenhills Industrial Estate and further large-scale townscape elements to the north and west (and the Greenhills esker) that collectively ensure it is contained in character and visual terms. As such, this development can be successfully absorbed into this area without causing adverse townscape / landscape effects and the site lends itself to such a proposal.

Beyond a short section of Greenhills Road, the existing built environment comprises a density of building and vegetation that ensures the majority of these areas will experience *slight / negligible effects* (i.e., insignificant) due to the proposal being visually obscured or not forming a significant part of the setting. The majority of the Greenhills / Walkinstown area will experience *negligible* or *no* townscape or visual effects due to the proposal being visually obscured. There will be no effects to any designated historic sites / environments in this locality.

The distinctive buildings will represent an addition to the local skyline and townscape and serve as a visual backdrop to open areas towards the Walkinstown Roundabout, more distant public parks and intermittent roads with the upper parts of the development rising above the intervening townscape. The nature of the intervening townscape and limited quality or value in the Application Site area ensures that the development, while sizeable, can be accommodated and absorbed without detriment or adverse effects to any of these areas.

The proposed development will be taller than the existing buildings in this area but it not likely to be unique the city on account of the major regeneration ambitions which will inevitably be developed out with a contemporary architecture of a larger scale than currently exists.

16.5.2.3 Dublin City

The current site and setting contributes little to the character or quality of this part of the city. This development will signify a fresh phase or stage for this part of Greenhills which will have *substantial* effects on areas closer to the proposed development, but the baseline setting ensures this can be successfully absorbed without causing any adverse townscape / landscape effects. There are no designated views, landmarks, landscapes / townscapes, prospects or vistas affected by this proposal in an adverse, unacceptable or significant manner.

In townscape character terms, the completed development will improve the quality and character of this area symbolising progress, revitalisation and positivity with the development including significant new public (and communal) open spaces that will be a positive effect in terms of “greening” this part of the city in an area that has been historically devoid of such a characteristic. For passing traffic on the Greenhills Road, it will be seen in context with the townscape and contribute positively to this area’s identity and sense of place signifying commencement of a new architectural and landscape character.

In general, views experienced by pedestrians are focused at ground level and from these areas the proposal will be obscured by existing buildings or boundary treatments ensuring *negligible / no* effects to the vast majority of the city. Where visible in glimpse views, it will invariably be a part of a built townscape and its existing condition, proximity of buildings, infrastructure and adjacent land-uses ensure it can be accommodated without causing any detriment to townscape character. There will be new open spaces, enhanced linkages and amenity set off and around the new development that correlates with the objectives in the Development Plan (Objective REGEN zone) that, on completion and as the landscape works mature, will clearly have positive effects on this part of the city.

In summary, the effects, while significant will be a positive statement in terms of the townscape development, legibility and future while tying effectively in with many of the ambitions and objectives of the Development Plan in terms of residential-led regeneration, mixed-use development and services as addressed in the accompanying planning statement.

16.5.2.4 Visual Assessment

The following tables summarise the existing views and context of the 11 no. representative viewpoints and the likely impact on these views and visual quality deriving from the proposed development and the consequent significance of impact on these views of visual receptors. The below includes extracts from the photomontage booklet (See Appendix 16B) for ease of reference.

Table 16.8 Viewpoint 1 – Walkinstown Avenue



Image courtesy of 3D Design Bureau (2025)

Viewpoint Baseline	Walkinstown Crescent is part of a residential area located off Ballymount Road Lower and Walkinstown Avenue with this viewpoint being located approximately 350m to the north of the Application Site. A triangular area of open space is located to the core of this residential area which comprises low-rise / two-storey terraced housing. The small park allows relatively open views to the south, across the intervening roads and eastern edge of Ballymount Trading Estate towards the Application Site area (though this is obscured). The majority of visual receptors will be local residents.
Viewpoint Sensitivity	Medium
Predicted Visual Changes	A small portion of the proposed development will be visible from this section of area with filtered views of the higher storeys being visible amongst the trees within the open space and over the rooftops of properties on Ballymount Road Lower. The combination of distance and trees ensure that the proposal never forms a significant portion of the view. Any awareness of the proposal will not have a significant effect on the overall quality of the existing view or visual amenity of this area. Given the distance, and partial nature of the view, these effects are assessed as slight neutral.
Significance Summary	Minor: proposed development will form a very minor component in the distant view but would have no significant effect the quality or character of this area or the open space.

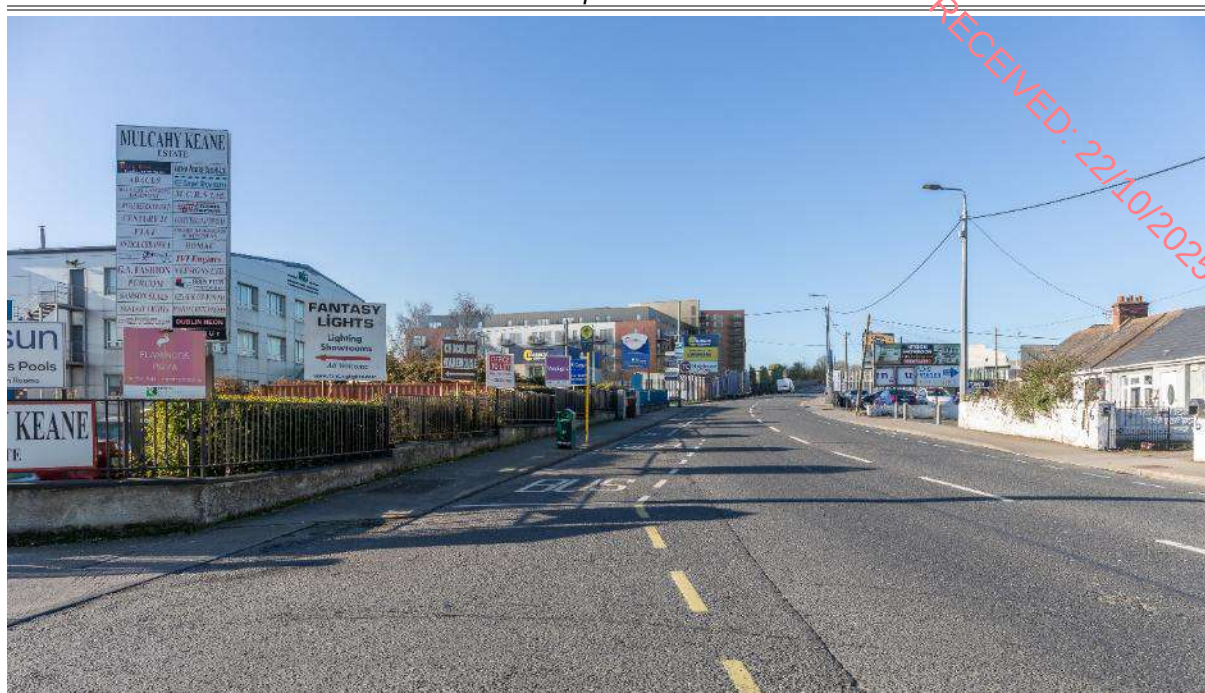
Table 16.9 Viewpoint 2 – Greenhills Road

Image courtesy of 3D Design Bureau (2025)

Viewpoint Baseline	The R819 Greenhills Road commences at the Walkinstown Roundabout, 235m to the north-east of the Application Site and crosses the cityscape to the south-west towards the M50 and Tallaght. Existing commercial buildings, boundary treatments and associated advertising signage are notable features in this very close proximity (c. 80m) view from the road of the eastern part of the Application Site. The majority of viewers will be road users including pedestrian, those in the adjacent residential properties on the north side of the road, those working in commercial properties and those travelling through for commuting reasons.
Viewpoint Sensitivity	Low / Medium
Predicted Visual Changes	The proposed development will be an immediately apparent component in the view and redefine the baseline characteristics dominating the built form and architecture to the south and west. This transformation will constitute a substantial change in view and context but one that will include positive effects due to an improvement in localised cityscape setting, architecture and use including public realm areas that would symbolise progress and revitalisation of this area. The broad nature of the adjacent road and associated large scale buildings and horizontal plinth provide a sufficiently wide setting that would be able to effectively accommodate and balance the scale of the proposed development in this view.
Significance Summary	Major: The proposal will form a prominent and significant component within the overall view along Greenhills Road to the west.

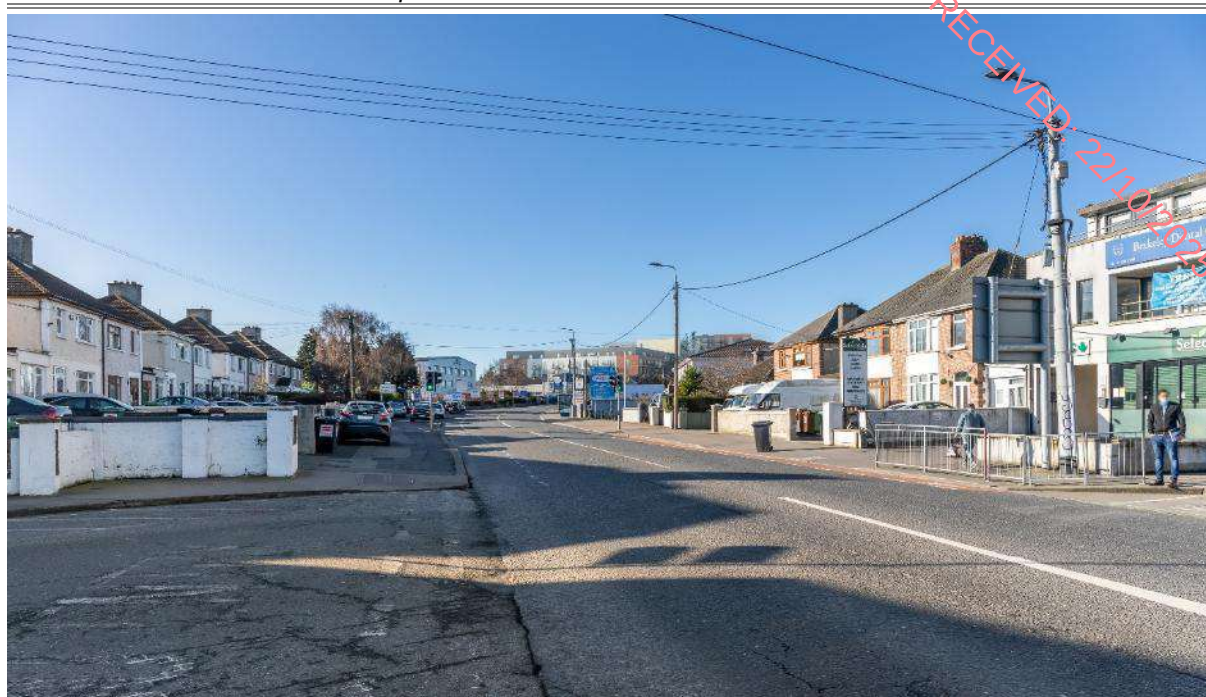
Table 16.10 Viewpoint 3 – Greenhills Road near Walkinstown Roundabout

Image courtesy of 3D Design Bureau (2025)

Viewpoint Baseline	The R819 Greenhills Road commences at the Walkinstown Roundabout c.235m east of the Application Site with the road aligned with low-rise residential houses and commercial properties. Partial views of the eastern end of the site, over 195m distant, and associated buildings (including the Chadwick's premises) are afforded in the linear view to the west along the road corridor. The site beyond these is obscured by intervening townscape and built form. The majority of viewers will be road users including those using the pedestrian footpaths on both sides and those here for work or commuting reasons.
Viewpoint Sensitivity	Low / Medium – road users, adjacent residential properties and workers in nearby units
Predicted Visual Changes	The upper floors of the eastern buildings that form part of the proposal will be an immediately apparent and notable addition to the skyline to the west rising above the low intervening townscape forming a distinctive set of new buildings on the backdrop having moderate effects. Given the distance, urban context and mixed quality or form of architecture and townscape in this view, this addition would not have any detrimental effects on the setting or character of this part of Greenhills Road. It will not close off or affect any notable view but it would visually symbolise a change in sense of place and density of townscape to the west of Walkinstown.
Significance Summary	Moderate: The proposal will form a readily apparent component within the overall view along Greenhills Road to the west.

Table 16.11 Viewpoint 4 – Walkinstown Roundabout

Image courtesy of 3D Design Bureau (2025)

Viewpoint Baseline	Walkinstown Roundabout (also known as Walkinstown Cross) dates from the 1950's and is one of the busiest junctions in the city and serves as the conduit for six roads (including the Greenhills Road). The significant junction has an open characteristic with the area of roads / footpaths and roundabout extending to approximately 1 hectare being bound by low-rise (up to 3 storey) commercial buildings including public bars, restaurants and retail premises. Views are afforded to the south-west along Greenhills Road though the Application Site itself is largely obscured by intervening buildings on the west of the roundabout. The majority of viewers will be road users including pedestrians accessing local services or facilities or those passing through for work or commuting reasons.
Viewpoint Sensitivity	Medium
Predicted Visual Changes	The upper parts of the proposed development will be visible from parts of the roundabout area forming a new set of buildings on the western skyline. Given the distance (c. 300m) and context of the intervening broad road-scape / townscape, the effects would be of a moderate nature and any awareness of the proposal will not have a significant or unacceptable effect on the overall quality of the existing view or visual amenity of this area. It will not close off any notable view but it would visually symbolise a change in sense of place and density of townscape to the west of Walkinstown.
Significance Summary	Moderate: The proposal will form a readily apparent component within the overall view to the west of the roundabout.

Table 16.12 Viewpoint 5 – Beechfield Park Walkinstown

Image courtesy of 3D Design Bureau (2025)

Viewpoint Baseline	Beechfield Park located over 435m to the east in Walkinstown and includes sports pitches and a playground extending to approximately 1.95 hectares. The park has an open nature being predominantly mown grass with any trees on the park periphery. The park is bound by the rear of properties on Cherryfield Avenue to the west, south and east and by Beechfield Road to the north. The properties are two-storey semi-detached and terraced houses. The Application Site is over 440m from the park edge and it and all existing building are obscured by intervening townscape. The majority of visual receptors will be local residents and those availing of the parks amenities and open space.
Viewpoint Sensitivity	Medium
Predicted Visual Changes	A small portion of the proposed development will be visible in gaps between trees and over the peripheral properties on Cherryfield Avenue looking west from the internal park areas. The majority of the proposal will be visually obscured and combination of distance and partial views ensure that the proposal never forms a significant portion of the view. Any awareness of the proposal will not have a marked effect on the overall quality of the existing view or visual amenity of the park and effects are assessed as slight neutral.
Significance Summary	Minor: proposed development will form a very minor component in the view but would not have a notable effect on its overall character or visual quality.

Table 16.13 Viewpoint 6 – St. Joseph's Road

Image courtesy of 3D Design Bureau (2025)

Viewpoint Baseline	St Joseph's Road is located within a dense housing area to the south of the Application Site and leads from St James Road to the north towards the Holy Spirit Church off Limekiln Lane to the south. The road is aligned with trees within verges and terraced two-storey houses. The Application Site, over 370m distant, is obscured by intervening buildings. The majority of visual receptors will be local residents and road users.
Viewpoint Sensitivity	Medium
Predicted Visual Changes	A very small portion of the proposed development will be visible from this section of St Joseph's Road rising in between the avenue trees and over the roofs of houses when looking north. The magnitude of change is not significant given the intervening urban context and elements, the enclosed nature of view looking north as well as extent of proposed development that would be visible. The effects are assessed as slight neutral.
Significance Summary	Minor: proposed development will form a minor component in the view to the north having no notable effect on its overall quality.

Table 16.14 Viewpoint 7 – Greenhills Park

Image courtesy of 3D Design Bureau (2025)

Viewpoint Baseline	Greenhills Park is located over 400m to the south near the Greenhills Community College and includes large areas of open grassland and some sports facilities. The park has a very open characteristic being largely set out in managed grass with little in the way of trees or vegetation on its northern boundary which is defined by a lane to the variable fences and walls at the rear of property gardens on St Brendan's Crescent and St Anthony's Crescent. While there is open vantage to the north, the nature of intervening townscape across Greenhills ensures that existing buildings on the Application Site are negligible. The majority of visual receptors will be local residents and users of the park.
Viewpoint Sensitivity	Medium
Predicted Visual Changes	The proposed development will be a discernible change rising into the skyline to the north with the higher parts of the proposed blocks evident above the intervening residential housing having slight neutral effects. While an evident addition to the visual backdrop from this part of Greenhills Park, it would not have any significant or adverse effects due to distance (c. 500m from this viewpoint) and existing townscape context while having no direct influence on the use, enjoyment or amenity of the park.
Significance Summary	Minor: proposed development will form a minor component in the view but would not have a notable effect on its overall character or visual quality.

Table 16.15 Viewpoint 8 – St. James's Road

Image courtesy of 3D Design Bureau (2025)

Viewpoint Baseline	St James Road provides a circuitous connection between Limekiln Road / Tymon Park to the south and St Peters Road (R112) to the north providing access to 11 streets or lanes off it to various housing estates or areas in the Greenhills area. The road is bound by two-storey terraced housing for the majority of its route that ensure views are visually contained to the road corridor. While it is approximately 160m from the Application Site at its closest point, all buildings on the site are visually obscured from the road. The majority of potential visual receptors will be local residents and commuting / through traffic.
Viewpoint Sensitivity	Medium
Predicted Visual Changes	The development will be obscured by intervening townscape / built environment associated with the existing housing on St James Road. Effects are assessed as being negligible due to this screening and distance and it will have no effects on the visual quality of this section of St James Road.
Significance Summary	Negligible: the proposal is barely discernible and at such a distance that it is very difficult to perceive equating to a no-change situation..

Table 16.16 Viewpoint 9 – Tymon Park

Image courtesy of 3D Design Bureau (2025)

Viewpoint Baseline	Tymon Park is situated over 720m to the south-west in the old townland of Greenhills and is located to the south of the Limekiln estate. It extends to an area of over 300 acres / 120 hectares includes 29 no. sports pitches and a children's adventure playground but is divided in two by the M50 motorway. It has a very open character due to parts of the park being grassland with views afforded in all directions over the west city, the M50 and on south towards the peripheral hills to the south. In the direction of the Application Site, the townscape comprises a dense but relatively low-rise housing estates with larger scale commercial units forming part of the view nearer the Application Site. The majority of visual receptors will be those using the park for amenity or recreational (including sporting) purposes.
Viewpoint Sensitivity	Medium
Predicted Visual Changes	The upper floors of the proposed development will be a discernible addition to the visual backdrop / skyline set above the broader Greenhills townscape on a small part of the panoramic view to the east. Due to distance and extent and scale of intervening land-uses, the impacts are not assessed as being of a significant nature and rated as slight neutral. There will be no detrimental or direct effects on the character or visual amenity of Tymon Park.
Significance Summary	Minor: proposed development will form a minor component in view backdrop but would not have any significant effect on its overall quality or views from the park.

Table 16.17 Viewpoint 10 – Greenhills Road

Image courtesy of 3D Design Bureau (2025)

Viewpoint Baseline	Approximately 300m to the west of the site on Greenhills Road, the elevated nature of the road in conjunction with more limited roadside vegetation and built environment near the Lidl store allow slightly elevated views over the Greenhills and west Walkinstown area. The existing units on the site are largely obscured or set amongst similar utilitarian and functional buildings that ensures they are negligible components in the view. The majority of visual receptors will be passing road users heading towards Walkinstown or accessing the local supermarket.
Viewpoint Sensitivity	Medium
Predicted Visual Changes	The proposal will rise into visual backdrop / skyline above the existing commercial lands and buildings having moderate effects on this section of the Greenhills Road and acting as notable and new landmark set of buildings in views to the east. Such effects should be measured against the existing setting with the majority of the view comprising utilitarian townscape of limited visual quality and value. The addition would not have any detrimental effects on the setting or character of this road but would be a major component in the visual backdrop that would symbolise progress and revitalisation of this area.
Significance Summary	Moderate: The proposal is likely to form a readily apparent component within the overall view towards Walkinstown and the city.

Table 16.18 Viewpoint 11 – Walkinstown Avenue Park

Image courtesy of 3D Design Bureau (2025)

Viewpoint Baseline	Walkinstown Avenue Park is located over 470m to the north off Walkinstown Avenue. The park has three football pitches, two GAA pitches and a tennis court). It extends to approximately 8.5 hectares with the majority of the park managed as open grassland. Looking south towards the Application Site and existing industrial units off Ballymount Road Lower, views are filtered or obscured (in summer) by a thick band of trees on the periphery of the park. The majority of visual receptors will be those using the park for amenity or recreational (including sporting) purposes.
Viewpoint Sensitivity	Medium
Predicted Visual Changes	The upper part the proposed development will be a discernible in winter months with filtered views possible through the boundary trees and being a slight change to the panoramic view to the south. Due to distance and intervening land-uses, the impacts would not be of a significant nature and rated as slight neutral with no detrimental or direct effects on the character of Walkinstown Avenue Park or its amenities predicted.
Significance Summary	Minor: proposed development will form a minor component in view backdrop but would not have any significant effect on its overall quality or views from the park.

Table 16.19 Viewpoint 12 – Greenhills Industrial Estate Service Lane

Image courtesy of 3D Design Bureau (2025)

Viewpoint Baseline	Located to the south and rear of the Application Site is a narrow lane set between utility boundaries (mainly steel fences and concrete walls) that provides access to large scale warehouses and premises including iron works, motor repairs and manufacturing industries. The area has a very functional townscape character and there is little in the way of aesthetic considerations including planting towards the western end of this private lane. Views of the site are obscured by intervening walls (with barbed wire tops) that mark its boundary. The majority of visual receptors will be those in this area for employment or business reasons.
Viewpoint Sensitivity	Low
Predicted Visual Changes	The upper parts of the western end of the proposed development will rise above the intervening wall and introduce a notable change of land-use and architecture in this area. Given the existing context of the view, the change would not have any significant bearing on its quality and value.
Significance Summary	Minor: proposed development will form a notable component in view backdrop but would not have any significant effect on its overall quality.

Table 16.20 Viewpoint 13 – Greenhills Industrial Estate Service Lane

Image courtesy of 3D Design Bureau (2025)

Viewpoint Baseline	Located to the south and rear of the Application Site is a narrow lane set between utility boundaries (mainly steel fences and concrete walls) that provides access to large scale warehouses and premises including, adjacent to this viewpoint, Brennans Bread. The area has a very functional townscape character and there is little in the way of aesthetic considerations including planting towards the western end of this private lane. The site is partially obscured by intervening walls (with barbed wire tops) set along the southern site boundary. The majority of visual receptors will be those in this area for employment or business reasons.
Viewpoint Sensitivity	Low
Predicted Visual Changes	The upper parts of proposed Blocks A and B will rise above the intervening wall and introduce a notable change of land-use and architecture in this area. Given the existing context of the view, the change would not have any significant bearing on its quality and value in terms of built townscape but there would be positive outcomes from the nature of the architecture and associated landscape works that could constitute an improvement in visual character comparative to the existing situation.
Significance Summary	Minor: proposed development will form a notable component in view backdrop but would not have any significant effect on its overall quality.

16.6 Do-Nothing Approach

Given that the area is designated to "... *facilitate enterprise and/or residential-led regeneration*" under Objective REGEN in the Development Plan, it is likely that the area site will be subject to on-going interest for mixed use or residential development in the future. The nature of any future applications is impossible to determine but they could be of a more piecemeal and disjointed nature.

Until any application is granted, it is reasonable to assume there will be limited visual or character alterations to the existing situation and townscape / landscape setting. On balance of these, it is considered that the continued use of the land for such purposes represents a Low magnitude of landscape impact.

The existing site would be subject to minimal landscape management and usage and continue to contribute negatively to the character and sense of place in the Greenhills Road and Walkinstown area.

16.7 Remedial or Reductio Measures: Mitigation

The appearance of the development is a major influence on how the site is perceived by the public, so the proposed development includes extensive landscape and open space works with the overall objective of providing a layout that integrates the development into the surrounding townscape / landscape and provides a series of coordinated and linked green spaces.

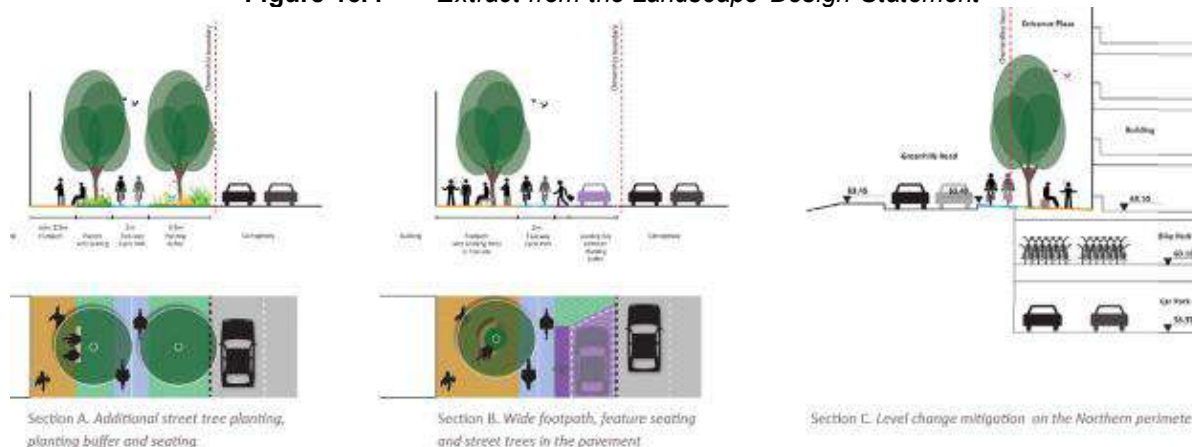
This includes designing of green infrastructure, formal and informal open spaces, public realm and other external areas for the amenity and use of residents and others in this area as shown on the Landscape Design drawings. **See Figure 16.5 Proposed Landscape Setting**

16.7.1 Landscape Design and Amenity Considerations

16.7.1.1 Circulation and Connectivity

The main vehicular entrances are off the Greenhills Road (similar to the existing road junction) providing access to the internal car parks and the external parking area to the south-west of the site.

Figure 16.4 Extract from the Landscape Design Statement



The landscape design aims to create a sense of connectivity between spaces through the use of high-quality materials and the establishment of a carefully considered planting scheme with a cyclist / pedestrian footpath network helping to ensure that both residents and guests can navigate around the site easily. Cyclist provision is an integral part of the external design with bicycle paths following the internal road routing but separated by landscape elements including tree planting to assist in safety. Bicycle storage provision is facilitated internally and at strategic node/meeting points.

Wide pedestrian footpaths connect the areas of public realm and alongside internal roads close that will allow interaction of these spaces with their routes and direction visually and aesthetically enhanced by tree and hedge planting. The selection of materials includes a mix of permeable concrete pavers and compacted gravel set between appropriate edgings. Urban furniture is to be located at key locations or spaces along these connections for resident or visitor use.

Identifiable future cycle and pedestrian linkages are also considered in relation to the wider connectivity and linkages to the townscape across the Greenhills / Walkinstown area. This will correlate and link to an improved treatment of the public realm to Greenhills Road that lessens the domination by the access roadway (moved to the east) providing more active frontage and addressing the change in level in a more appropriate way.

CGI 16.3 *Proposed view of development demonstrating linkages and connectivity proposals*



Image courtesy of 3D Design Bureau (2025)

16.7.1.2 Boundary Treatments

The proposed works include an overhaul of the planted bank to the north of the Application Site on the steeper slopes towards the Greenhills Road to both improve this planting mix and enhance its screening ability and bio-diversity benefit. Dense planting including trees, climbing plants and ground cover are integrated into the proposed retaining walls towards Greenhills Road. The area aside the replaced fence on Greenhills Road is to be replanted with a native hedgerow to provide a natural corridor and visual screen.

To the south, landscape works including hedgerows and avenue trees are proposed on the development side of the former service road to assist natural screening and site definition.

16.7.1.3 Public Realm Landscapes

The public realm includes broadened streetscapes with green infrastructure (including bioswales), a centralised public courtyard, public realm streetscapes, pocket parks, urban furniture, shared spaces and designated play areas for resident and local visitor use. The site layout will ensure properties face areas of open space (and streets) to provide passive supervision / ownership ensuring no hidden corners (as per Space Syntax research and recommendations).

The open spaces have been designed to coordinate with the changes in levels across the site and use these variations to create further pocket parks and amenity landscape areas accessed by a series of ramps and steps.

The activity area provided in the public open space is circa 235m² and includes a mix of areas for both physical activity. Incidental play elements are included elsewhere throughout the development

CGI 16.4 *Elevated view of internal public open space to core of the proposed development including amenity area and seating areas*



Image courtesy of 3D Design Bureau (2025)

16.7.1.4 Communal Landscapes

Communal open space is provided within podium parks and roof gardens including areas of hard landscape, tree planting, lawns, ornamental planting including seating / passive amenity areas, and areas for communal garden and outdoor working. The space also includes a designated play area. The objective of the collective podium parks and communal spaces is to allow residents at all levels ready access to exterior garden spaces.

16.7.1.5 Green Roofs

60% of the roof areas of the proposed buildings will include sedum green roofs designed, in part to assist in drainage patterns by intercepting rainfall, building insulation and but also to enhance biodiversity. These areas are not accessible to residents but will contribute to the general character and environmental integrity of the development. Rain gardens are also integrated into the shared surface space to mitigated surface runoff.

16.7.1.6 Hard Landscapes Works

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

16.7.1.7 Planting Works

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

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

The landscape works include for planting of trees within public open space, communal open space and along new connection routes through the proposed development that will entail over 360 no. 'semi-mature' or 'extra-heavy standard' size trees to provide an instant impression. The collective trees will, as they mature, assist in merging the proposed development into the surrounding landscape and local views as well as set about creation of the areas new landscape character. Other landscape works will include structure planting, amenity planting, garden trees, hedgerows and wooded belts. Such planting will more than compensate for the loss of the low-quality vegetation that currently exists and will enhance the overall "green" cover and nature of the site.

Figure 16.5 *Proposed Landscape Setting*



Extract from Proposed Landscape Plan (Drawing No. 7103-PHL-SW-XX-DR-L-2000)

Planting and augmentation of existing vegetation towards Greenhills Road will consist of evergreen and deciduous trees with under-story scrub mix. A range of plant species and heights will be selected to provide quick establishment and assist in visual integration.

Amenity planting will consist of trees, native woodlands, hedgerows, shrub / groundcover planting, meadow / wildflower and grass seeding works. As the planting matures, it will change the nature of the site and its visual amenity and the height of planting for assessment purposes is as follows:-

- Planting at Year 1 : 3 metres;
- Planting at Year 15 : 8 metres; and
- Planting at maturity : 20 metres (i.e., Year 25)

Plants selected will be predominantly indigenous and species selection based on those in the "All-Ireland PollinatorCode / All Ireland Pollinator Plan 2021-2025" to ensure successful plant establishment

that will merge visually and ecologically into this area. Landscape works will be undertaken by an ALCI approved landscape contractor and in accordance with *BS 4428:1989 Code of practice for general landscape operations (excluding hard surfaces)*. Any trees or shrubs dying, damaged or removed will be replaced in the following planting session with plant of similar size and species. Trees supply and planting shall correspond to *BS 8545 Trees: from nursery to independence in the landscape - Recommendations*.

CGI 16.5 Internal view of public open space



Image courtesy of 3D Design Bureau (2025)

16.8 Residual Impact of the Proposal

The proposed development is regarded as being permanent or long term in landscape and visual terms. The most appreciable effects relate to the scale and nature of the proposed development which will occupy the majority of the site footprint although xx% is to be set out as public open space and part of a wider landscape development proposal. While substantial, the new facades, architecture, building form, usage and enhanced urban realm will be *positive* and significant contributions to the townscape character of this area. Further the active frontages at ground level will equate to a significantly improved architectural relationship with the adjacent streetscape and reinvigorate use and activity on giving it a more productive and appropriate land-use for this nodal and gateway point.

The proposed development will be significantly taller than the existing buildings in this part of Greenhills and have landmark status in this area and on this route to and from Walkinstown. The broad width of Greenhills Road in conjunction with the generally large scale of adjacent townscape ensure that this development, while higher, can be accommodated and absorbed without detriment or adverse character effects. This proposal will be a notable departure from the normal architecture having high level of design and façade detail which will mark it out in architectural terms as locally distinct. Such an introduction would enhance the existing non-descript townscape character and have positive effects on this part of the city.

The proposal will be a prominent and a significant addition to the local skyline and townscape that is likely to influence and instigate further (cumulative) changes that will have substantial and positive contribution to character of this part of Dublin. While effects are categorised as significant to areas on and aside the proposed development site, the baseline setting ensures it can be successfully absorbed into this area without causing any adverse townscape / landscape effects and it will serve this part of

the city in a positive way as a building with landmark and notable architectural status.

Table 16.21 *Summary of Predicted Townscape Effects*

Townscape Character Area	Landscape Sensitivity	Magnitude of Change	Significance & Magnitude of Effects		
			Construction (Temporary)	Operation (Permanent)	Residual (Permanent)
Application Site	Low	High	Moderate negative	Moderate positive	Moderate positive
Greenhills and Walkinstown	Medium	Medium to Low	Slight negative	Slight positive	Slight positive
Dublin City	Medium	Low	Slight negative	Slight positive	Slight positive

Table 16.22 *Summary of Predicted Visual Amenity Effects*

Representative Viewpoint Location	Viewpoint Sensitivity	Magnitude of Change	Significance & Magnitude of Visual Effects		
			Construction (Temporary)	Operation (Permanent)	Residual (Permanent)
VP1: Walkinstown Crescent	Medium	Minor	Slight negative	Slight neutral	Slight Neutral
VP2: R819 Greenhills Road	Low /Medium	Major	Moderate negative	Slight positive	Slight positive
VP3: Greenhills Road near Walkinstown Roundabout	Low / Medium	Moderate	Slight negative	Slight Neutral	Slight Neutral
VP4: Walkinstown Roundabout	Medium	Moderate	Negligible	Negligible	Negligible
VP5: Beechfield Park, Walkinstown	Medium	Minor	Slight neutral	Slight Neutral	Slight Neutral
VP6: St Joseph's Road	Medium	Minor	Slight neutral	Slight Neutral	Slight Neutral
VP7: Greenhills Park	Medium	Minor	Slight neutral	Slight Neutral	Slight Neutral
VP8: St James's Road	Medium	Minor	Slight neutral	Slight Neutral	Slight Neutral
VP9: Tymon Park	Medium	Minor	Slight neutral	Slight Neutral	Slight Neutral
VP10: R819 Greenhills Road	Medium	Moderate	Slight negative	Slight Neutral	Slight Neutral
VP11: Walkinstown Avenue Park	Medium	Minor	Slight neutral	Slight Neutral	Slight Neutral

VP12: Greenhills Industrial Estate Service Lane	Low	Major	Slight neutral	Slight positive	Slight positive
VP13: Greenhills Industrial Estate Service Lane	Low	Major	Slight neutral	Slight positive	Slight positive

CGI 16.6 View of northern facades and landscape area towards the Greenhills Road



Image courtesy of 3D Design Bureau (2025)

16.9 Potential Cumulative Impacts

Cumulative landscape or visual effects are the combined effects that arise through the interaction of two or more developments, whether of the same type or not, within the landscape and visual baseline context. Collectively they give rise to an overall combined effect.

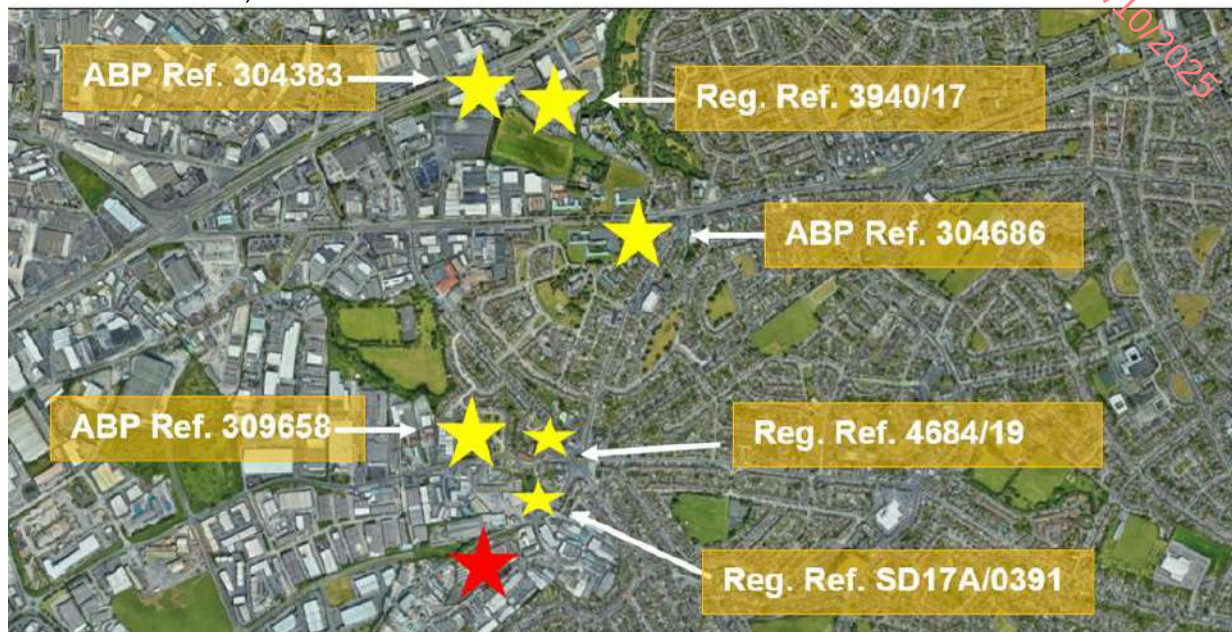
A significant cumulative effect will occur where the addition of the proposed development to other existing and developments results in a landscape or view that is defined by the presence of more than one major development and is characterised primarily by large scale development so that other patterns and components are no longer definitive.

Chapter 3.3 identifies the following SHD planning applications in this part of Dublin that could give rise to cumulative impacts as follows:-

- CHM Premises, Ballymount Road Lower, Walkinstown, Dublin 12 (Reg. Ref. ABP-309658-21);
- Lands immediately east of the Assumption National School, Long Mile Road, Walkinstown, Dublin 12 (Dublin City Council) (ABP Ref. ABP-304686-19);
- Carraiglea Industrial Estate, Muirfield Drive, Naas Road, Dublin 12 (Dublin City Council) (Reg. Ref. 3940/17);
- Lands at the Former Concorde Industrial Estate, Naas Road, Walkinstown, Dublin 12 (Dublin City Council) (ABP Ref. ABP- 304383-19);
- Lands at 138 Walkinstown Avenue (DCC Ref. 4684/19);
- Lands at 22 Greenhills Road, Walkinstown, Dublin 12 (SDCC Ref. SD17A/0391).

The closest of these developments is approximately 250m distant from the Application Site and, given the existing built form and townscape in the Dublin 12 area, there are no significant cumulative effects predicted to derive from this proposal in conjunction with these in townscape / landscape and visual amenity terms. See Figure 15.6

Figure 16.6 Locations of SHD planning applications (yellow stars) in relation to the subject site (red star) in Dublin 12.



16.10 Worst Case Scenario

No worst-case scenario has been identified

16.11 Monitoring and Reinstatement

The management of landscape areas will initially be undertaken by an ACLI approved landscape contractor. After 12 months the maintenance will be handed over to the long-term Management Company who will take over maintenance of set areas on completion of the development. There will be a five-year guarantee after construction that all the proposed planting works still exists and has been established in line with landscape design expectations. This will ensure that no planting has been removed or damaged due to the subsequent construction or plant failure. The planning application is accompanied by Landscape Management and Maintenance Plans setting out the objectives for management of external spaces or public realm areas for a 20-year period.

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

16.12 Difficulties in Compiling Information

No difficulties were encountered in compiling the information for this chapter.

16.13 Conclusions

16.13.1 Baseline Landscape and Visual Setting

The Application Site comprises 2.79 hectares / 6.89 acres of land off Greenhills Road in Walkinstown, Dublin 12. It comprises an extensive area of commercial warehouses and functional buildings some of which are degraded, run-down and vacant with extensive areas of utilitarian parking provision. The majority of the site has been subject to historic quarrying with grading and modifications to the original landscape undertaken to facilitate industrial scale buildings and yard areas and large areas are graded flat. To the north, the land rises towards the Greenhills Road which is set on an embankment associated

with a glacial esker.

Bound by unsightly security fences and walls subject to graffiti and weed growth respectively, the site would be categorised as poor townscape and very capable of accommodating change in townscape / landscape and visual terms. It has been in a similar condition for some time and contributes adversely to the setting of Greenhills and Walkinstown and would be categorised as townscape of low sensitivity, quality and value. The site carries no environment, amenity, heritage, visual amenity or landscape designations and possesses nothing that would be categorised as sensitive in terms of townscape character, features or vegetation.

Beyond the Application Site and adjacent industrial park areas, the townscape of Walkinstown and Greenhills comprises a mix of good to ordinary townscape of medium sensitivity comprising extensive areas of low-rise mid-20th century housing estates and incidental parks. There are no heritage or conservation areas in this area. The *Landscape Character Assessment of South Dublin County 2015* (LCA) noted that the key “*Landscape Value*” contributors in south Dublin are the public parks, the Dodder River Valley, 19th century industrial heritage and views out to Dublin (Wicklow) Mountains and agricultural hinterland. These are all sufficiently distant from the Application Site to be subject to any significant landscape or visual effects.

A review was also undertaken of the *Prospects to be reserved and protected*” as per the *South Dublin County Council Development Plan (2016-2022)* and established none are in close proximity to the site or will be impacted by activity or land use on the Application Site. Site surveys identified 12 no. representative viewpoints in this part of the city where key visual receptor groups might visit, work or stay or have a general movement through the area. Built-up townscape, infrastructure and vegetation are features of the Greenhills townscape ensuring that views consistently change in context, scale and extent with many views of the Application Site, even from close proximity locations within the nearby housing estates and business parks closed off.

16.13.2 Proposed Development Summary

The proposal comprises a Large-Scale Residential Development following the demolition of the former Chadwick’s Builders Merchant development and the construction of a mixed-use residential and commercial development comprising 588 no. apartment units, a childcare facility and 6no. commercial/retail units in 4 no. blocks (A-D) ranging in height from 5 to 12 storeys

Works include services and amenities, car parking and cycle spaces, public realm works towards Greenhills Road and the service road to the south and creation of internal public open spaces, communal open spaces, private amenity areas and roof terraces.

16.13.3 Predicted Significance of Landscape and Visual Effects

Any assessment must be measured against the current situation on site which comprises utilitarian buildings set in a largely functional landscape that has limited aesthetic appeal and value. In broad terms, a proposal of this nature and scale will become part of the integrity, legibility and identity of the Greenhills and Walkinstown area having significant effects to local townscape character, visual amenity and local sense of place become an immediately apparent and substantial change in close proximity views from Greenhills Road and immediately adjacent areas.

While it will be a substantial development, the baseline setting of large scale townscape, adjacent built form and broad road-scape ensure this area is capable of absorbing such a change without detriment. In all views, the proposed development would be seen in context with other large buildings, infrastructure, elements or structures and would not have any detrimental effects.

The proposal offers the opportunity for a marked improvement in the architecture / building quality and streetscape comparative to the existing situation. This includes significant planting works and extensive public realm landscape works which will provide an enhanced townscape sense of place and legibility while offering variation and relief from the prevailing similar and repetitive building type in this part of the city. Consequently, it is considered the development can be successfully absorbed into this area without causing adverse townscape / landscape effects.

Beyond close proximity areas, the existing built environment provides a density of building and

vegetation ensuring the majority of areas will experience negligible to no effects (i.e., insignificant) on townscape character and visual amenity due to the proposal being visually obscured. There will be no effects to any designated historic sites, views, townscapes, key landmarks or environments at a local or city wide level.

16.13.4 Summary Statement on Townscape and Visual Effects

The Application Site comprises a commercial, industrial and partially brownfield site that contributes adversely to the character and visual quality of this part of Dublin. The proposal will result in a positive contribution to the townscape character and urban fabric of this part of Greenhills and Walkinstown. While recognising there are some significant local impacts, this report concludes that this proposal, on balance, has no unacceptable townscape / landscape or visual effects and can be successfully absorbed into the character and views of this part of the city

APPENDIX 16A GENERIC TVIA TERMINOLOGY

Terminology	Definition
Access Land	Land where the public have access either by legal right or by informal agreement.
Activity	Activity on site tends to draw the eye whether it is a moving object or light reflection of an object changing with movement and thus the degree of impact is increased. It is sudden changes in contrast ratios that draw the attention of the viewer.
Baseline Studies	Work undertaken to determine and describe the environmental conditions against which any future changes can be measured, predicted or assessed.
Characterisation	The process of identifying areas of similar landscape character, classifying and mapping them and describing their character.
Characteristics	A distinctive element or combination of elements, which make a particular contribution to distinctive landscape character.
Compensation	Measures devised to offset or compensate for residual adverse effects which cannot be prevented / avoided or further reduced.
Cumulative	The additional changes caused by a proposed development in conjunction with other similar Developments or as the combined effect of a set of Developments, taken together.
Cumulative Town /Landscape and Visual Assessment (CLVIA)	The changes to townscape / landscape or visual amenity caused by the proposed development in conjunction with similar Developments or as the combined effect of a set of Developments, taken together.
Designated Landscape	Areas of landscape/ townscape identified as being of importance at international, national or local levels, either defined by statute or identified in Development plans or other documents. e.g., Greenbelt, Conservation Areas, Areas of High Scenic Quality or National Parks
Development	Any proposal that results in a change to the existing landscape and / or visual environment.
Digital Terrain Model	Computerised representation of ground topography in 3D as digital model based on the contour data (either 10m or 50m grid) of the OSI Ordinance Survey Maps.
Direct Effect	An effect that is directly attributable to the proposed development
Distance	The greater the distance, the less detail is observable and the more difficult it is to discern the proposal from its background, diminishing potential impact.
"Do nothing" situation	Continued change/evolution of a landscape in the absence of the proposed development.

Terminology	Definition
Elevation	Viewed from a higher elevation, a proposal is likely to be viewed against a backdrop thus decreasing the degree of impact. Viewed from a lower elevation, a proposal may be seen against the skyline and thus the impact is increased.
Enhancement	Proposals that seek to improve the landscape resource and the visual amenity of the proposed development site and its wider setting, over and above its baseline condition.
Environmental Impact Assessment (EIA)	An Environmental Impact Assessment (EIA) is the process of examining the anticipated environmental effects of a proposed project - from consideration of environmental aspects at design stage, through consultation and preparation of an Environmental Impact Assessment Report (EIAR)
Geographical Information System (GIS)	A system that captures, stores, analyses, manages and presents data linked to location. Its links spatial information to a digital database.
Indirect Effects	Effects that result indirectly from the proposed project as a consequence of the direct effects, often occurring away from the site, or as a result of a sequence of interrelationships or a complex pathway. They may be separated by distance or in time from the source of the effects.
Key Characteristics	The combinations of elements, which are particularly important to the current character of the landscape and help to If the key characteristics which are identified were to change or be lost, there would be significant consequences for the current condition of the landscape.
Land Cover	The surface cover of the land, usually expressed in terms of vegetation cover or lack of it. Related but not the same as Land Use.
Land Use	What land is used for, based on broad categories of functional land cover, such as urban and industrial use and different types of agriculture and forestry.
Landform	The shape and form of the land surface which has resulted from combinations of geology, geomorphology, slope, elevation and physical processes.
Landscape	An area, perceived by people, the character of which is the result of the action and interaction of natural and / or human factors.
Landscape and Visual Assessment (LVA)	A tool used to identify and assess the likely significance of the effects of change resulting from Development both on the landscape as an environmental resource in its own right and on people's views and visual amenity.
Landscape Character	A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.
Landscape Character Areas	Landscape Character Area as defined in local or regional policy guidance. These areas that have been determined to be single unique areas that are distinct geographically or of a particular landscape type. Every LCA is geographically

Terminology	Definition
(LCA)	specific and has its own distinctive character and sense of place based upon patterns of geology, landform, land-use, cultural, historical and ecological features.
Landscape Capacity	The degree to which a particular landscape character type or area is able to accommodate change without significant effects on its character, or overall change to the landscape character type.
Landscape Constraints	Components of the landscape resource such as views or mature trees recognised as constraints to Development.
Landscape Effects	Effects on the landscape as a resource in its own right.
Landscape Elements	Individual components, which make up the landscape such as trees and hedgerows.
Landscape Features	Particularly prominent or eye-catching elements in the landscape such as tree clumps, church towers or wooded skylines.
Landscape Patterns	Spatial distributions of landscape elements combining to form patterns, which may be distinctive e.g., hedgerows that combine to form a distinctive field pattern.
Landscape Quality / Condition	A measure of the physical state of the landscape. It may include the extent to which typical character is represented in individual areas, the intactness of the landscape and condition of individual elements.
Landscape Value	The relative value that is attached to different landscapes by society. A landscape may be valued by different stakeholders for a variety of reasons.
Landscape Resource	The combination of elements that contribute to landscape context, character and value.
Magnitude (of effect)	A term that combines judgements about the size and scale of the effect, the extent the area over which it occurs, whether it is reversible or irreversible and whether it is short or long term in duration.
Mitigation	Measures including any process, activity, or design to avoid, reduce, remedy or offset for potential adverse environmental effects arising from a proposed development.
Perception	Combines the sensory (that we receive through our senses) with the cognitive (our knowledge and understanding gained from sources and experiences)
Photomontage	A visualisation which superimposes an image of the proposed development upon a photograph or a series of photographs.
Receptors	Defined aspects of the landscape resource that have the potential to be affected by a proposal.

Terminology	Definition
Seascape	Landscapes with views of coast or seas, and coasts and adjacent marine environments with cultural, historical and archaeological links with each other.
Sensitivity	A term applied to specific receptors, combining judgements of the susceptibility of the receptor to the specific type of change or Development proposed and the value related to that receptor.
Significance	A measure of the importance or gravity of the environmental effect, defined by significance criteria specific to the environmental topic.
Townscape	The character and composition of the built environment including the buildings and relationships between them, the different types of urban open space, including green spaces, and the relationships between buildings and open spaces.
Tranquillity	A state of calm and quietude associated with peace, considered to be a significant asset of landscape.
Visual Amenity	The overall pleasantness of the views people enjoy of their surroundings, which provides an attractive visual setting or backdrop for the enjoyment of activities of the people living, working, recreating, visiting or travelling through the area.
Visual Effects	Effects on specific views and the general visual amenity experienced by people.
Visual Receptors	Individuals and / or defined groups of people who have the potential to be affected by the proposal.
Visual Reference Points	Abbreviated to VRP, these are selected locations of viewpoints within the study area towards the proposal that allow analysis of the existing and proposed visual setting.
Combined Views	This occurs when the observer is able to see two or more Developments from one viewpoint and within the same arc of vision.
Successive Views	This occurs where the observer has to turn their head to see the various Developments.
Sequential Views	This occurs when the observer has to move to another viewpoint to see the same or different Developments (i.e., when moving through the landscape).
Size	The greater the proportion of the view taken up by the proposed development the greater the impact. Camouflage brought about by form and colour can alter the degree of impact.
Visualisation	A computer simulation, photomontage or other technique illustrating the predicted appearance of a Development.
Wireframe	A computer generated line drawing of the DTM (digital terrain model) and the

Terminology	Definition
	proposed development from a known location.
Weather conditions	Visibility is affected by the sun direction during different times of the day. It is also affected by clarity of air. For example, on a bright and sunny morning after a frosty night the air tends to be clear. This is in contrast to a heat haze, which may be experienced during summer months.
Zone of Theoretical Visibility	Often abbreviated to ZTV, this is a digitally produced map showing the areas of land within which a Development is theoretically visible.

17.0 INTERACTIONS BETWEEN ENVIRONMENTAL FACTORS

17.1 Introduction

This section of the EIAR has been prepared by Hughes Planning and Development Consultants. More specifically, this chapter of the EIAR was prepared jointly by Mr. Kevin Hughes, Director, Ms. Anne McElligott, Associate Director, and Mr. Christopher Browne, Senior Planner, with Hughes Planning and Development Consultants.

Mr. Kevin Hughes of Hughes Planning and Development Consultants, graduated from University College Dublin (UCD) with a Masters in Regional and Urban Planning (MRUP) in 2002, having previously completed a Bachelor of Arts Degree in Sociology from National University of Ireland in 1999. Kevin has over 22 years professional experience in the field of planning and development consultancy, which has included providing consultancy services in respect of several major urban regeneration projects including EIA. Kevin is currently the Director of Hughes Planning and Development Consultants.

Ms. Anne McElligott of Hughes Planning and Development Consultants, graduated from University College Cork (UCC) with a Masters in Planning and Sustainable Development (MPLAN) in 2011, having previously completed a Bachelor of Arts Degree in Geography and Irish from University College Cork in 2011. Anne has over 13 years professional experience in the field of planning and development consultancy, which has included providing consultancy services in respect of several major urban regeneration projects including EIA. Anne is currently Associate Director in the Practice of Hughes Planning and Development Consultants.

Mr. Christopher Browne of Hughes Planning and Development Consultants, graduated from University College Dublin (UCD) with a Masters in Urban Design and Planning in 2018, having previously completed a Bachelor of Arts Degree in Geography and History from Dublin City University in 2012. Christopher has 7 years professional experience in the field of planning and development consultancy, which has included providing consultancy services in respect of several major urban regeneration projects including EIA. Christopher is currently an Senior Planner in the Practice of Hughes Planning and Development Consultants.

The preceding Chapters 4.0 to 15.0 of this EIAR identify the potential environmental impacts that may have occur as a result of the proposed development in terms of Population and Human Health; Biodiversity; Land and Soils; Water; Noise and Vibration; Air Quality and Climate; Material Assets; Waste; Archaeology, Architectural and Cultural Heritage; and Landscape and Visual Amenity. All of the potential significant effects of the proposed development and the measures proposed to mitigate them have been outlined in the preceding chapters of this report. However, for any development with the potential for significant environmental effects there is also the potential for interaction amongst these potential significant effects. The result of interactive effects may exacerbate the magnitude of the effects or ameliorate them or have a neutral effect. The purpose of this chapter is to identify and draw attention to interactions and interdependencies between the various chapters of this EIAR and associated topic specific assessments.

As previously stated, the scoping process of this EIAR occurred concurrently with the masterplanning process. As members of the design team contributed to this EIAR, detailed elements of the scheme evolved. The relevant consultants liaised with each other and the project architects, engineers and landscape architects where necessary to review the proposed scheme and incorporate suitable mitigation measures where necessary. For example, the proposed development has been amended to provide retail units along Greenhills Road, which has informed the open space design while elevational treatments were undertaken following preparation of the sunlight and daylight assessment. Most of the interactions informed the design approach undertaken by the project architect in the first instance and were considered to be design considerations and site constraints.

17.2 Impact Definitions

Section 3.7.7 of the *Guidelines on the Information to be Contained in Environmental Impact Statements* published by the EPA provides guidance on how to measure and define potential impacts on the environment. The following assessment criteria have been used to assess significant interactions:

Impact Definition	Impact Definition
Neutral	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error
Positive	A change which improves the quality of the environment
Negative	A change which reduces the quality of the environment
Significance	Definition
<i>Imperceptible</i>	<i>Capable of measurement but without significant consequences</i>
<i>Not Significant</i>	<i>Causes noticeable changes in the character of the environment but without noticeable consequence</i>
<i>Slight</i>	<i>Causes noticeable changes in the character of the environment without affecting sensitivities</i>
<i>Moderate</i>	<i>Alters character of environment consistent with existing and emerging trends</i>
<i>Significant</i>	<i>By its character, magnitude and duration or intensity alters a sensitive aspect of the environment</i>
<i>Very Significant</i>	<i>By its character, magnitude, duration or intensity, significantly alters most of a sensitive aspect of the environment</i>
<i>Profound</i>	<i>Obliterates sensitive characteristics</i>

Figure 17.1 Assessment criteria utilised in assessing the significance of interactions

17.3 Summary of Principal Interactions

The following tables highlight the interactions that occur between topics addressed by this EIAR and rate the outcome of those interactions employing the above criteria.

Subject Interaction	Interaction With	Interactions/Inter-Relationships (and, where relevant mitigation proposed)	Residual Impact Significance
Population & Human Health			
Population & Human Health	Biodiversity	There is potential for disturbance to breeding birds to occur during initial construction stages. Planting of shrub and tree species to take place as part of project design. No removal of vegetation to take place during the nesting season. Standard construction phase measures are proposed.	Neutral <i>Not Significant</i>
Population & Human Health	Air Quality & Climate	There will be some wider impacts felt to the wider community during the construction phase by way of noise, dust and traffic. However, these impacts are considered unlikely to be localized and significant. The construction of the proposed development will be done in accordance with a Construction and Environmental Management Plan and Traffic Management Plan (both of which will be agreed with South Dublin County Council) which will ensure that the works do not pose an adverse risk to health and safety of both the surrounding properties / community and the workers on site.	Neutral <i>Slight</i>

Subject Interaction	Interaction With	Interactions/Inter-Relationships (and, where relevant mitigation proposed)	Residual Impact Significance
		The measures that will be put in place during construction of the proposed development will ensure that the impact of the development complies with all EU ambient air quality legislative limit values which are based on the protection of human health.	
Population & Human Health	Water (Hydrology)	There is a potential risk to Human Health should the ground water of the existing water supply become contaminated during the construction or operational stages, and the water is consumed. To mitigate against these risks' measures outlined within Chapter 7 of the EIAR will be adopted in full during the construction phase.	Neutral <i>Not Significant</i>
Population & Human Health	Landscape & Visual Impact	The construction phase of the development will include site works comprising, demolition of several existing low rise disused industrial units, site clearing, excavation, infrastructure works in preparing the road and drainage infrastructure. This has the potential to result in the temporary degradation of the local visual amenity on a short-term basis. Construction works are to take place on a phased basis, which will moderate the potential impacts on adjoining lands. In addition, the construction of the proposed development will be done so in accordance with a Construction and Environmental Management Plan and Traffic Management Plan (both of which will be agreed with South Dublin County Council) which will ensure that the works do not pose an adverse risk to the environment.	Neutral <i>Slight</i>
Biodiversity			
Biodiversity	Habitats	The site largely comprises built land with artificial surfaces. There will be no impact on biodiversity from demolition of the buildings on site and no invasive species are recorded in the project area. Should best practice guidelines for the prevention of invasive species spread be adhered to, no potential for the spread or introduction of high impact invasive species are foreseen as a result of this Scheme.	Neutral <i>Not Significant</i>
Biodiversity	Fauna	Despite recorded bat activity in May 2024, the site is considered to be low importance for bats. Should best practice guidelines for the prevention of invasive species spread be adhered to,	Neutral <i>Not Significant</i>

Subject Interaction	Interaction With	Interactions/Inter-Relationships (and, where relevant mitigation proposed)	Residual Impact Significance
		no potential for the spread or introduction of high impact invasive species are foreseen as a result of this Proposed Development. The retention of existing green areas and promotion of biodiversity through native species landscaping will be undertaken where feasible.	
Biodiversity	Overall Ecology	SuDs measures and a landscape strategy will be implemented.	Positive <i>Not Significant</i>
Land, Soils, Geology, and Hydrogeology			
Land, Soils, Geology, and Hydrogeology	Water (Hydrology)	There is always a potential for localized contamination of soils during construction. This can happen through construction materials leaching into the underlying soils, dewatering or construction related spillages. The construction of the proposed development will be undertaken in accordance with a project specific Construction Environmental Management Plan (CEMP) as a form of mitigation. Adherence to this plan will ensure that the impacts of all short term negative impacts associated with construction are imperceptible and neutral.	Neutral <i>Imperceptible</i>
Land, Soils, Geology, and Hydrogeology	Air Quality	During the construction phase, dust emissions may potentially arise from soil erosion. The mitigation measures outlined ensure that soil erosion and, indirectly, dust emissions are minimised.	Neutral <i>Not Significant</i>
Land, Soils, Geology, and Hydrogeology	Traffic & Transportation	Local Traffic and transportation will be implemented by the additional vehicle movements generated by the volume of excavated soil that will have to be transported off site, resulting in an increase of heavy good vehicles (HGVs) during construction. The increase in vehicle movements as a result of excavated soil removal during the construction phase will be temporary in duration. The mitigation measures outlined, ensure that soil erosion and, dust emissions are appropriately managed and minimised.	Neutral <i>Not Significant</i>
Water (Hydrology)			
Water (Hydrology)	Biodiversity	The proposed development may have temporary negative impacts on biodiversity at site level however introduction of grass cover and green areas during operational phase may have a positive impact on local biodiversity. There is no potential for	Neutral <i>Not Significant</i>

Subject Interaction	Interaction With	Interactions/Inter-Relationships (and, where relevant mitigation proposed)	Residual Impact Significance
		impacts on water quality within European Designated sites.	
Water (Hydrology)	Climate and Flood Risk	The proposed development will not have negative impact on flood risk as a result of climate change. The proposed development is located within Flood Zone C. The proposed drainage plan incorporates adequate attenuation taking consideration of a climate safety factor (20% allowance for climate change).	Neutral <i>Not Significant</i>
Water (Hydrology)	Land, Soil, Geology, and Hydrogeology	There will be a slight reduced recharge to the underlying aquifer due to modification onsite and installation of an advanced drainage system.	Neutral <i>Slight</i>
Noise & Vibration			
Noise & Vibration	Population & Human Health	Construction noise and vibration sources can temporarily potentially impact on human beings in terms of noise disturbance. However, a detailed CEMP incorporating mitigation measures will ensure that any potential effects are not significant. No long-term effects are anticipated as the proposed Development is similar to existing development in the area.	Neutral <i>Not Significant</i>
Noise & Vibration	Biodiversity	Construction noise has the potential to impact fauna in terms of temporary disturbance.	Neutral <i>Not Significant</i>
Air Quality			
Air Quality	Population & Human Health	An adverse air quality impact during the construction phase can cause health and dust nuisance issues. There is a low risk of dust-related human health impacts during the construction phase of the proposed development. Best practice mitigation measures will be implemented during the construction phase to ensure that the impact of the proposed development complies with all ambient air quality legislative limits. Therefore, the predicted impact is direct, short-term, negative, localised and not significant with respect to Population and Human Health during the construction phase. Vehicles accessing the site will emit pollutants which may impact Air Quality and Human Health. However, the increased number of vehicles associated with the proposed development will not cause a significant change in air pollutant emissions in the locality. It has been assessed that emissions will be in	Neutral <i>Not Significant</i>

Subject Interaction	Interaction With	Interactions/Inter-Relationships (and, where relevant mitigation proposed)	Residual Impact Significance
		compliance with the ambient air quality standards which are set for the protection of human health. Impacts will be long-term, localised, direct, negative and not significant.	
Air Quality	Climate	Air Quality and Climate have interactions as the emissions from the burning of fossil fuels during the construction and operational phases generate both air quality and climate impacts. There is no impact on climate due to air quality. However, the sources of impacts on air quality and climate are strongly linked.	Neutral <i>Not Significant</i>
Air Quality	Land, Soils, Geology, and Hydrogeology	Construction phase activities such as land clearing, excavations, stockpiling of materials etc. have the potential for interactions between Air Quality and Land and Soils in the form of dust emissions. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that there will be no significant interactions between air quality and land and soils during the construction phase.	Neutral <i>Not Significant</i>
Air Quality	Biodiversity	Dust generation can occur during extended dry weather periods due to construction traffic along haul routes and construction activities such as excavations and infilling works. Dust emissions can coat vegetation leading to a reduction in the photosynthesising ability as well as other effects. A high level of dust mitigation is proposed to ensure no significant effects occur. With the implementation of these mitigation measures dust emissions will be minimised and impacts will be direct, short-term, negative, localised and not significant with respect to biodiversity.	Neutral <i>Not Significant</i>
Air Quality	Material Assets – Traffic & Transport	Interactions between Air Quality and Traffic can be significant. With increased traffic movements and reduced engine efficiency, i.e. due to congestion, the emissions of vehicles increase. The impacts of the proposed development on air quality are assessed by reviewing the change in annual average daily traffic on roads close to the site. In this assessment, the impact of the interactions between Traffic and Air Quality are considered to be direct, short-term, neutral, localised and not significant during the construction phase.	Neutral <i>Not Significant</i>
Climate			
Climate	Land, Soils,	The impact of flood risk has been	Neutral

Subject Interaction	Interaction With	Interactions/Inter-Relationships (and, where relevant mitigation proposed)	Residual Impact Significance
	Geology and Water (Hydrology)	assessed, and the surface water drainage network will be designed to cater for increased rainfall in future years as a result of climate change. The effect of the interactions between climate and land, soils, geology and hydrology are <i>direct, short-term, negative</i> and <i>imperceptible</i> during the construction phase and <i>direct, long-term, negative</i> and <i>imperceptible</i> during the operational phase, which is overall <i>not significant</i> in EIA terms.	<i>Not Significant</i>
Climate	Air Quality	Air quality and climate have interactions due to the emissions from the burning of fossil fuels during the construction and operational phases generating both air quality and climate impacts. Air quality modelling outputs are utilised within the Climate Chapter. There is no impact on climate due to air quality. However, the sources of impacts on air quality and climate are strongly linked.	Neutral <i>Not Significant</i>
Climate	Traffic and Transportation	During the construction and operational phase, there is the potential for interactions between climate and traffic. Vehicles accessing the site will result in emissions of CO ₂ , a greenhouse gas. The effects of the proposed development on climate are assessed by reviewing the change in annual average daily traffic on roads close to the site. In this assessment, the effects of the interactions between traffic and climate are considered to be <i>direct, short-term, negative</i> and <i>not significant</i> during the construction phase and <i>direct, long-term, negative</i> and <i>not significant</i> during the operational phase, which is overall <i>not significant</i> in EIA terms.	Negative <i>Not Significant</i>
Climate	Waste	Waste management measures will be put in place to minimise the amount of waste entering landfill, which has higher associated embodied carbon emissions than other waste management such as recycling. The effect of the interactions between waste and climate are considered to be <i>direct, short-term, negative</i> and <i>not significant</i> during the construction phase and <i>direct, long-term, negative</i> and <i>not significant</i> during the operational phase, which is overall <i>not significant</i> in EIA terms.	Negative <i>Not Significant</i>
Wind and Microclimate			
Wind and Micro-Climate	Population & Human Health	Results of microclimate have shown this interaction to be not significant based on wind conditions prevalent in the area.	Neutral <i>Not Significant</i>

Subject Interaction	Interaction With	Interactions/Inter-Relationships (and, where relevant mitigation proposed)	Residual Impact Significance
Material Assets – Waste			
Material Assets - Waste	Population & Human Health	During construction phase, noise will be generated from construction activity during hours of operation. The use of best practice noise control measures, hours of operation, scheduling of works within appropriate time periods, and noise monitoring during this phase will be implemented during the duration of the construction. The inclusion of the control measures around screening discussed in Chapter 8.7.1.3, have been accounted for within the construction calculations presented within Chapter 8.6.1.1. After the implementation of these best practice mitigation measures, residual construction noise levels at the closest NSLs are expected to fall within the adopted construction noise thresholds. As the construction activities are inherently transient, meaning noise intrusive works will only affect the nearest NSLs for brief periods. The construction noise calculations are highly conservative, representing a worst-case scenario. In practice, it is likely that the actual noise levels and associated residual impacts will be lower than predicted. As such, this interaction on human health is considered to be short term, neutral, and not significant. In addition, noise during operational phase including inward noise has been measured and assessed and mitigation measures have been specified to ensure that noise levels are imperceptible in the long term.	Neutral Not Significant
Material Assets – Utilities			
Material Assets – Utilities	Population & Human Health	A risk to the human health of the installer from built services can occur as a result of any excavation work in areas where built services exist, through coming into contact with live electricity lines or damaging live gas mains. Health and safety of workers will fall under the remit of the contractors appointed who will be required to comply with relevant Health and Safety legislation.	Neutral Not Significant

Subject Interaction	Interaction With	Interactions/Inter-Relationships (and, where relevant mitigation proposed)	Residual Impact Significance
		From the perspective of the end user of the networks the risks to human health include: - Gas leaks or explosions. The installation of services is tightly monitored and controlled by Gas Networks Ireland to ensure the protection of human health. Therefore, the risk of effect on human health is not considered significant. - Loss of supply. This is a managed process that is the responsibility of the individual utility supplier and emergency plans will be in place. The effect is therefore considered brief and not significant. With the implementation of the aforementioned mitigation measures, the impact of the proposed built services on human health is likely to be negligible.	RECEIVED: 22/10/2025
Material Assets – Traffic and Transport			
Traffic/ Transportation /Roads	Noise	Increased traffic flows can give rise to traffic related noise and effects on human beings. The impact of traffic related noise on the existing ambient sound environment is expected to be imperceptible with no effect anticipated on local residents.	Neutral <i>Not Significant</i>
Traffic/ Transportation /Roads	Air Quality & Climate	Increased traffic flows can give rise to traffic related air quality impacts and effects on human beings. The impact on ambient air quality levels is expected to be imperceptible with no effect anticipated on local residents. In this assessment, the effects of the interactions between traffic and climate are considered to be direct, short-term, negative and not significant during the construction phase and direct, long-term, negative and not significant during the operational phase, which is overall not significant in EIA terms.	Neutral <i>Not Significant</i>
Traffic/ Transportation /Roads	Human Beings - Safety	Increased traffic can potentially give rise to safety issues. A road safety audit has been carried out on the proposed development and recommendations have been incorporated into the proposed design where necessary.	Neutral <i>Not Significant</i>

17.4 Cumulative Impacts

The cumulative effects with other existing and/or approved projects in the area have also been considered to determine whether these could be sufficient to generate impacts of significance on the environment. Any predicted specific cumulative impacts are outlined in the various EIAR chapters and tend to be temporary; related to the construction period; and manageable by way of mitigation. No significant interactions are envisaged in terms of interactions arising from cumulative impacts.

17.5 'Do Nothing' Scenario

If the proposed project does not proceed, there will be no cumulative impacts arising.

17.6 Mitigation and Monitoring Measures

It is not proposed that any mitigation or monitoring will be undertaken specifically for cumulative impacts.

18.0 MITIGATION AND MONITORING MEASURES

18.1 Introduction

This section of the EIAR has been prepared by Hughes Planning and Development Consultants in association with the various EIAR consultants. More specifically, this chapter of the EIAR was prepared jointly by Mr. Kevin Hughes, Director, Ms. Anne McElligott, Associate Director, and Mr. Christopher Browne, Associate Planner, with Hughes Planning and Development Consultants.

Mr. Kevin Hughes of Hughes Planning and Development Consultants, graduated from University College Dublin (UCD) with a Masters in Regional and Urban Planning (MRUP) in 2002, having previously completed a Bachelor of Arts Degree in Sociology from National University of Ireland in 1999. Kevin has over 22 years of professional experience in the field of planning and development consultancy, which has included providing consultancy services in respect of several major urban regeneration projects including EIA. Kevin is currently the Director of Hughes Planning and Development Consultants.

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Mr. Christopher Browne of Hughes Planning and Development Consultants, graduated from University College Dublin (UCD) with a Masters in Urban Design and Planning in 2018, having previously completed a Bachelor of Arts Degree in Geography and History from Dublin City University in 2012. Christopher has 7 years of professional experience in the field of planning and development consultancy, which has included providing consultancy services in respect of several major urban regeneration projects including EIA. Christopher is currently an Associate in the Practice of Hughes Planning and Development Consultants.

The central purpose of EIA is to identify potentially significant adverse impacts at the pre-consent stage and to propose measures to mitigate or ameliorate such impacts. This chapter of the EIAR document sets out a summary, for ease of reference, of the measures outlined within the individual chapters of this EIAR document which are proposed as mitigation and for monitoring during the construction and operational phases of the proposed development. All measures included below form part of the proposed development and will be implemented in full.

It is intended that this chapter of the EIAR document will provide a useful and convenient summary to the competent/consent authority of the range of mitigation and monitoring measures proposed.

18.2 Mitigation and Monitoring Measures

The following provides a list, for ease of reference, of the mitigation and monitoring measures recommended in each chapter of the EIAR.

18.2.1 Population and Human Health

18.2.1.1 Construction Phase

All standard health and safety procedures will be implemented at every stage of this project. The Main Contractor for the project is responsible for the method in which the demolition and construction works are carried out and for ensuring that best practices and all legal obligations including Local Authority requirements and Health and Safety legislation are complied with. Further to this, Building Regulations will also be adhered to during the construction phase.

A range of construction-related remedial and mitigation measures are proposed throughout this EIAR document with reference to the various environmental topics discussed under each. These measures seek to ensure that any likely significant adverse environmental impact on humans during the construction phases is either ameliorated to have an acceptable level of impact or avoided altogether.

Included in these measures is the requirement that a detailed construction traffic management plan be prepared by the Contractor and agreed upon with South Dublin County Council as the Road Authority prior to commencing works on the public road. This Construction Traffic Management Plan will include restrictions on deliveries and access to the construction site. Further, measures with regards to noise and dust abatement covered elsewhere within this EIAR will be implemented during construction and will limit impacts on population and human health.

Further to the above, working hours on site will be such that the residential amenity of adjacent residences is not unreasonably impacted. They will be agreed with the Council in full as part of the required construction management plan.

As a result of the implementation of the abovementioned measures, the impacts of the construction phase of the development on population and human health are not anticipated to be significant. Furthermore, all impacts will be temporary in nature.

18.2.1.2 Operational Phase

The proposed development has been designed to avoid negative impacts on the population and human health through the inclusion of landscaping, the provision of a creche, the provision of energy-efficient measures and through high-quality finishes and materials. The mitigation measures relating to the operation phase of the development concerning traffic, transport, noise, vibration, water, air and dust quality and landscaping as set out in this EIAR (and listed in Chapter 16.0) will be carried out in full to minimise impacts on residents of the development, adjacent residents and human health.

18.2.1.3 Monitoring

Measures to avoid negative impacts on Population and Human Health are largely integrated into the design and layout of the proposed development. Compliance with the design and layout will be a condition of any permitted development. There is no other ongoing monitoring required in relation to the effect of the proposed development on the population and human health.

18.2.2 Biodiversity

18.2.2.1 Construction Phase

There are no specific measures for habitats.

Should best practice guidelines for the prevention of invasive species spread be adhered to, no potential for the spread or introduction of high-impact invasive species is foreseen as a result of this Proposed Development.

The retention of existing green areas and promotion of biodiversity through native species landscaping will be undertaken where feasible.

Based on the findings of the survey work completed between April 2021 and May 2024, it is concluded that the overall impact on bats arising from the proposed development will likely be low to negligible, provided that the general recommendations and specific mitigation measures outlined in Section 4.0 of the Bat Report are implemented. These measures include:

1. Conducting a pre-demolition bat survey of all buildings with "Low" suitability the night before roof removal commences.
2. Implementing a phased demolition approach, with roof structures removed first, followed by a waiting period of at least one week before demolishing the walls.
3. Scheduling demolition works during the autumn months (September to November) to avoid sensitive periods for bats and nesting birds.
4. Installing a series of 5+ bat boxes on suitable structures around the site to provide future roosting opportunities for bats.

5. Implementing sensitive lighting design and strategies to minimise light spillage and disturbance to bats and other nocturnal wildlife.

18.2.2.2 Operational Phase

In addition to retention of existing green areas where feasible, the proposed development includes a Landscape Plan which provides for biodiversity offset through the additional planting.

The IPL and BCT (2023) guidelines provide a list of recommendations in relation to luminaire design, which is based on the extensive research completed to date on the potential impact of lighting on bats and therefore provides best practice mitigation measures. The following recommendations to minimise disturbance to bats/other nocturnal wildlife are summarised as follows:

- Warm white (2700K or lower) LEDs should be used to minimize blue light disturbance. Light sources should lack UV and peak above 550nm.
- A photo-electric cell (PEC) for automatic switch-on at dusk and off with time control. Presence detection may also be incorporated for safety purposes & bat consideration, e.g. when nobody is outside, after a set interval time, lighting reduces to a pre-determined level, e.g. 50%, but as soon as human or vehicular movement is detected, full illumination is restored.
- Lighting should be installed where necessary for public safety. These lights should be designed and selected with specific shutters and filters to minimise any potential for back spills into sensitive locations while still providing the primary function of safely lighting the pedestrian routes.
- Reflectance – Downward lighting can be reflected from bright surfaces. To minimise bat disturbance, the design should avoid the use of bright surfaces and incorporate darker colour lamp heads and poles to reduce reflectance.
- Shielding of Luminaires & Light - the design should avoid the use of upward lighting by shielding or by downward directional focus.
- Type of Light – the design should avoid the use of strong UV lighting. The lighting design should be based on the use of LED lighting which has minimal or no UV output of significance.

Although no bats were observed emerging from or entering the buildings during the surveys, there was activity on site and therefore it is crucial to adopt a precautionary approach to minimise the risk of harm to any bats that may have gone undetected.

To minimise the potential impact on bats, the demolition process should be carried out in a phased manner. The roof structures should be removed first, followed by a waiting period of at least one week before demolishing the walls. This approach will provide any bats that may have gone undetected during the surveys with an opportunity to escape and relocate to alternative roosting sites.

With the employment of appropriate mitigation measures with regard to local biodiversity, the Proposed Development will have a **neutral, imperceptible and long-term effect** on biodiversity.

18.2.2.3 Monitoring

Construction Phase

As a precautionary measure, it is recommended that a pre-demolition bat survey be carried out on all buildings with "Low" suitability the night before the commencement of demolition works, these include Buildings/structures numbered 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15 and 16 on Table 6 (Appendix 7.1). It is recommended that the demolition works be scheduled during the months September-October, which will avoid the sensitive maternity and hibernation periods for bats. This timing will also minimize the potential impact on birds, such as barn swallows, that may be using the buildings for nesting.

To compensate for the loss of potential roosting sites and to enhance the future biodiversity value of

the site, a series of 5 x bat boxes should be erected on suitable structures/walls around the site. No reinstatement measures are proposed.

Operational Phase

No ecological monitoring is required during the operational phase.

18.2.3 Lands, Soil and Geology

18.2.3.1 Construction Phase

A Construction Environmental Management Plan (CEMP) (2025) is included with the application documentation and contained in this EIAR. This outlines the best practice construction techniques and methodologies which will be implemented during the construction of the proposed development.

The CEMP and the mitigation measures contained in this EIAR, as well as any relevant conditions of a grant of permission, will be implemented and adhered to by the construction contractor and will be overseen and updated as required if site conditions change by the Project Manager, Environmental Manager and Ecological Clerk of Works where relevant. All personnel working on the Site will be trained in the implementation of the procedures.

The CEMP sets out the proposed procedures and operations to be utilised on the proposed construction site to protect soil and water quality. All mitigation measures outlined here, and within the CEMP will be implemented during the construction phase, as well as any additional measures required pursuant to planning conditions which may be imposed.

As a minimum, the CEMP will be formulated in accordance with best international practice including but not limited to:

- CIRIA, (2001), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors, (C532) Construction Industry Research and Information Association;
- CIRIA (2002) Control of water pollution from construction sites: guidance for consultants and contractors (SPI56) Construction Industry Research and Information Association
- CIRIA (2005), Environmental Good Practice on Site (C650); Construction Industry Research and Information Association
- BPGCS005, Oil Storage Guidelines;
- Eastern Regional Fisheries Board, (2006), Fisheries Protection Guidelines: Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites;
- CIRIA 697, The SUDS Manual, 2007; and
- UK Pollution Prevention Guidelines (PPG) UK Environment Agency, 2004.

In order to reduce impacts on the soils and geology environment, a number of mitigation measures will be adopted as part of the construction works on site. The measures will address the main activities of potential impact which include:

- Control of soil excavation/ infill and export from site;
- Fuel and chemical handling, transport and storage; and
- Control of water during construction.

Soil Management

Stockpiles have the potential to cause negative impacts on air and water quality. The effects of soil stripping and stockpiling will be mitigated through the implementation of appropriate earthworks handling protocol during construction. It is anticipated that any stockpiles will be formed within the boundary of the site and there will be no direct link or pathway from this area to any surface water body. Overburden material will be protected from exposure to wind by storing the material in sheltered parts of the site, where possible.

The strategy for controlling and mitigating potential adverse environmental issues related to soil and contamination during construction will include the following, as appropriate:

- Identification and assessment of the potential for residual ground contamination to be presented prior to the start of any excavation works.
- Minimisation of potential risks to site workers as required by the Safety, Health and Welfare (Construction Regulations) 2013.
- Testing and sampling of excavated soils in order to assess the suitability of materials for re-use on site.
- Dust suppression (e.g., damping down during dry periods) from any contaminated soils by the regular use of water spray during any dry conditions, sheeting of haulage vehicle loads vehicle wheel washes, and road sweeping.
- Stockpiling of contaminated materials will be avoided where possible.
- Stockpiles will be treated to prevent windblown dust.
- The handling and storage of any potentially hazardous liquids on site, e.g. fuels and chemicals, will be controlled and best practice guidelines. Storage tanks/container facilities will have appropriate bunding within the designated area.
- If hazardous liquids escape, remedial action will be taken as soon as possible.
- Where unforeseen contamination is identified during the course of the work, specific investigations will be carried out in the areas in question and appropriate health and safety procedures will be implemented during the removal of the material. A strategy will be prepared to identify, analyse, segregate and control existing contaminated materials on site. In addition to the measures above, all excavated materials will be visually assessed by suitably qualified persons for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of potential contaminants to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted/licensed waste disposal contractor.

Run Off Suspended Solids

- During construction, any surfaces which are intended to enable infiltration must be protected from compaction. This includes protecting from heavy traffic or storage materials.
- Silt deposited during construction will be removed.
- Soils will be stabilised and protected from erosion whilst planting becomes established.
- Hydrocarbons or any hazardous chemicals will be stored in specific bunded areas. Refuelling of plant and machinery will also be carried out in bunded areas to minimise the risk of any potential pollutants being discharged from the site.
- Pollution control measures will be implemented to control run-off from the site and prevent run-off which is potentially contaminated with sediments or hazardous chemicals entering the drainage network.
- Foul drainage from site offices and compound, where not directed to the existing wastewater network, will be contained and disposed of off-site in an appropriate manner and in accordance with the relevant statutory regulations to prevent the pollution of watercourses.
- A response procedure will be put in place to deal with any accidental pollution events and spillage kits will be available on site. Construction staff will be familiar with the emergency procedures and use of the equipment.
- During earthworks and excavation works care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts;
- Silt reduction measures on site and settlement measures (e.g. silt traps and settlement tanks/ponds or equivalent);
- Any hard surface site roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only;
- A power washing facility or wheel cleaning facility will be installed near to the site compound for use by vehicles exiting the site when appropriate;
- Aggregate will be established at the site entrance points from the construction site boundary extending for at least 10 m;
- The temporary storage of soil will be carefully managed. Stockpiles will be tightly compacted to reduce runoff and graded to aid in runoff collection;

- Construction materials, including aggregates etc. will be stored a minimum of 20-meter buffer distance from any surface water bodies and surface water drainage points;
- Aggregate materials such as sand and gravel will be stored in clearly marked receptacles within a secure compound area to prevent contamination;
- Movement of material will be minimised to reduce the degradation of soil structure and generation of dust;
- Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise the potential for water ingress into excavations;
- Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the site.

Source of Fill and Aggregates

- All fill and aggregate for the proposed development will be sourced from reputable suppliers per the project Contract and Procurement Procedures. All suppliers will be vetted for:
- Aggregate compliance certificates/declarations of conformity for the classes of material specified for the proposed development;
- Environmental Management status; and
- Regulatory and Legal Compliance status of the Company.

Cement/Concrete Works

Where feasible all ready-mixed concrete will be brought to the site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent the discharge of alkaline wastewater or contaminated stormwater to the underlying subsoil.

No wash-down or wash-out of ready-mix concrete vehicles during the construction works will be carried out at the site within 10 meters of an existing surface water drainage point. Washouts will only be allowed to take place in designated areas with an impervious surface where all wash water is contained and removed from the site by road tanker or discharged to foul sewer submitted to agreement with Irish Water / FCC.

Pouring of cement-based materials for works will only be carried out in dry conditions. Pumped concrete will be monitored to ensure there is no accidental discharge. Mixer washings and excess concrete will not be discharged directly into the drainage network. Concrete washout areas will be created to avoid any accidental discharge from the proposed development site.

The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.

Hydrocarbons and Other Construction Chemicals

The following mitigation measures will be implemented during the construction phase to prevent any spillages to the ground of fuels and other construction chemicals and prevent any spillages resulting in surface water and groundwater systems:

- Designation of bunded refuelling areas on the Site;
- Provision of spill kit facilities across the Site;
- Where mobile fuel bowzers are used, the following measures will be taken:
 - Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use;
 - The pump or valve will be fitted with a lock and will be secured when not in use;
 - All bowzers to carry a spill kit and operatives must have spill response training;
 - Portable generators or similar fuel-containing equipment will be placed on suitable drip trays.

In the case of drummed fuel or other potentially polluting substances which may be used during the construction phase, the following measures will be adopted:

- Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded area;
- Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be

stored within temporary bunded areas, doubled-skinned tanks or bunded containers to a volume of 110% of the capacity of the largest tank/container. Drainage from the bunded area(s) shall be diverted for collection and safe disposal.

- Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage;
- All drums to be quality approved and manufactured to a recognised standard;
- If drums are to be moved around the Site, they will be secured and on spill pallets; and
- Drums will be loaded and unloaded by competent and trained personnel using appropriate equipment.

Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area or within the construction compound (or where possible off the site). In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double-skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area. All relevant personnel will be fully trained in the use of this equipment. Guidelines such as *"Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors"* (CIRIA 532, 2001) will be complied with.

The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.

Control of Water during Construction

Care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts.

There may be localised pumping of surface run-off from the excavations during and after heavy rainfall events to ensure that the trenches are kept relatively dry. Any minor ingress of groundwater and collected rainfall in the excavation will be pumped out during construction. It is estimated that the inflow rate of groundwater will be low and limited to localised perched water. Due to the very low permeability of the Dublin Boulder Clay and the relative shallow nature for excavations, infiltration to the underlying aquifer is not anticipated.

There shall not be discharge of silty water from the works to any watercourse, should any discharge of construction water be required during the construction phase, discharge will be to foul sewer following agreement with SDCC/ Irish Water. Pre-treatment and silt reduction measures on site will include a combination of silt fencing, settlement measures (silt traps, 20 m buffer zone between machinery and watercourses, refuelling of machinery off site) and hydrocarbon interceptors. The use of slit traps and an oil interceptor (if required) will be adopted if the monitoring indicates the requirements for the same with no silt or contaminated water permitted to discharge to water. Extensive monitoring will be adopted to ensure that the water is of sufficient quality to discharge to water or sewer.

In order to minimise the risk of contamination, any stockpiled material designated for removal will be removed off-site as soon as possible. Surface water drain gratings in areas near or close to where stockpiles are located will be covered by appropriate durable polyurethane covers or similar. Active treatment systems such as silt busters/traps or similar/equivalent may be adopted, depending on turbidity levels and discharge limits.

18.2.3.2 Operational Phase

The proposed development design includes hardstand cover across the site and the proposed surface water drainage system for this development has been designed as a sustainable urban drainage system. The surface water design has been designed in accordance with the Greater Dublin Regional Code of Practice for Drainage Works and Sewers for adoption. Any localised car leaks will therefore discharge to the stormwater drainage and be intercepted by petrol/hydrocarbon / oil interceptors. Therefore, the risk of accidental discharge has been adequately addressed through design.

There are no discharges to ground included in the design and no abstractions from the aquifer.

18.2.3.3 Monitoring

Construction Phase

The management of land, soils and groundwater during the construction phase will be monitored by the Contractor to ensure compliance with the above-listed mitigation measures, and relevant waste management legislation and local authority requirements.

During the construction phase the following monitoring measures will be implemented:

- Soil sampling to confirm disposal options for excavated soils in order to avoid contaminated run-off; and
- Regular inspection and auditing of construction/mitigation measures will be undertaken (e.g., concrete pouring, refuelling, etc). Pouring of cement-based materials for works will only be carried out in dry conditions.
- Weekly checks will be carried out to ensure surface water drains are not blocked by silt or other items, and that all storage is located at least 10 m from surface water receptors. Regular inspection of surface water run-off and any sediment control measures (e.g. silt traps) will be carried out during the construction phase.

Operational Phase

There will be no requirement for groundwater monitoring as there is no likely discharge to the ground and no bulk chemical storage on site.

Petrol / Hydrocarbon interceptors will be maintained and cleaned out in accordance with the manufacturer's instructions. Maintenance of the surface water drainage system and foul sewers as per normal urban developments is recommended to minimise any accidental discharges to the ground.

18.2.4 Water (Hydrology)

18.2.4.1 Construction Phase

A CEMP is included with the application documentation of this EIAR. This outlines the best practice construction techniques and methodologies which will be implemented during the construction of the proposed development including measures to protect water bodies. The CEMP sets out the proposed procedures and operations to be utilised on the proposed construction site to protect water quality. The mitigation and control measures outlined in the CEMP and this EIAR will be employed on-site during the construction phase.

The CEMP and mitigation measures set out in this EIAR will be implemented and adhered to by the construction Contractor and will be overseen and updated as required if site conditions change by the Project Manager, Environmental Manager and Ecological Clerk of Works where relevant. All personnel working on the site will be trained in the implementation of the procedures.

All mitigation measures outlined in this chapter, and within the CEMP will be implemented during the construction phase, as well as any additional measures required pursuant to planning conditions which may be imposed.

The CEMP and this EIAR contain best practice measures and protocols to be implemented during the construction phase of the proposed development to avoid/minimise environmental impacts.

Construction works and the proposed mitigation measures are informed by best practice guidance on the prevention of pollution during development projects including but not limited to:

- Construction Industry Research and Information Association (CIRIA), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (C532);
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (2016);
- Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (4th edition), (C741); and

- Enterprise Ireland Best Practice Guide, Oil Storage Guidelines (BPGCS005).

The CEMP provides actions and measures which will be undertaken for the purpose of environmental management and pollution prevention during the construction phase. As there is potential for run-off to indirectly discharge to the local drainage network in the vicinity of the site and in order to manage the potential impact associated with sediment and sediment runoff the following mitigation measures will be implemented during the construction phase:

- SuDS will be constructed in line with the manufacturer's guidelines/best practice methods.
- This development includes an attenuation system stormtech underground to cater for the 100-year return period and a detention basin to cater for the 1-100-year designed for this site. The design of the attenuation is in accordance with CIRIA SuDS Manual C753 2015. Please refer to the accompanying drawings for further information.
- During construction, any surfaces which are intended to enable infiltration must be protected from compaction. This includes protecting from heavy traffic or storage materials.
- Any surface water run-off collecting in excavations will likely contain a high sediment load. This will not be allowed to directly discharge directly to the stormwater drains/site drainage or the River Poddle.
- Water contaminated with silt will not be allowed to enter a drain as it can cause pollution. All parts of the drainage system will be protected from construction runoff to prevent silt from clogging the system and causing pollution downstream. Silt reduction measures to prevent this include early construction of sediment management basins, channelling runoff away from watercourses and surface water drains and erosion prevention measures. Following construction, subsoil that has been compacted during construction should be broken up prior to the re-application of topsoil to reinstate the natural infiltration performance of the ground.
- Pipe systems and orifices will be checked for blockages or partial blockages.
- Soils will be stabilised and protected from erosion whilst planting becomes established. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts.
- The temporary storage of soil will be carefully managed. Stockpiles will be tightly compacted to reduce runoff and graded to aid in runoff collection.
- Pollution control measures will be implemented to control run-off from the site and prevent run-off which is potentially contaminated with sediments or hazardous chemicals entering the drainage network.
- A response procedure will be put in place to deal with any accidental pollution events and spillage kits will be available on site. Construction staff will be familiar
- Any hard surface site roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only.
- A power washing facility or wheel cleaning facility will be installed near the site compound for use by vehicles exiting the site when appropriate,
- Aggregate materials such as sand and gravel will be stored in clearly marked receptacles within a secure compound area to prevent contamination.
- Movement of material will be minimised to reduce the degradation of soil structure and generation of dust.
- Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise the potential for water ingress into excavations.
- Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the site.
- All excavated materials will be visually assessed by suitably qualified persons for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of potential contaminants to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted/licensed waste disposal contractor.
- Surface water discharge from the site will be managed and controlled for the duration of the construction works until the permanently attenuated surface water drainage system of the proposed site is complete.

Cement/concrete works

Where feasible all ready-mixed concrete will be brought to the site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent the discharge of alkaline wastewater or contaminated stormwater to the underlying subsoil.

Pouring of cement-based materials for works will only be carried out in dry conditions. Pumped concrete will be monitored to ensure there is no accidental discharge. Mixer washings and excess concrete will not be discharged directly into the drainage network. Concrete washout areas will be created to avoid any accidental discharge from the proposed development site.

No wash-down or wash-out of ready-mix concrete vehicles during the construction works will be carried out at the site within 10 meters of an existing surface water drainage point. Washouts will only be allowed to take place in designated areas with an impervious surface where all wash water is contained and removed from the site by road tanker or discharged to foul sewer submitted to agreement with Uisce Éireann / SDCC.

The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the site will be suitably trained in the implementation of the procedures.

Hydrocarbons and other construction chemicals

The following mitigation measures will be implemented during the construction phase in order to prevent any spillages to the ground of fuels and other construction chemicals and prevent any results to surface water and groundwater systems:

- Designation of bunded refuelling areas on the site;
- Provision of spill kit facilities across the site;
- Where mobile fuel bowsters are used, the following measures will be taken:
 - Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use;
 - The pump or valve will be fitted with a lock and will be secured when not in use;
 - All bowsters to carry a spill kit and operatives must have spill response training;
- Portable generators or similar fuel-containing equipment will be placed on suitable drip trays.
- In the case of drummed fuel or other potentially polluting substances which may be used during the construction phase, the following measures will be adopted:
 - Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded area;
 - Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be stored within temporary bunded areas, doubled-skinned tanks or bunded containers to a volume of 110% of the capacity of the largest tank/container. Drainage from the bunded area(s) shall be diverted for collection and safe disposal.
- Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage;
- All drums are to be quality-approved and manufactured to a recognised standard;
- If drums are to be moved around the Site, they will be secured and on spill pallets; and Drums will be loaded and unloaded by competent and trained personnel using appropriate equipment.
- Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area or within the construction compound (or where possible off the site). In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double-skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area. All relevant personnel will be fully trained in the use of this equipment.
- The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.

Rainwater Run-off

Rainfall at the construction site will be managed and controlled for the duration of the construction

works.

Wastewater Management

Foul drainage from site offices and compound, where not directed to the existing wastewater network, will be contained and disposed of off-site in an appropriate manner and in accordance with the relevant statutory regulations to prevent the pollution of watercourses.

Surface Water Flow and Quantity

During construction, a site drainage and protection system will be built to reduce the flow of run-off from the site, prevent soil erosion, and protect water quality in the local surface water drainage network and River Poddle. Temporary excavated channels, bunds, or ridges or a combination of the three, may be constructed to divert sediment-laden water to an appropriate sediment retention structure. These will be installed to provide permanent diversion of clean stormwater away from erosion-exposed soil areas or to provide a barrier between exposed areas and unexposed areas of the construction site. Runoff diversion channels/bunds need regular maintenance to keep functioning throughout their life.

Human Health and Population

It has been established (Section 6.3.3) that there are no recorded Recreational Waters, Bathing Waterbodies, or Surface Water Drinking RPA, located downstream in the Camac River, River Poddle or the Liffey Estuary. As such there is no potential for impact on human health and populations. And no mitigation measures are required.

Potential Impacts of Water Framework Directive

It has been established that while there is a potential for accidental discharges during the construction phase there is a very low potential for even a temporary change in water quality in receiving waters. As such there is no likely impact on trends in water quality and overall WFD status assessment. On a precautionary basis, the mitigation measures previously set out in Section 7.6 above, will be implemented during the construction works for the protection of surface water status and achievement of the programme of measures.

18.2.4.2 Operational Phase

Surface Water Quality

The design has taken account of the potential impacts of the development on surface water quality; measures have been incorporated in the design to mitigate these potential impacts.

The proposed development stormwater drainage network design includes sustainable drainage systems (SuDS). These measures by design ensure the stormwater leaving the site is to be attenuated and treated within the new development site boundary to ensure suitable quality, before discharging to the local surface water drainage network, which subsequently outfalls to the nearby River Poddle. SuDS are drainage systems that are environmentally beneficial, causing minimal or no long-term detrimental damage. The SuDS design is set out in the Engineering Services Report (2024) and uses rain gardens, blue roofs, flow control devices (Hydrobrake), grass swales, tree pits, permeable paving (porous surfacing), and petrol interceptors.

The purpose of the SuDS design is to:

- Treat runoff and remove pollutants to improve quality;
- Restrict outflow and to control quantity;
- Increase amenity value.

The layout of the proposed surface water drainage network is included in the Lohan & Donnelly Consulting Engineers Ltd (2024) Drawing Set included with this Application. It is proposed to strictly separate the surface water and wastewater drainage networks, which will serve the proposed development, and provide independent connections to the surface water and wastewater sewer networks respectively.

Surface Water Flow and Quantity

The design has taken account of the potential impacts of the development on surface water flow; measures have been incorporated in the design to mitigate these potential impacts.

As set out in the Engineering Services Report (2024), flow restriction is achieved by means of a hydro-brake installed at the outfall point from the development, with the excess stormwater stored on-site for the duration of the storm periods of up to 1 in 100 years. The surface water network has been designed to provide sufficient capacity to contain and convey all surface water run-off associated with the 1-in-100-year event to the detention basins for attenuation without any overland flooding.

Surface water runoff exceeding the allowable outflow rate for the catchment will be stored in detention basins for rainfall events up to a 1 in 100-year return period with an allowance for climate change of 20%. The proposed development includes a new surface water network which will mitigate any pluvial risk to the site in line with SuDS measures.

18.2.4.3 Monitoring

Construction Phase

During the construction phase the following monitoring measures will be considered:

- Contractors will carry out regular inspections to confirm compliance with the CEMP. Daily inspections by contractors will address potential environmental impacts including dust, litter, waste management and general housekeeping.
- Regular inspection of surface water run-off and sediment controls (e.g., silt remediation treatment e.g. silt traps for site drainage where required).
- Regular inspection or auditing of construction/mitigation measures (e.g., concrete pouring, refuelling, etc).

Operational Phase

No future surface water monitoring is proposed for the proposed development due to the low hazard potential at the site.

Petrol/hydrocarbon interceptors will be maintained and cleaned out in accordance with the manufacturer's instructions.

Maintenance of the surface water drainage system and foul sewers as per normal urban developments is recommended to minimise any accidental discharges to surface water.

18.2.5 Noise and Vibration

18.2.5.1 Construction Phase

The assessment detailed in Section 8.6.1 has determined that construction activities can operate within the adopted construction noise threshold levels at the identified residential and commercial NSLs within the vicinity of the construction of the proposed development.

Vibration levels at the neighbouring buildings beyond 20m are expected to be orders of magnitude below the limits set out in Table 8.4 to avoid any cosmetic damage to buildings.

A suite of noise and vibration control measures will be employed by the contractor during the construction phase in order to avoid exceedance of the adopted construction noise threshold values at the nearest NSLs.

The best practice measures set out in BS 5228 (2009 +A1 2014) Parts 1 and 2 will be complied with. This includes guidance on several aspects of construction site mitigation measures, including, but not limited to:

- Selection of quiet plant;
- Noise control at source;

- Screening, and;
- Liaison with the Public

Further comment is offered on these items in the following paragraphs. Noise control measures that will be considered include the selection of quiet plant, enclosures and screens around noise sources, hours of work and noise monitoring, where required.

Selection of Quiet Plant

The potential for any item of plant to result in exceedance of construction noise thresholds will be assessed prior to the item being brought onto the site. The least noisy item of plant will be selected wherever practicable (e.g., plant items with sound attenuation incorporated). Should a particular item of plant already on the site be found to exceed the construction noise thresholds, the first action will be to identify whether the item can be replaced with a quieter alternative.

The appointed contractor will evaluate the choice of excavation, breaking, piling or other working methods taking into account various ground conditions and site constraints. Where alternative lower noise-generating equipment is available that will provide equivalent structural / excavation results, these will be selected to control noise within the relevant thresholds, where it is practicable to do so.

Noise Control at Source

The following measures will be implemented, by the appointed contractor to control noise at the source. These measures relate to specific site considerations:

- For mobile plant items such as dump trucks, cranes, excavators and loaders, the installation of an acoustic exhaust, utilising an acoustic canopy to replace the normal engine cover and/or maintaining enclosure panels closed during operation can reduce noise levels by up to 10 dB. Mobile plant will be switched off when not in use and not left idling.
- For percussive tools such as pneumatic concrete breakers and tools a number of noise control measures include fitting a muffler or sound-reducing equipment to the breaker 'tool' and ensuring any leaks in the air lines are sealed;
- Where compressors, generators and pumps are located in proximity to NSLs and have the potential to exceed the construction noise thresholds, these will be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation; and
- Resonance effects in panel work or cover plates can be reduced through stiffening or the application of damping compounds, while other noise nuisances can be controlled by fixing resilient materials in between the surfaces in contact.
- For all materials handling, ensure that materials are not dropped from excessive heights, lining drop chutes and dump trucks with resilient materials.

Screening

Screening is an effective method of reducing CNLs at a receiver location and can be used successfully as an additional measure to other forms of noise control. The effectiveness of a noise screen will depend on the height and length of the screen, its mass, and its position relative to both the source and receiver. Standard construction site hoarding (2.4 m in height) with a mass per unit of surface area greater than 7 kg/m² can provide adequate sound insulation. This is recommended, as a minimum around all site boundaries of the proposed development site.

Erection of localised demountable enclosures or screens will be used around particularly noisy equipment as required, when in operation in proximity to NSLs with the potential to exceed the construction noise thresholds. Annex B of BS 5228-1 (Figures B1, B2 and B3) provides typical details for temporary and mobile acoustic screens, sheds and enclosures that can be constructed on-site from standard materials. A well-placed and designed mobile temporary screen around a pile, breaker or excavation can effectively reduce noise emissions by 10 dB(A).

In addition, careful planning of the construction site layout will also be considered. The placement of site buildings such as offices and stores between the site and sensitive locations can provide a good level of noise screening.

Hours of Work

Working hours will be restricted to 08:00 to 19:00 Monday to Friday & 08:00 to 14:00 on Saturdays. Sunday or Bank Holiday work will only take place periodically at the agreement with South Dublin County Council. Similarly, any other out of hours working will be only permitted by arrangement with site management and South Dublin County Council

Liaison with the Public

A designated Community Liaison Officer (CLO) will be appointed to the site during construction works. Any noise complaints will be logged and followed up in a prompt fashion by the CLO. In addition, prior to particularly noisy construction activity, the CLO will inform the nearest noise-sensitive locations of the time and expected duration of the noisy works

18.2.5.2 Construction Phase – Vibration

Vibration from construction activities will be limited to the values set out in Table 8.4 to avoid any form of potential cosmetic damage to buildings and structures. Monitoring will be undertaken at sensitive buildings, where proposed works have the potential to be at or exceed the vibration limit values in Table 8.4.

18.2.6 Operational PhaseAdditional Traffic on Adjacent Roads

Changes to traffic flows will result in an imperceptible to not significant increase in noise level in the surrounding environment. Therefore, no mitigation measures are necessary in this case.

Mechanical Services Plant

With consideration at the detailed design stage, the selection and location of plant items within the proposed development and associated buildings will ensure that noise emissions from any mechanical and electrical building services plant do not exceed the relevant noise criteria outlined, therefore no further mitigation is required. In addition, noise emissions should be broadband in nature and should not contain any tonal or impulsive elements.

Once operational noise emissions are controlled within the development site, there will be no perceptible noise impact at sensitive receivers off-site

Inward Noise Impact

As is the case in most buildings, the glazed elements and ventilation paths of the building are typically the weakest elements from a sound insulation perspective. In general, all wall constructions (i.e. block work or concrete and spandrel elements) offer a high degree of sound insulation, much greater than that offered by the glazing systems. Therefore, the noise intrusion via the wall construction will be minimal.

In this instance residential units on the facades highlighted in Figure 8.13 will be provided with glazing and ventilation that achieves the minimum sound insulation performances as set out in Table 8.18.1 And Table 8.18.2. These performance requirements may be refined during the detailed design stage. Other facades in the development will be able to achieve good internal noise levels through the installation of standard double glazing.

Table 8.18.1 Sound Insulation Performance Requirements for Glazing, SRI (dB)

Mark-up	Octave Band Centre Frequency (Hz)						R _w
	125	250	500	1k	2k	4k	
Red	27	26	33	39	39	47	37
Orange	19	27	34	39	35	40	35

The overall R_w and D_{ne,w} outlined in this section are provided for information purposes only. The overriding requirement is the Octave Band sound insulation performance values which may also be

achieved using alternative glazing and ventilation configurations. Any selected system will be required to provide the same level of sound insulation performance set out in Figure 8.18.1.

The following performance requirements apply to all ventilation paths from outside the building. This can be achieved by passive acoustic wall vents or via mechanical ventilation systems.

Table 8.18.2 Sound Insulation Performance Requirements for Ventilation, D_{new} (dB)

Mark-up	Octave Band Centre Frequency (Hz)						D_{new}
	125	250	500	1k	2k	4k	
Red	35	34	33	38	49	45	39
Orange	29	32	37	36	35	40	37



Figure 8.18.3 Façade Acoustic Requirements

It is important to note that the acoustic performance specifications detailed herein are minimum requirements which apply to the overall glazing and ventilation systems. In the context of the acoustic performance specification the 'glazing system' is understood to include any and all of the component parts that form part of the glazing element of the façade, i.e. glass, frames, seals, openable elements etc.

The assessment has demonstrated that the recommended internal noise criteria will be achieved through consideration of the proposed façade elements at the design stage. The calculated glazing and ventilation specifications are preliminary and are intended to form the basis for noise mitigation at the detailed design stage. Consequently, these may be subject to change as the project progresses at the detailed design stage.

Operational Phase – Vibration

Based on the nature of the proposed development there are no appreciable sources of vibration during the operational phase of the development. No mitigation is deemed necessary.

18.2.6.1 Monitoring

During the construction phase the contractor will carry out noise monitoring at representative NSLs to evaluate and inform the requirement and / or implementation of noise management measures. Noise monitoring will be conducted in accordance with ISO 1996-1 (ISO 2016) and ISO 1996-2 (ISO 2017).

18.2.7 Odour, Air Quality and Climate

18.2.7.1 Construction Phase

Air Quality

The pro-active control of fugitive dust will ensure the prevention of significant emissions, rather than an inefficient attempt to control them once they have been released. The main contractor will be responsible for the coordination, implementation and ongoing monitoring of the of the site and ensure compliance with the Dust Mitigation measures outlined in Chapter 9. The key aspects of controlling dust are listed below. These measures will be incorporated into the Construction Environmental Management Plan (CEMP) prepared for the site.

In summary, the measures which will be implemented will include:

Communications

- Develop and implement a stakeholder communications plan that includes community engagement before works commence on site. Community engagement includes explaining the nature and duration of the works to local residents and businesses.
- The name and contact details of a person to contact regarding air quality and dust issues shall be displayed on the site boundary, this notice board should also include head/regional office contact details.

Site Management

- During working hours, dust control methods will be monitored as appropriate, depending on the prevailing meteorological conditions. Dry and windy conditions are favourable to dust suspension therefore mitigations must be implemented if undertaking dust-generating activities during these weather conditions.
- A complaints register will be kept on-site detailing all telephone calls and letters of complaint received in connection with dust nuisance or air quality concerns, together with details of any remedial actions carried out

Preparing and Maintaining the Site

- Plan site layout so that machinery and dust-causing activities are located away from receptors, as far as is possible.
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Avoid site runoff of water or mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove materials that have the potential to produce dust from the site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
- Cover, seed or fence stockpiles to prevent wind whipping.
- Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.

Operating Vehicles / Machinery and Sustainable Travel

- Ensure all vehicles switch off engines when stationary - no idling vehicles.
- Avoid the use of diesel or petrol-powered generators and use mains electricity or battery-powered equipment where practicable.
- Impose and signpost a maximum speed limit of 15 kph on haul roads and work areas (if long

haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).

- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
- Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)

Operational Phase

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Ensure equipment is readily available on-site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Waste Management

- Avoid bonfires and burning of waste materials.

Measures Specific to Demolition

- Prior to demolition blocks should be soft striped inside buildings (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).
- During the demolition process, water suppression should be used, preferably with a hand-held spray. Only the use of cutting, grinding or sawing equipment fitted or used in conjunction with a suitable dust suppression technique such as water sprays/local extraction should be used.
- Drop heights from conveyors, loading shovels, hoppers and other loading equipment should be minimised, if necessary fine water sprays should be employed.
- Avoid explosive blasting, using appropriate manual or mechanical alternatives.

Measures Specific to Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- Use Hessian, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- Only remove the cover in small areas during work and not all at once.
- During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will operate to ensure moisture content is high enough to increase the stability of the soil and thus suppress dust.

Measures Specific to Construction

- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
- For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.

Measures Specific to Trackout

- A speed restriction of 15 kph will be applied as an effective control measure for dust for on-site vehicles.
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving sites are covered to prevent the escape of materials during transport.
- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- Record all inspections of haul routes and any subsequent action in a site log book.
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowzers and regularly cleaned.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
- Ensure there is an adequate area of hard-surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
- Access gates to be located at least 10 m from receptors where possible.

18.2.7.2 Monitoring

- Undertake daily on-site and off-site inspections, where receptors (including roads) are nearby, to monitor dust, and record inspection results in the site inspection log. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of the site boundary, with cleaning to be provided if necessary.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on-site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.

At all times, these procedures will be strictly monitored and assessed. In the event of dust nuisance occurring outside the site boundary, movements of materials likely to raise dust would be curtailed and satisfactory procedures implemented to rectify the problem before the resumption of construction operations.

18.2.8 Climate

Construction stage traffic and embodied energy of construction materials are expected to be the dominant source of greenhouse gas emissions as a result of the construction phase of the development. Construction vehicles, generators etc., may give rise to some CO₂ emissions. However, due to the short-term nature of these works, the impact on climate will not be significant.

Nevertheless, some site-specific mitigation measures can be implemented during the construction phase of the proposed development to ensure emissions are reduced further. In particular the prevention of on-site or delivery vehicles from leaving engines idling, even over short periods. Minimising waste of materials due to poor timing or over-ordering on site will aid in minimising the embodied carbon footprint of the site.

18.2.9 Construction Phase

A number of mitigation measures have been incorporated into the design of the development to reduce the impact on climate wherever possible. The development will be in compliance with the requirements of the Near Zero Energy Building (NZEB) Standards and will achieve a Building Energy Rating (BER) in line with the NZEB requirements. The following sustainability measures are outlined within the Sustainability Report prepared by Homan O'Brien in relation to the proposed development.

- The residential units will aim to achieve a BER of A2.
- U-values and thermal bridging in line with the Technical Guidance Documents Part L, '*Conservation of Fuel and Energy Buildings other than Dwellings*' requirements will be achieved.
- The Energy Performance Coefficient (EPC) will be greater than 0.3 and the Carbon Performance Coefficient (CPC) will be greater than 0.35 in line with the Part L and NZEB requirements.

- A Renewable Energy Ratio (RER) of 0.2 will be achieved in line with the NZEB requirements. This will include the inclusion of heat pump technology.
- In order to reduce water use low water use sanitary ware will be installed along with a leak detection system that will be integrated with the building management system (BMS).
- Low voltage, energy-efficient LED lighting will be utilised.

These identified measures will aid in reducing the impact to climate during the operational phase of the proposed development in line with the goals of the Climate Action Plan.

A number of measures have been incorporated into the design of the development to mitigate against the impacts of future climate change. For example, adequate attenuation and drainage have been incorporated into the design of the development to avoid potential flooding impacts as a result of increased rainfall events in future years. All below-ground drainage services have been designed with adequate cover over all pipework to protect against extreme temperatures and drought. The buildings have been designed to account for climate change hazards such as extreme temperatures, snow loadings and increased wind loadings. These measures have been considered when assessing the vulnerability of the proposed development to climate change (see Section 10.4.3.1).

18.2.10 Operational Phase

The impact of the proposed development on air quality and climate is predicted to be imperceptible with respect to the operational phase in the long term. The following mitigation measures are proposed:

Embodied carbon of materials and construction activities will be the primary source of climate impacts during the construction phase. During the construction phase the following best practice measures shall be implemented on site to prevent significant GHG emissions and reduce impacts to climate:

- Prevention of on-site or delivery vehicles from leaving engines idling, even over short periods.
- Ensure all plant and machinery are well maintained and inspected regularly.
- Minimising waste of materials due to poor timing or over ordering on site will aid to minimise the embodied carbon footprint of the site. A construction waste management plan will be implemented to minimise construction waste sent to landfills. Recycling of materials will be promoted to and reduce the environmental footprint of the site.
- Sourcing materials locally will be prioritised. This will help to reduce transport related CO₂ emissions and helps support local suppliers, further promoting economic sustainability.
- Material choices and quantities will be reviewed during detailed design, to identify and implement any lower embodied carbon options, where feasible.

In terms of impact on the proposed development due to climate change, during construction, the Contractor will be required to mitigate against the effects of extreme rainfall/flooding through site risk assessments and method statements. The Contractor will also be required to mitigate against the effects of extreme wind/storms, and temperature extremes through site risk assessments and method statements. All materials used during construction will be accompanied by certified datasheets which will set out the limiting operating temperatures. Temperatures can affect the performance of some materials, and this will require consideration during construction. During construction, the Contractor will be required to mitigate against the effects of fog, lightning and hail through site risk assessments and method statements.

The proposed development has been designed to minimise the impact to climate where possible during operation. Details of the measures to be incorporated into the design of the development are outlined in Section 10.4.3.2 and within the Building Lifecycle Report and Sustainability Report prepared in support of this planning application.

18.2.11 Monitoring

Construction Phase

There is no monitoring recommended for the operational phase of the proposed development as impacts to air quality and climate are predicted to be imperceptible.

Operational Phase

There is no monitoring recommended for the operational phase of the proposed development as impacts to air quality and climate are predicted to be imperceptible.

18.2.12 Wind and Microclimate

18.2.12.1 Construction Phase

Given the above-predicted assessments, no mitigation measures are proposed during construction or operation.

18.2.12.2 Operational Phase

Given the above-predicted assessments, no mitigation measures are proposed during construction or operation.

18.2.12.3 Monitoring

No monitoring is considered to be necessary during either construction or operational phases.

18.2.13 Material Assets - Utilities

18.2.13.1 Construction Phase

Ongoing consultation with Uisce Éireann, Eirgrid, ESB Networks and other relevant service providers will ensure a smooth construction schedule without disruption to the local and business community. Best practice measures shall be put in place to ensure that there are no interruptions to these utilities unless this has been agreed in advance.

Power and Electricity Supply

The power demand for the construction phase will be relatively minor and the connection works are entirely within proposed site boundaries.

The excavation of trenches within the vicinity of existing electrical services will be carried out in consultation with ESB Networks to ensure there is no impact on existing users.

Once the construction of the unit substations is completed, ESB Networks will complete the commissioning in accordance with the statutory requirements.

Telecommunications

The existing telecommunications will be extended from the perimeter of the site to the proposed development. Strict quality control measures will be undertaken while laying telecommunications cables. The connection into the wider telecommunications network will be undertaken by a statutory telecommunications operator.

Surface Water Infrastructure

A temporary drainage system shall be installed prior to the commencement of the construction works to collect surface water runoff by the site during construction. Run-off water containing silt will be contained on-site to ensure adequate silt removal. It is not anticipated that there will be any interruptions to service in existing surface water sewers, but should interruptions be anticipated, they will be agreed in advance.

Should any discharge of construction water be required during the construction phase, discharge will be to foul sewer. Pre-treatment and silt reduction measures on site will include a combination of silt fencing, settlement measures (silt traps, 20 m buffer zone between machinery and watercourses/stormwater sewer/ drainage ditch, refuelling of machinery off-site) and hydrocarbon interceptors.

Strict quality control measures will be undertaken while laying pipes to minimise or eradicate infiltration (where existing water in the ground enters the surface water infrastructure) and ex-filtration (where

water in the surface water infrastructure escapes into the ground).

Foul Drainage Infrastructure

Prior to the temporary connection of the foul drainage to the public network, approval will be given to ensure there is enough capacity in the public network for the proposed development's foul water discharge.

The works contractor will be obliged to put a number of measures in place to ensure that there is no impact on the public network during the construction works. Foul drainage for the proposed development will be in accordance with the Building Regulations Technical Guidance Document H for design and construction. Strict quality control measures will be undertaken while laying pipes to minimise or eradicate infiltration and ex-filtration.

Water Supply

A temporary connection will be put in place for the construction phase.

The works contractor will be obliged to put best practice measures in place to ensure that there are no interruptions to service from the public watermain. It is not anticipated that there will be any interruptions to service from the public watermain, but should interruptions be anticipated, they will be agreed in advance.

Strict quality control measures will be undertaken while laying pipes to minimise or eradicate infiltration and ex-filtration.

18.2.13.2 Operational Phase

Power and Electricity Supply

In circumstances where consultation with ESB Networks, EirGrid or another relevant service provider has taken place, the proposed work will be in line with their requirements or guidelines. Therefore, no mitigation measures are required in relation to Power and Electricity Supply.

Telecommunications

The connection into the wider telecommunications network will be undertaken by a statutory telecommunications operator. In circumstances where statutory telecommunications operator is in compliance with their requirements and guidelines continues.

Therefore, no mitigation measures are required in relation to telecommunications.

Surface Water Infrastructure

As mentioned in Section 14.4.2, the surface water drainage system for the proposed development incorporates the designed SuDS mitigation measures.

These measures include Extensive Green Roofs, Intensive Green Roofs, Permeable Paving, Porous Asphalt, Petrol interceptors, an Attenuation Tank, Rain Gardens, Tree Pits and Hydrobrakes. Implementation of these measures will prevent an increase in surface water flow offsite.

The allowable runoff rate has been established by the project engineers, Lohan & Donnelly Consulting Engineers, using the methodology set out in the *Engineering Services Report*. To ensure that the existing surface water sewer is not over-capacitated, the flow of surface water leaving the last manhole "SW02" on site (as per Greater Dublin Regional Code of Practice for Drainage Works, Rev 6) will be limited to 8.021 l/s via a hydro-brake, a flow control device capable of managing the flow rate of water. Refer to Appendix E & F of the *Engineering Services Report* (Lohan & Donnelly, 2024) for Q-Bar and run-off calculations.

Foul Drainage Infrastructure

As discussed in Section 14.4.2 above, Uisce Éireann has provided a CoF for the wastewater requirements for the development (which are detailed in the *Engineering Services Report* prepared by Lohan & Donnelly Consulting Engineers, which accompanies the planning application) can be

accommodated, subject to upgrades.

Foul drainage for the proposed development will be in accordance with the relevant standards for design and construction, including the Uisce Éireann Code of Practice for Wastewater Infrastructure, The Building Regulations Technical Guidance Document (TGD) 'Part H' & the Regional Code of Practice for Drainage Works. It will be necessary to carry out further detailed studies and investigations to confirm the available capacity and to determine the full extent of any upgrades which may be required to be completed to Uisce Éireann Infrastructure, prior to agreeing to the proposed connection.

No mitigation measures are required in relation to foul drainage infrastructure during the operational phase.

Water Supply

The proposed development will be connected to a 200mm MDPE (medium-density polyethylene) type PE-80 water main. The proposed network connection will be metered, with associated hydrants and valves as per Uisce Éireann requirements. As the connection works will be approved to ensure there is capacity for water supply to the proposed development, it is not anticipated that this would have any perceptible offsite impact.

As discussed in Section 14.4.2 above, Uisce Éireann has provided a CoF for the water requirements for the development (which are detailed in the *Engineering Services Report* prepared by Lohan & Donnelly Consulting Engineers, which accompanies the planning application) can be accommodated, subject to upgrades. No mitigation measures are required in relation to water supply during the operational phase.

18.2.13.3 Monitoring

During the construction phase, the following monitoring measures will be considered:

- Regular inspection of surface water run-off and sediment controls e.g. silt traps will be carried during the construction phase.
- Soil sampling to confirm disposal options for excavated soils in order to avoid contaminated run-off.
- Regular inspection of construction/mitigation measures will be undertaken e.g. concrete pouring, refuelling etc.

Maintenance of the surface water drainage system, including hydrocarbon interceptors, and foul sewers as per normal urban developments is recommended to minimise any accidental discharges to surface water.

18.2.14 Material Assets – Waste

18.2.14.1 Construction Phase

During the Construction phase waste management will be carefully managed as set out in Section 12.7.1. Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will minimise/mitigate any potential cumulative impacts associated with waste generation and waste management. As such it is considered that the cumulative effect relating to waste management will be **short-term, imperceptible** and **neutral**.

18.2.14.2 Operational Phase

During the Operational phase waste management will be carefully managed as set out in Section 12.7.2. Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will minimise/mitigate any potential cumulative impacts associated with waste generation and waste management. As such it is considered that the cumulative effect relating to waste management will be **long-term, imperceptible** and **neutral**.

18.2.14.3 Monitoring

The management of waste during the construction phase will be monitored by the Contractor's appointed Resource Manager to ensure compliance with the above-listed mitigation measures, and relevant waste management legislation and local authority requirements, including maintenance of waste documentation.

The management of waste during the operational phase will be monitored by the operator of the proposed development to ensure effective implementation of the mitigation measures outlined in Section 12.6, Appendix 12.1 and 12.2 internally and by the nominated waste contractor(s).

Table 12.5 *Monitoring Proposals*

Likely Significant Effect	Monitoring Proposals
Litter Pollution	The Contractor will review and maintain waste records and site audits
Unlicensed Waste Collection (Illegal Dumping)	A register will be maintained and reviewed. A copy of all waste collection permits will be maintained.
Insufficient Waste Facilities	A register will be maintained and reviewed. A copy of all waste collection permits will be maintained.
Lack of waste Classification	An appointed Resource Manager will monitor all on-site waste segregation and classification
Unlicensed Waste Collection (Illegal Dumping)	The operator/ facilities management company will maintain waste receipts on-site for a period of 7 years and make them available to SDCC as requested.
Poor Waste Segregation	Waste generation volumes will be monitored by the waste contractor/operator / facilities management company
Litter Pollution	Waste storage areas will be monitored by the waste contractor/operator / facilities management company

Construction Phase

The objective of setting targets for waste management is only achieved if the actual waste generation volumes are calculated and compared. This is particularly important during the excavation and construction works, where there is a potential for waste management objectives to become secondary to other objectives, i.e. progress and meeting construction schedule targets. The RWMP specifies the need for a Resource Manager to be appointed, who will have responsibility for monitoring the actual waste volumes being generated and ensuring that contractors and sub-contractors are segregating waste as required. Where targets are not being met, the Resource Manager will identify the reasons for this and work to resolve any issues. Recording of waste generation during the construction phase of the proposed development will enable better management of waste contractor requirements and identify trends. The data should be maintained to advise on future developments.

Operational Phase

During the operational phase, waste generation volumes should be monitored by the waste contractor and or the operator of the proposed development. There may be opportunities to reduce the number of bins and equipment required in the WSAs, where estimates have been too conservative. Reductions in bin and equipment requirements will improve efficiency and reduce waste contractor costs.

18.2.15 Material Assets – Traffic

18.2.15.1 Construction Phase

A Construction Traffic Management Plan (CTMP) has been prepared as part of the Construction Management Plan (CMP) and is included as a separate document. In the event of a grant of Planning Permission, the contractor will adopt and refine the CTMP for agreement with the Local Authority prior to commencement, as per normal best practice.

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

- Chapter 8 of the Department of Environment Traffic Signals Manual, current edition, published by the Stationary Office and available from the Government Publications Office, Sun Alliance House, Molesworth Street, Dublin 2;
- The Guidance for the Control and Management of Traffic at Road Works (June 2010) prepared by the local Government Management Services Board;
- The Construction Site Traffic Management Plan (CSTMP) Guidance prepared by the Health and Safety Authority; and
- Any additional requirements detailed in TII standards or in the Design Manual for Urban Roads and Street (DMURS).

Issues addressed in the CTMP shall include:

- Public, Staff & Patients Safety
- Construction Traffic Routes
- Deliveries Schedules
- Special Deliveries (Wide and Long Load)
- Traffic Flows
- Signage and Lighting
- Road Opening Requirements
- Road Closures
- Lighting

A liaison officer will be appointed as a point of contact with the local residents, SDCC and the Gardai. Specific mitigation measures suggested for inclusion in the CTMP include:

- Securely fencing off the site from adjacent properties, public footpaths and roads during the pre-construction phase;
- Providing signage on the surrounding road network to define the access and egress routes for the development;
- Strictly controlling the traffic generated by the construction phase of the development in order to minimise the impact of this traffic on the surrounding road network;
- Adequately signposting and enclosing all road works to ensure the safety of all road users and construction personnel;
- Accommodating all unavoidable employees' and visitors' vehicle parking demands on site or within designated off-site parking areas;
- Implementing a programme of street cleansing as required;
- Making arrangements to facilitate the delivery of abnormal loads to the site; and
- Implementing measures to avoid queuing of construction traffic on the adjoining road network.

Vehicular Access to the Site

Vehicular Access to the site for construction traffic shall be primarily via the main entrance road to the Northeast of the Site.

All vehicular construction traffic arriving and departing to/from the site during the first stages of the development will be required to travel along a new temporary access road that shall be constructed as part of the site set-up. This temporary construction access road shall follow the eastern boundary of the site directly into the contractor's compound. This access arrangement shall maintain the level of safety for pedestrians and cyclists, as well as the operational efficiency of the access as the construction traffic movements shall be more consistent and predictable.

The arrangement of the site's vehicular access provisions may be further refined as part of the final Construction Traffic Management Plan (CTMP) to be prepared by the lead Contractor appointed to the project.

Vehicular Access Control Measures

Security personnel will be present at the entrance/ exit of the site to ensure all exiting traffic will do so safely. A wheel wash may be installed at the exit from the site to prevent any dirt from being carried out onto public roads. If necessary, a road sweeper will be used to keep public roads around the site clean. The vehicular access to the construction site shall include the following design elements:

- Sufficient entrance width to permit two rigid body vehicles to pass one another (i.e. one can enter while another waits to leave).
- An entrance gate set back a minimum of 18m from the public road edge, to ensure that vehicles may leave the road completely before having to stop.
- Appropriate sight lines for vehicles exiting from the site to be ensured by removing existing visual obstructions and by appropriate design of perimeter hoarding.
- Directional signage for site traffic and advance warning signage for all other road users. Any works on the public road (e.g. for services connections) will require an application for a Road Opening Licence and will be submitted by the contractor to the Local Authority which will include a full detailed Construction Traffic Management Plan prepared in accordance with Chapter 8 of the Traffic Signs Manual for pre-approval by the Local Authority.

Access measures may be refined further as part of the final Construction Traffic Management Plan (CTMP) to be prepared by the contractor.

HGV Access Routes

Heavy Good Vehicle traffic (Vehicles 3.5t or over) to and from the construction site shall comprise primarily 3-axle and 4-axle lorries for the removal and delivery of spoil and aggregate.

All HGV construction traffic shall follow the same designated routes in place for all other construction traffic.

- Arrivals- From the M50 (north and south) via Junction 10
- Departures- From the Subject Site to the M50 via Junction 10

These designated HGV and Construction Traffic Routes ensure that the traffic can travel between the development site and the national primary roads/ motorways without:

- Passing through residential areas;
- Travelling via roads with weight limits;
- Passing beneath low bridges
- Travelling in both directions along any single-carriageway road; or
- Entering the Dublin City restricted cordon area

Minimisation of Construction Vehicle Movements

Construction vehicle movements will be minimised through:

- Consolidation of delivery loads to/ from the site and management of large deliveries on-site to occur outside peak periods.
- Use of Pre-cast/ Prefabricated materials where possible.
- Reuse on-site 'Cut' material generated by the construction works, where possible, through various accommodation works.
- Provision of adequate storage space on site.
- Development of a strategy to minimise construction material quantities as much as possible; and
- Minimisation of construction staff's vehicle movements by promoting car sharing and the use of public transport.

Site Parking

Approximately 30 car parking spaces for construction personnel are to be provided on-site during construction works. The parking will be located within the contractor's compound. Usage of this shall be strictly controlled and limited to those workers for whom no alternative mode of transport is practical.

All construction personnel shall be encouraged to use public transport or to cycle to the site and shall be supported in this. It is also expected that the lead Contractor and/ or individual subcontractors shall arrange bus transport to the site for a proportion of their works. No parking by construction personnel shall be permitted within the Leopardstown Park Hospital car parks.

All construction personnel shall be encouraged to use public transport or to cycle when travelling to the site, and all contractors shall be required to make reasonable provision for shared transport of workers to the site (e.g., charter buses or car-sharing arrangements). Information on local transportation services shall be posted on-site.

Cycling

Cycle parking spaces will be provided on the site for construction staff. In addition, lockers will be provided to allow cyclists to store their clothes.

Public Transport

The development site is advantageously located with respect to public transport accessibility, in particular its position adjacent to the adjacent Bus Routes on Greenhills Road. Construction staff will therefore be encouraged to use public transport for travel to and from the site. An information leaflet will be provided to all staff as part of their induction on-site highlighting the location of various public transport services in the vicinity of the construction site.

Car Sharing

The contractor will provide organisational support and encouragement for car sharing amongst staff, particularly those for whom end-to-end public transport journeys are impractical. To the extent possible, the contractor will endeavour to arrange staff shift patterns to facilitate shared journeys by staff who would drive similar routes.

Deliveries & Storage Facilities

It is proposed that unloading bays be provided for deliveries to the site within the hoarding perimeter. These should be accessible by cranes and teleporters. Appropriately demarcated storage zones will be used to separate materials.

All deliveries to the site will be scheduled to ensure their timely arrival and avoid the need for storing large quantities of materials to the site. Deliveries will be scheduled outside of peak traffic hours, to avoid disturbance to pedestrian and vehicular traffic in the vicinity of the site.

18.2.15.2 Operational Phase

The assessment demonstrates the negligible traffic impact of the operational (full completion and occupation) stage of the development. The construction traffic volumes have been assessed and are expected to be equivalent to or below the operational stage traffic volumes. In these terms, the effects of the construction traffic volumes are expected to be negligible and unnoticeable on the local road network. The implementation of the mitigation measures and Construction Traffic Management Plan will ensure that the effects are further minimised and controlled.

18.2.15.3 Monitoring

The following monitoring measures will be put in place for the development:

- A visual condition survey (VCS) will be carried out of all surrounding streets prior to any site works commencing.
- The lead contractor will liaise with the Environment & Transportation Department of South Dublin County Council to agree any changes to load restrictions and construction access routes for the site as part of the contractor refinement of the CTMP.
- All site entrances and temporary roads will be continuously maintained for emergency vehicle access.
- The following measures will be taken to ensure that site, public roads and surroundings are kept clean and tidy:

- A regular program of site tidying will be established to ensure a safe and orderly site.
- Scaffolding will have debris netting attached to prevent materials and equipment being scattered by the wind.
- Food waste will be strictly controlled on all parts of the site;
- Mud spillages on roads and footpaths outside the site will be cleaned regularly and will not be allowed to accumulate.
- Wheel wash facilities will be provided for vehicles exiting the site.
- In the event of any fugitive solid waste escaping the site, it will be collected immediately and removed.

Normal post-planning consultation and liaison with the Local Authority will be undertaken to ensure that any adverse impacts of the proposed development are minimised and reviewed.

18.2.16 Archaeology, Architectural and Cultural Heritage

18.2.16.1 Construction Phase

As noted above in Sections 15.5.1.1, 15.5.1.2 and 15.5.1.3, the impacts (effects) of the proposed development, at the construction stage, with respect to any archaeological monuments or structures of historical, archaeological or architectural heritage interest is considered to be of unlikely probability, of neutral quality and of imperceptible significance; in addition given the developmental history of the site, it is not deemed likely that any previously unrecorded subsurface archaeological features might be positioned within the subject site. Consequently, no mitigation measures are deemed necessary.

18.2.16.2 Operational Phase

As noted above in Section 15.5.2, the overall proposed development will not impact on the views or setting of any monuments or structures of Cultural Heritage interest, resulting in an impact (effect) of unlikely probability, of neutral quality and of imperceptible significance; consequently, no mitigation measures are deemed necessary.

18.2.16.3 Monitoring

No monitoring measures are required.

18.2.17 Landscape and Visual Amenity

18.2.17.1 Construction Phase

The appearance of the development is a major influence on how the site is perceived by the public so the proposed development includes extensive landscape and open space works with the overall objective of providing a layout that integrates the development into the surrounding townscape/landscape and provides a series of coordinated and linked green spaces.

This includes designing green infrastructure, formal and informal open spaces, public realm and other external areas for the amenity and use of residents and others in this area as shown on the Landscape Design drawings. **See Figure 16.5 Proposed Landscape Setting**

Landscape Design and Amenity Considerations

Circulation and Connectivity

The main vehicular entrances are off Greenhills Road (similar to the existing road junction) providing access to the internal car parks and the external parking area to the south-west of the site.

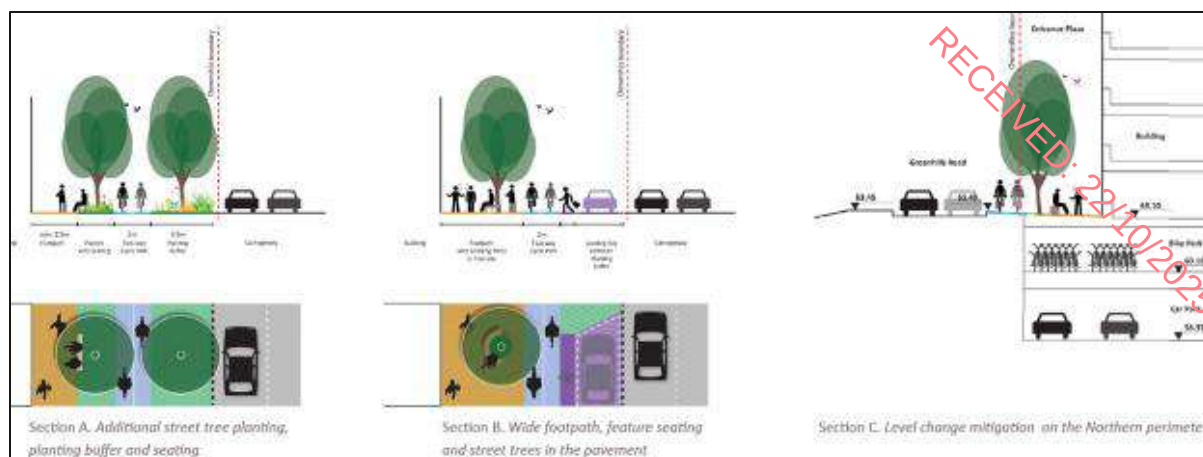


Figure 16.4 Extract from the Landscape Design Statement

The landscape design aims to create a sense of connectivity between spaces through the use of high-quality materials and the establishment of a carefully considered planting scheme with a cyclist/pedestrian footpath network helping to ensure that both residents and guests can navigate around the site easily. Cyclist provision is an integral part of the external design with bicycle paths following the internal road routing but separated by landscape elements including tree planting to assist in safety. Bicycle storage provision is facilitated internally and at strategic node/meeting points.

Wide pedestrian footpaths connect the areas of the public realm and alongside internal roads close that will allow interaction of these spaces with their routes and direction visually and aesthetically enhanced by tree and hedge planting. The selection of materials includes a mix of permeable concrete pavers and compacted gravel set between appropriate edgings. Urban furniture is to be located at key locations or spaces along these connections for resident or visitor use.

Identifiable future cycle and pedestrian linkages are also considered in relation to the wider connectivity and linkages to the townscape across the Greenhills / Walkinstown area. This will correlate and link to an improved treatment of the public realm to Greenhills Road that lessens the domination by the access roadway (moved to the east) providing more active frontage and addressing the change in level in a more appropriate way.

CGI 16.3: Proposed view of development demonstrating linkages and connectivity proposals

Image courtesy of 3D Design Bureau (2025)

Boundary Treatments

The proposed works include an overhaul of the planted bank to the north of the Application Site on the steeper slopes towards the Greenhills Road to both improve this planting mix and enhance its screening ability and bio-diversity benefit. Dense planting including trees, climbing plants and ground cover is integrated into the proposed retaining walls towards Greenhills Road. The area aside from the replaced fence on Greenhills Road is to be replanted with a native hedgerow to provide a natural corridor and visual screen.

To the south, landscape works including hedgerows and avenue trees are proposed on the development side of the former service road to assist natural screening and site definition.

Public Realm Landscapes

The public realm includes broadened streetscapes with green infrastructure (including bioswales), a centralised public courtyard, public realm streetscapes, pocket parks, urban furniture, shared spaces and designated play areas for resident and local visitor use. The site layout will ensure properties face areas of open space (and streets) to provide passive supervision/ownership ensuring no hidden corners (as per Space Syntax research and recommendations).

The open spaces have been designed to coordinate with the changes in levels across the site and use these variations to create further pocket parks and amenity landscape areas accessed by a series of ramps and steps.

The activity area provided in the public open space is circa 235m² and includes a mix of areas for both physical activity. Incidental play elements are included elsewhere throughout the development.

CGI 16.4: *Elevated view of internal public open space to the core of the proposed development including amenity area and seating areas*



Image courtesy of 3D Design Bureau (2025)

Communal Landscapes

Communal open space is provided within podium parks and roof gardens including areas of hard landscape, tree planting, lawns, ornamental planting including seating / passive amenity areas, and areas for communal garden and outdoor working. The space also includes a designated play area. The objective of the collective podium parks and communal spaces is to allow residents at all levels ready access to exterior garden spaces.

Green Roofs

60% of the roof areas of the proposed buildings will include sedum green roofs designed, in part to assist in drainage patterns by intercepting rainfall, building insulation and also to enhance biodiversity. These areas are not accessible to residents but will contribute to the general character and environmental integrity of the development. Rain gardens are also integrated into the shared surface space to mitigate surface runoff.

Hard Landscapes Works

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

Planting Works

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

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

The landscape works include for planting of trees within public open spaces, communal open spaces and along new connection routes through the proposed development that will entail over 360 no. 'semi-mature' or 'extra-heavy standard' size trees to provide an instant impression. The collective trees will, as they mature, assist in merging the proposed development into the surrounding landscape and local views as well as set about the creation of the area's new landscape character. Other landscape works will include structure planting, amenity planting, garden trees, hedgerows and wooded belts. Such planting will more than compensate for the loss of the low-quality vegetation that currently exists and will enhance the overall "green" cover and nature of the site.

Figure 16.5: Proposed Landscape Setting



Extract from Proposed Landscape Plan (Drawing No. 7103-PHL-SW-XX-DR-L-2000)

Planting and augmentation of existing vegetation towards Greenhills Road will consist of evergreen and deciduous trees with an under-story scrub mix. A range of plant species and heights will be selected to provide quick establishment and assist in visual integration.

Amenity planting will consist of trees, native woodlands, hedgerows, shrub/groundcover planting, meadow/wildflower and grass seeding works. As the planting matures, it will change the nature of the site and its visual amenity and the height of planting for assessment purposes is as follows:-

- Planting at Year 1: 3 metres;
- Planting at Year 15: 8 metres; and
- Planting at maturity: 20 metres (i.e., Year 25)

Plants selected will be predominantly indigenous and species selection based on those in the “All-Ireland Pollinator Code / All Ireland Pollinator Plan 2021-2025” to ensure successful plant establishment that will merge visually and ecologically into this area. Landscape works will be undertaken by an ALCI-approved landscape contractor and in accordance with *BS 4428:1989 Code of Practice for general landscape operations (excluding hard surfaces)*. Any trees or shrubs dying, damaged or removed will be replaced in the following planting session with plants of similar size and species. Trees supply and planting shall correspond to *BS 8545 Trees: from nursery to independence in the landscape - Recommendations*.

CGI 16.5: Internal view of public open space



Image courtesy of 3D Design Bureau (2025)

18.2.17.2 Operational Phase

No mitigation measures are proposed for the operational phase.

18.2.17.3 Monitoring

The management of landscape areas will initially be undertaken by an ALCI-approved landscape contractor. After 12 months the maintenance will be handed over to the long-term Management Company which will take over maintenance of set areas on completion of the development. There will be a five-year guarantee after construction that all the proposed planting works still exist and have been established in line with landscape design expectations. This will ensure that no planting has been removed or damaged due to the subsequent construction or plant failure. The planning application is accompanied by Landscape Management and Maintenance Plans setting out the objectives for the management of external spaces or public realm areas for a 20-year period.

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