ARMSTRONG
FENTON
ASSOCIATES

PROJECT: Large Scale Residential Development (LRD)

Environmental Impact Assessment Report (EIAR)

Volume II

for proposed development at

Santry Avenue & Swords Road, Santry, Dublin 9.

CLIENT: Dwyer Nolan Developments Ltd

DATE: March 2024

Planning &
Development
Consultants

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PART A - Introduction and Background

1.0. Introduction

1.1 Introduction

1.1.1. This Environment Impact Assessment Report (EIAR) has been prepared by Armstrong Fenton Associates Planning Consultants on behalf of Dwyer Nolan Developments Ltd. who intend to apply to Dublin City Council for a Large-scale Residential Development (LRD) on lands at the junction of Santry Avenue and Swords Road, Santry, Dublin 9. The proposed development falls under the definition of Large-scale Residential Development (LRD) as set out under Section 2 of the Planning and Development (Amendment) (Large-scale Residential Development) Act, 2021, as it consists of "the development 100 or more houses" the floor space of which "is not less than 70 per cent, or such other percentage as may be prescribed, of the LRD floor space of the buildings comprising the development". This chapter of the EIAR was prepared by Tracy Armstrong, BA, MRUP, MRTPI, MIPI, of Armstrong Fenton Associates Planning Consultants.

1.1.2. The application site comprises c. 1.5 hectares located on lands at the junction of Santry Avenue and Swords Road, Santry, Dublin 9. The site is bounded to the north by Santry Avenue, to the east by Swords Road, to the south by the permitted Santry Place development (Ref.s 2713/17, 2737/19 & 4549/22) and to the west by the Santry Avenue Industrial Estate.

1.1.3. The proposed site is currently occupied by the Chadwicks (formerly Heiton Buckley) builder's providers in a large industrial type building and associated yard.

1.1.4. The proposed application represents the development of an area, identified within the current Dublin City Development Plan 2022-2028. Within the City Development Plan (hereafter "CDP") the subject site is zoned objective Z3 Neighbourhood Centres: *"To provide for and improve neighbourhood facilities".* Permitted uses under the *"Z3"* land use zoning objective include *inter alia* community facility, cultural/recreational building and uses, enterprise centre, live-work units, medical and related consultants, office, open space, primary health care centre, residential, restaurant, shop (local), shop (neighbourhood), training centre. (Emphasis added by Armstrong Fenton Associates – hereafter "AFA")

1.1.5. The CDP was accompanied by a Strategic Environmental Assessment (SEA) and Appropriate Assessment (hereafter AA) Screening Report. In the above context, the Environmental Impact Assessment (EIA) of this project is undertaken against a background of a significant amount of environmental information and assessment which informed the preparation of the CDP and its approval by Dublin City Council (hereafter "DCC").

1.1.6. The EIA process, including the preparation of this EIAR and the examination of the information presented by DCC, will inform the decision-making process. The purpose of this EIAR is to assist and inform the Planning Authority in undertaking an environmental assessment of this project.

Therefore, the objectives of this EIAR are summarised as follows:

- To identify the significant environmental impacts of the proposed development during the construction and operational phases having regard to the characteristics of the receiving environment.

- To evaluate the magnitude and significance of these impacts and propose appropriate measures to mitigate potential adverse impacts.

- To identify, where appropriate, monitoring measures to be implemented during the construction and operational phases.

The nature and extent of the development being assessed is outlined in Chapter 3 of this EIAR and summarised in Section 1.2 below. This EIAR is prepared with reference to the plans and particulars submitted with the planning application.

1.2. Proposed Development

1.2.1 Dwyer Nolan Developments Ltd. wishes to apply for permission for a Large-Scale Residential Development (LRD) on this site, c. 1.5 hectares, located at the junction of Santry Avenue and Swords Road, Santry, Dublin 9. The development site is bounded to the north by Santry Avenue, to the east by Swords Road, to the west by Santry Avenue Industrial Estate, and to the south by the permitted Santry Place development (granted under Dublin City Council Ref.s. 2713/17 (as extended under Ref. 2713/17/X1), 2737/19 & 4549/22).

The proposed development provides for 321 no. apartments, comprised of 104 no. 1 bed, 198 no. 2 bed, & 19 no. 3 bed dwellings, in 4 no. seven to thirteen storey buildings, over basement level, with 3 no. retail units, a medical suite / GP Practice unit and community/arts & culture space (total c.1,460sq.m), all located at ground floor level, as well as a one storey residential amenity unit, facing onto Santry Avenue, located between Blocks A & D.

The proposed development consists of the following:

1. Demolition of the existing building on site i.e. the existing Chadwicks Builders Merchants (c. 4,196.8m^2).

2. Construction of 321 no. 1, 2, & 3 bed apartments, retail units, medical suite / GP Practice, community/arts & culture space, and a one storey residential amenity unit in 4 no. buildings that are subdivided into Blocks A-G as follows:

- **Block A is a 7-13 storey block consisting of 51 no. apartments comprised of 22 no. 1 bed, 23 no. 2 beds & 6 no. 3 bed dwellings, with 2 no. retail units located on the ground floor (c. 132sq.m & c.172sq.m respectively). Adjoining same is Block B, which is a 7 storey block consisting of 38 no. apartments comprised of 6 no. 1 bed, 26 no. 2 bed, & 6 no. 3 bed dwellings, with 1 no. retail unit (c.164sq.m) and 1 no. medical suite / GP Practice unit located on the ground floor (c. 130sq.m). Refuse storage areas are also provided for at ground floor level.**

- **Block C is a 7 storey block consisting of 53 no. apartments comprised of 14 no. 1 bed & 39 no. 2 bed dwellings. Adjoining same is Block D which is an 8 storey block consisting of 44 no. apartments comprised of 22 no. 1 bed, 15 no. 2 bed, & 7 no. 3 bed dwellings. Ground floor, community/arts & culture space (c. 583sq.m) is proposed in Blocks C & D, with refuse storage area also provided for at ground floor level.**

- **Block E is an 8 storey block consisting of 49 no. apartments comprised of 7 no. 1 bed & 42 no. 2 bed dwellings. A refuse storage area, substation, & switchroom are also provided for at ground floor level. Adjoining same is Block F which is a 7 storey block consisting of 52 no. apartments comprised of 13 no. 1 bed & 39 no. 2 bed dwellings. Ground floor, community/arts & culture space (c.877sq.m) is proposed in Blocks E & F. A refuse storage area, bicycle storage area, substation, & switchroom are also provided for at ground floor level of Blocks E & F.**

- **Block G is a 7 storey block consisting of 34 no. apartments comprised of 20 no. 1 bed & 14 no. 2 bed dwellings. A refuse storage area & bicycle storage area are also provided for at ground floor level.**

3. **Construction of a 1 storey residential amenity unit (c. 166.1sq.m) located between Blocks A & D.**

4. **Construction of basement level car park (c.5,470.8sq.m), accommodating 161 no. car parking spaces, 10 no. motorbike parking spaces & 672 no. bicycle parking spaces. Internal access to the basement level is provided from the cores of Blocks A, B, C, D, E, & F. External vehicular access to the basement level is from the south, between Blocks B & C. 33 no. car parking spaces & 58 no. bicycle parking spaces are also provided for within the site at surface level.**

5. **Public open space of c. 1,791sq.m is provided for between Blocks C-D & E-F. Communal open space is also proposed, located between (i) Blocks E-F & G, (ii) Blocks A-B & C-D, and (iii) in the form of roof gardens located on Blocks A, C, & F and the proposed residential amenity use unit, totalling c.2,986sq.m. The development includes for hard and soft landscaping & boundary treatments. Private open spaces are provided as terraces at ground floor level of each block and balconies at all upper levels.**

6. **Vehicular access to the development will be via 2 no. existing / permitted access points: (i) on Santry Avenue in the north-west of the site (ii) off Swords Road in the south-east of the site, as permitted under the adjoining Santry Place development (Ref. 2713/17).**

7. **The development includes for all associated site development works above and below ground, bin & bicycle storage, plant (M&E), sub-stations, public lighting, servicing, signage, surface water attenuation facilities etc.**

1.3. Requirement to Prepare an EIAR

The Environmental Impact Assessment (EIA) requirements for certain developments derive from EU Directives. Directive 2011/92/EU as amended by Directive 2014/52/EU amended (the "EIA Directive") imposes requirements to assess the effects of certain projects on the environment. To assist with such assessments, the EIA Directive requires that an Environmental Impact Assessment Report ("EIAR") is prepared for certain projects. The EIAR was introduced by Directive 2014/52/EU and replaces the Environmental Impact Statement ("EIS") required under Directive 2011/92/EU.

The *European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018* have now transposed the 2014 Directive into Irish law.

Article 3 (1) of the amended Directive outlines that:

"The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors:

a) Population and human health;

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

c) land, soil, water, air and climate;

d) material assets, cultural heritage and the landscape;

e) the interaction between the factors referred to in points (a) to (d)."

The EIAR process is illustrated at Figure 1.1 below:

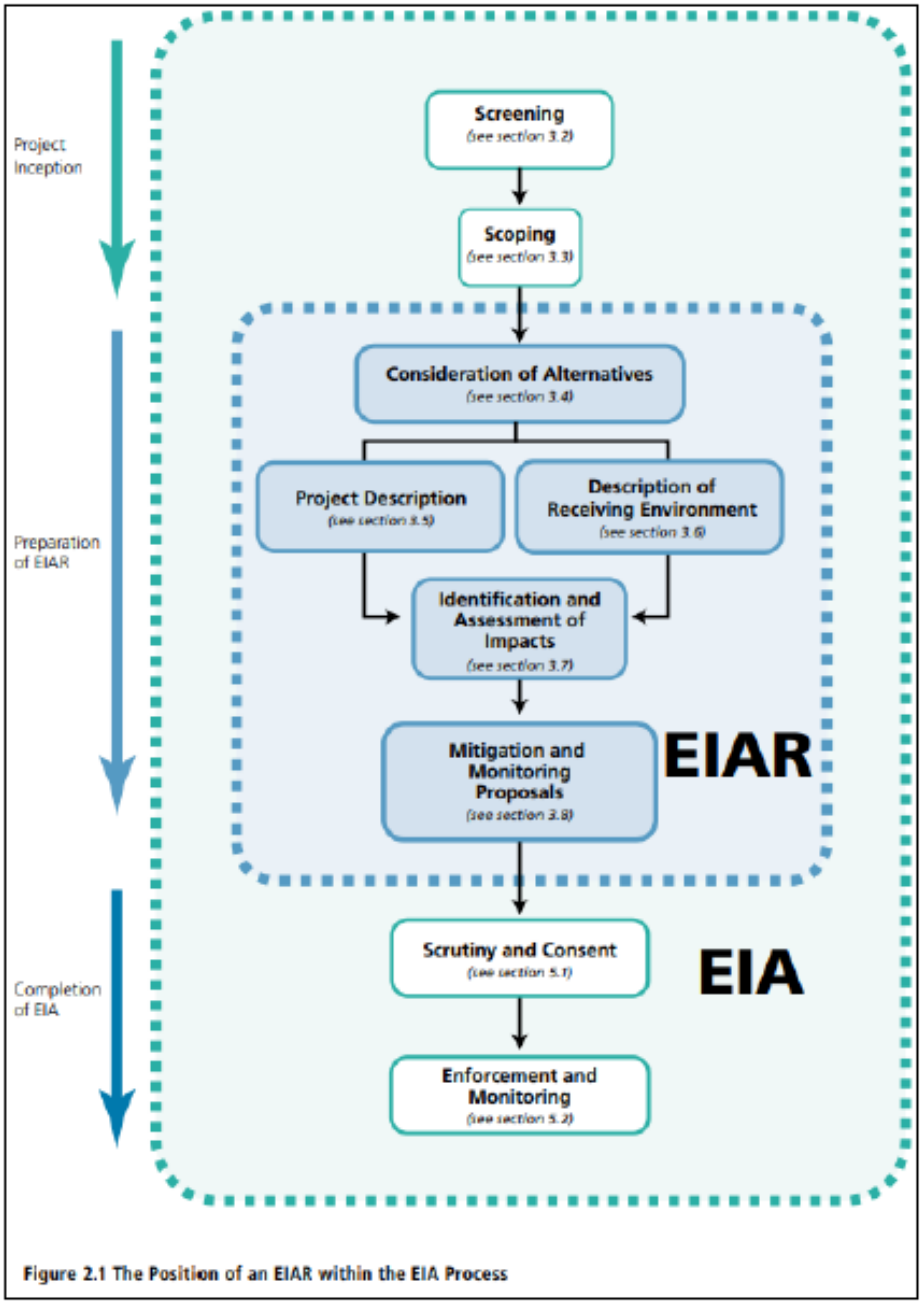


Figure 2.1 The Position of an EIAR within the EIA Process

Fig. 1.1: Diagram illustrating the Process of Carrying Out an EIAR.

(Source: EPA Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, 2022).

As detailed in Figure 1.1 above, the following are the key stages of the EIAR process:

- Screening – Does an EIAR need to be prepared?
- Scoping – Relevant environmental aspects to be considered in the assessment
- Preparing the EIAR Document
- Completion of EIAR and any enforcement of mitigation measures or monitoring etc.

1.4. Requirement to Prepare this EIAR

1.4.1 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 1 projects.

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

The proposed development falls below the threshold for a mandatory EIAR. The subject proposal comprises 321 no. dwellings and is on a site of less than 10 hectares. Therefore, a mandatory EIA is not required.

However, when assessed in conjunction with neighbouring developments i.e.:

- directly to the south (permitted under Dublin City Council Ref.s 2713/17 (as extended under Ref. 2713/17/X1), 2737/19 & 4549/22) i.e. named Santry Place),
- lands to the northeast of Omni Park Shopping Centre (permitted under An Bord Pleanála Ref. ABP-307011-20) and
- south-east (permitted under An Bord Pleanála Ref. ABP-303358-18 and Ref. ABP-306987-20 i.e. Swiss Cottage) of the application lands;

the Applicant is cognisant of the cumulative impacts which the permitted and proposed developments may have and as such has prepared this EIAR to accompany their LRD planning application in order to allow for a comprehensive assessment of the proposed development.

1.4.2 The proposed LRD planning application subject to this EIAR comprises of, *inter alia,* 321 no. residential dwellings, a residential amenity space/unit, 3 no. retail units, a medical suite / GP Practice unit, c, 1,460sq.m of ground floor space dedicated to community/arts/cultural uses, open spaces and associated infrastructure on a site of c. 1.50 hectares.

1.5. Purpose of this EIAR

1.5.1 This EIAR has been prepared on behalf of the Applicant, Dwyer Nolan Developments Limited, in relation to the subject development of 321 no. 321 no. apartments, comprised of 104 no. 1 bed, 198 no. 2 bed, & 19 no. 3 bed dwellings, in 4 no. seven to thirteen storey buildings, over basement level, with 3 no. retail units, a medical suite / GP Practice unit and community/arts & culture space (total c.1,460sq.m), all located at ground floor level, as well as a one storey residential amenity unit, facing onto Santry Avenue, located between Blocks A & D.

1.5.2 As noted above, this LRD application and associated EIAR is being submitted to the Planning Authority after the commencement of the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018, which transpose the requirements of Directive 2014/52/EU into Irish planning law. Schedule 5 of the Planning and Development Regulations 2001-2020 identifies projects in respect of which the submission of an EIAR is mandatory. The proposed development is not identified within Part 1 of the schedule, nor does it exceed the thresholds identified in Part 2 thereof. The following relevant criteria are noted in respect of Class 10 – Infrastructure Projects:
(b)(i) Construction of more than 500 dwelling units
(b)(iv) Urban development which would involve an area greater than 2 hectares in the case of a business district, 10 hectares in the case of other parts of a built-up area and 20 hectares elsewhere.

1.5.3 Whilst the proposed development does not exceed these thresholds, having regard to the extent of recently completed and planned development in the surrounding area, the Applicant has prepared this EIAR to allow a comprehensive assessment of the development.

This EIAR has been prepared in accordance with Article 5 (1) and Annex IV of Directive 2014/52/EU which stipulates that:

"A description of the likely significant effect of the project on the environment resulting from, inter alia:

a) the construction and existence of the project, including, where relevant, demolition works;

b) the use of natural resources, in particular land, soil, water and biodiversity , considering as far as possible the sustainable availability of these resources;

c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste;

d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters);

e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;

f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change;

g) the technologies and the substances uses.

The description of the likely significant effects on the [environmental] factors should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the project."

1.5.4 Furthermore, Annex III (3) of the amended Directive stipulates:

a) "the magnitude and spatial extent of the impact (for example geographical area and size of the population likely to be affected);

b) the nature of the impact;

c) the transboundary nature of the impact;

d) the intensity and complexity of the impact;

e) the probability of the impact;

f) the expected onset, duration, frequency and reversibility of the impact;

g) the cumulation of the impact with the impact of other existing and/or approved projects;

h) the possibility of effectively reducing the impact."

1.5.5 This EIAR has been completed fully in accordance with Article 5(1) and Annex IV of Directive 2014/52/EU. This EIAR has been compiled by AFA Planning Consultants and incorporates all inputs from

relevant experts as outlined in Section 1.8. The layout of the EIAR is discussed in the following section.

1.5.6 Under Article 5(3) of the 2014 Directive, it is specifically required that the developer must ensure that the environmental impact assessment report is prepared by competent experts. Each chapter of this EIAR has been prepared by experts with the requisite qualifications and competences which are detailed in each relevant chapter.

1.5.7 The intention of this EIAR document is to provide transparent, objective and replicable documentary evidence of the EIA evaluation and decision-making processes which led to the selection of the final project configuration. The EIAR documents the consideration of environmental effects that influenced the evaluation of alternatives. It also documents how the selected project design incorporates mitigation measures; including impact avoidance, reduction or amelioration; to explain how significant adverse effects will be avoided.

1.6 Format of this EIAR and EIAR Methodology

1.6.1 The overall structure and scope of this EIAR has regard to the information required by the EU/EC Directives, Statutory Regulations and relevant environmental guidelines prepared by the Environmental Protection Agency (EPA). The EIAR has been written and illustrated with figures in a manner which, insofar as possible, is intended to be understandable to the public generally. A Non-technical Summary has been prepared in accordance with the statutory regulations and is submitted as a separate document to this EIAR. The appendices to this EIAR contain background and technical details relating to the project and are referred to in the relevant Chapters.

1.6.2 The preparation of this EIAR has comprised the compilation and presentation of a wide range of information from a variety of consultants. Each expert has compiled the relevant chapter (details of each expert outlined at the outset of every EIAR chapter) principally set out in the following format, where relevant:

1. Existing Receiving Environment (Baseline Scenario)
2. Physical Characteristics of the Proposed Development
3. List of Relevant Environmental Factors and any Likely Impacts of the Development
4. Proposed Mitigation Measures
5. Potential Cumulative Impacts
6. Monitoring Required
7. Avoidance, Remedial or Reinstatement
8. Interactions
9. Difficulties Encountered (if any)

In addition, an Examination of Alternatives is provided in Chapter 4 and a Non-Technical Summary of each chapter is provided in Volume 1 of this EIAR.

1.7 The Applicant

We confirm that our Client, Dwyer Nolan Developments Limited, has full consent from the landowner Zoltorn Limited who owns the subject site.
In addition, we note that a letter of consent from Dublin City Council to carry out works to footpaths / roadway along the northern boundary (Santry Avenue) and eastern boundary (Swords Road) abutting the site.

1.8 Contributors

This EIAR has been compiled by AFA Planning Consultants and comprises input from an experienced team of consultants. The various consultants have been provided in Table 1.1 below and their expertise will be included at the beginning of each relevant chapter. Each consultant is appropriately qualified and experienced in their respective fields in accordance with Directive 2014/52/EU.

Chapter	Contributor
Non-Technical Summary	Armstrong Fenton Associates Planning Consultants: Tracy Armstrong BA, MRUP, MIPI, MRTPI
1 Introduction	Armstrong Fenton Associates Planning Consultants: Tracy Armstrong BA, MRUP, MIPI, MRTPI
2 Planning Policy Context	Armstrong Fenton Associates Planning Consultants: Tracy Armstrong BA, MRUP, MIPI, MRTPI
3 Description of Project & Alternatives	Armstrong Fenton Associates Planning Consultants: Tracy Armstrong BA, MRUP, MIPI, MRTPI
4 Population & Human Health	Armstrong Fenton Associates Planning Consultants: Tracy Armstrong BA, MRUP, MIPI, MRTPI
5 Biodiversity / Species & Habitats	Enviroguide Consulting: Liam Gaffney B.Sc. in Zoology (Hons) and a M.Sc. (Hons) in Wildlife Conservation and Management
6 Land & Soils	DBFL Consulting Engineers: Laura McLoughlin, Senior Civil Engineer, B.Eng, C.Eng.
7 Water	DBFL Consulting Engineers: Laura McLoughlin, Senior Civil Engineer, B.Eng, C.Eng.
8 Air Quality	AWN Consulting Ltd.: Ciara Nolan BSc in Energy Systems Engineering & MSc in Applied Environmental Science
9 Climate	AWN Consulting Ltd.: Aisling Cashell BA, MAI Civil, Structural and Environmental Engineering & Ciara Nolan, BSc in Energy Systems Engineering & MSc in Applied Environmental Science
10 Noise & Vibration	AWN Consulting Ltd.: Leo Williams BAI (Mechanical and Manufacturing Engineering) & MAI (Mechanical and Manufacturing Engineering).
11 Material Assets: Built Services	DBFL Consulting Engineers: Laura McLoughlin, Senior Civil Engineer, B.Eng, C.Eng.
12 Material Assets: Transportation	DBFL Consulting Engineers : Thomas Jennings BEng (Hons) MSc MIEI CMILT MIHT
13 Material Assets: Resource & Waste Management	AWN Consulting Ltd.: Chonaill Bradley, BSc in Environmental Science
14 Archaeology & Cultural Heritage	Archaeology Plan: Steven McGlade BA MIAI
15 The Landscape	Dermot Foley Landscape Architects: Teodora Karneva
16 Identification of Significant Impact / Interactions	Armstrong Fenton Associates Planning Consultants: Tracy Armstrong BA, MRUP, MIPI, MRTPI
17 Summary of EIA Mitigation and Monitoring Measures	Armstrong Fenton Associates Planning Consultants: Tracy Armstrong BA, MRUP, MIPI, MRTPI

Table 1.5: EIAR Project Team

1.9 Methodology

1.9.1 A systematic approach is employed using standard descriptive methods, replicable prediction techniques and standardised impact descriptions to provide an appropriate evaluation of each environmental topic under consideration. An outline of the methodology used to ensure consistency in each chapter of this EIAR and to examine each environmental topic is detailed in Table 1.2 below.

Section	Description
Introduction	Provides an overview of the specialist area and specifies the specialist who prepared the assessment.
Study Methodology	Outlines the method by which the relevant assessment of the development impacts has been conducted within that chapter.
Baseline Situation	Describes and assesses the receiving environment, the context, character, significance and sensitivity of the baseline receiving environment into which the proposed development will fit.
Construction Impacts and Mitigation	Describes the specific, direct and indirect impacts that may arise during the construction phases of the development. A description of the appropriate mitigation measures either practicable or reasonable is also provided in this section
Operational Impacts and Mitigation	Focuses on the operational phase of the proposed development and describes the specific, direct and indirect impacts that may arise together with appropriate mitigation measures.
Do Nothing Impact	Describes a scenario in which the development does not proceed and the environment would not change as a result.
Monitoring	Describes the monitoring of the development in a post-development phase, if required. This section addresses the effects that require monitoring, along with the methods and the agencies that are responsible for such monitoring. The level of monitoring, along with the methods and the agencies that are responsible for such monitoring. The level of monitoring proposed is proportionate to the nature, location and size of the project and the significance of its effects. This involves a description of monitoring in a post-development phase, if required. This section addresses the effects that require monitoring, along with the methods and the agencies that are responsible for such monitoring. The level of monitoring, along with the methods and the agencies that are

	responsible for such monitoring. The level of monitoring proposed is proportionate to the nature, location and size of the project and the significance of its effects.
Reinstatement	While not applicable to every aspect of the environment considered within the EIAR, certain measures need to be proposed to ensure that in the event of the proposal being discontinued, there will be minimal impact on the environment.
Interactions	Where applicable, the assessment refers to impact interactions, including potential indirect, secondary and cumulative impacts.
Difficulties encountered	Where applicable, any difficulties encountered by the environmental specialist in compiling the required information are noted.

Table 1.52: EIAR Methodology Outline

1.9.2 Forecasting Methods

The individual forecasting methods used to assess the various effects of the proposed development on the environment are outlined in the relevant chapters of this EIAR under the subheading *'Assessment Methodology'*.

1.9.3 Difficulties Encountered

Some details of the project and the construction methodology/programme are matters which may be subject to change depending on the contractor(s) appointed and other considerations which are not finalised at this stage, and which cannot be finalised until a grant of planning permission for the proposed development has been issued.

These are matters which can be addressed prior to the commencement of development in consultation with the Planning Authority and other relevant stakeholders. Subject to these constraints in relation to the future development of the area, no other significant difficulties were encountered in the preparation of the EIAR. Any limitations or technical difficulties associated with assessment of an environmental factor are detailed in the relevant chapter.

1.9.4 Terminology

In accordance with the EPA Guidelines on the Information to be contained in Environmental Impact Statements (2002) and Advice Notes on Current Practice in the preparation of Environmental Impact Statements (2003), the following definitions are used in this EIAR. These definitions take account of the 2017 Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (Draft) and the 2015 Advice Notes for preparing Environmental Impact Statements (Draft), prepared by the EPA: **These Guidelines note that all categories of terms do not need to be used for every effect** (our emphasis added).

The quality of the effects is defined as:

Positive effects: A change which improves the quality of the environment (e.g. by increasing species diversity; or the improving reproductive capacity of an ecosystem, or removing nuisances or improving amenities).

Negative effects: A change which reduces the quality of the environment (e.g. lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance).

Neutral effects: A change which does not affect the quality of the environment.

The significance of the effects is described as:

Imperceptible: An effect capable of measurement but without noticeable consequences.

Not significant: An effect which causes noticeable changes in the character of the environment but without noticeable consequences.

Slight effects: An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.

Moderate effects: An effect that alters the character of the environment in a manner that is consistent with existing and emerging trends.

Significant effects: An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.

Very significant: An effect which, by its character, magnitude, duration or intensity significantly alters the majority of a sensitive aspect of the environment.

Profound effects: An effect which obliterates sensitive characteristics.

The magnitude of the effect is, where appropriate, indicated as:

Extent: Describe the size of the area, the number of sites, and the proportion of a population affected by an effect.

Duration: Describe the period of time over which the effect will occur. (See further detail below)

Frequency: Describe how often the effect will occur. (Once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually)

Context: Describe whether the extent, duration, or frequency will conform or contrast with established (baseline) conditions (is it the biggest, longest effect ever?)

The probability of the effect is, where appropriate, indicated as:

Likely Effects: The effects that can reasonably be expected to occur as a result of the planned project if all mitigation measures are properly implemented.

Indeterminable Effects: When the full consequences of a change in the environment cannot be described.

`*Worst case'* Effects: The effects arising from a project in the case where mitigation measures substantially fail.

The duration of the effect is, where appropriate, indicated as:

Momentary Effects*:* Effects lasting from seconds to minutes

Brief Effects*:* Effects lasting less than a day

Temporary Effects: Effects lasting for one year or less.

Short-term Effects: Effects lasting one to seven years.

Medium-term Effects*:* Effects lasting seven to fifteen years.

Long-term Effects: Effects lasting fifteen to sixty years.

Permanent Effects: Effects lasting over sixty years.

The type of effect is described, where appropriate, as:

Cumulative Effects: The addition of many small effects to create one larger, more significant, impact.

Do-nothing Effects: The environment as it would be in the future should no development of any kind be carried out.

Indeterminable Effects: When the full consequences of a change in the environment cannot be described.

Irreversible Effects: When the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost.

Residual Effects: The degree of environmental change that will occur after the proposed mitigation measures have taken effect.

Worst-case: The impacts arising from a development in the case where mitigation measures substantially fail.

Synergistic Effects: Where the resultant effects is of greater significance than the sum of its constituents.

Indirect Effects: Effects that arise off-site or are caused by other parties that are not under the control of the developer (such as a quarry)

Secondary Effects: Effects that arise as a consequence of a project (a new waste water treatment plant will reduce the yield of mussels in a nearby estuary)

1.9.5 Non-Technical Summary

A Non-Technical Summary of the EIAR has also been prepared. The EIA Directive states that one of the objectives of the EIA process is to ensure that the public are fully aware of the environmental implications

of any decisions. The EPA Guidelines note that the non-technical summary of the EIAR should facilitate the dissemination of the information contained in the EIAR and that the core objective is to ensure that the public is made as fully aware as possible of the likely environmental impacts of projects prior to a decision being made by ABP. A Non-Technical Summary of the EIAR has therefore been prepared which summarises the key environmental impacts and is provided as a separately bound document.

1.9.6 Links between EIAR and Appropriate Assessment

A Screening Report for Appropriate Assessment (AA) was carried out for the proposed development to determine if there is a risk of effects to any Natura 2000 site and accompanies this EIAR as part of the planning application.

While AA is required by the proposer of any plan or project likely to have an adverse effect on a Natura 2000 site, EIA is required for projects listed in Annex I of the EIA Directive. The requirement for EIA relative to projects listed in Annex II of the EIA Directive is determined on a case by case. While these two different types of assessment are independent and are required by separate legislation, namely the Birds and Habitat Directives (i.e. AA) and the EIA Directive (i.e. EIAR) there is a degree of overlap, particularly in the Biodiversity Chapter (Chapter 5) of the EIAR.

1.9.7 Availability of EIAR Documents.

A copy of this EIAR document and Non-Technical Summary is available for purchase at the offices of Dublin City Council at a fee not exceeding the reasonable cost of reproducing the document. The application can also be viewed on the LRD website www.santryavenuelrd.ie set up by the applicant.

1.9.8 Impartiality

This EIAR document has been prepared with reference to a standardised methodology which is universally accepted and acknowledged. Recognised and experienced environmental specialists have been used throughout the EIA process to ensure the EIAR document produced is robust, impartial and objective.

It should be noted that, as highlighted above, an important part of the EIA process is preventative action which causes the project design team to devise measures to avoid, reduce or remedy significant adverse impacts in advance of applying for consent. As a result, where no likely significant impacts have been identified where they might reasonably be anticipated to occur, the design and layout of the proposed development has generally been amended to minimise the potential of any likely significant adverse impacts.

1.9.10 Statement of Difficulties Encountered

No particular difficulties, such as technical deficiencies or lack of knowledge, were encountered in compiling any of the specified information contained in this statement, such that that the prediction of impacts has not been possible. Where any specific difficulties were encountered, these are outlined in the relevant chapter of the EIAR.

1.9.11 EIA Quality Control and Review

Armstrong Fenton Associates is committed to consistently monitoring the quality of EIAR documents prepared both in draft form and before they are finalised, published and submitted to the appropriate competent authority taking into account latest best-practice procedure, legislation and policy. The EPA published draft guidelines on information to be contained in Environmental Impact Assessment Report[1]

[1] *Guidelines on the Information to be contained in an Environmental Impact Assessment Report, Environmental Protection Agency, 2017*

and the Department of Housing, Planning, Community and Local Government have published a consultation paper[2], which have been consulted in the preparation of this EIAR. This document includes a detailed EIAR Review Checklist which has been used to undertake a review of this EIAR document.

1.9.12 Errors

While every effort has been made to ensure that the content of this EIAR document is error free and consistent there may be instances in this document where typographical errors and/or minor inconsistencies do occur. These typographical errors and/or minor inconsistencies are unlikely to have any material impact on the overall findings and assessment contained in this EIAR.

1.9.13 Reference List

At the end of each chapter in Part B, each contributor has included a reference list of sources relied on in that Chapter.

1.9.14 List of Abbreviations

The following is a non-exhaustive list of abbreviations used in this EIAR. Where an abbreviation is not listed below, it is clarified in the relevant chapter of this EIAR.

AA: Appropriate Assessment
AADT: Annual Average Daily Traffic
ACA: Architectural Conservation Area
ABP: An Bord Pleanála
BOD: Biochemical Oxygen Demand
CAP: Climate Action Plan
CDP: City Development Plan
CEMP: Construction and Environment Management Plan
CFRAMS: Catchment Flood Risk Assessment and Management Study
CMP: Construction Management Plan
CNT: Construction Noise Threshold
CoF: Confirmation of Feasibility
DoCHG: Department of Culture, Heritage and the Gaeltacht
DCC: Dublin City Council
DECLG: Department of the Environment, Community and Local Government
DED: District Electoral Division
DEFRA: Department of Environment Food and Rural Affairs
DEHLG: Department of the Environment, Heritage and Local Government
DELG: Department of the Environment and Local Government
DHPCLG: Department of the Housing, Planning, Community and Local Government
DMURS: Design Manual for Urban Roads and Streets
EEC: European Economic

[2] *Transposition of 2014 EIA Directive (2014/52/EU) in the Land Use Planning and EPA Licencing Systems - Key Issues Consultation Paper, Department of Environment, Community and Local Government, 2017.*

Community

EIA: Environmental Impact Assessment

EIAR: Environmental Impact Assessment Report

EIS: Environmental Impact Statement

EPA: Environmental Protection Agency

ESB: Electrical Supply Board

EC: European Commission

EV: Electric Vehicle

EU: European Union

FCC: Fingal County Council

GDSDS: Greater Dublin Strategic Drainage Strategy

GSI: Geological Survey of Ireland

HDV: Heavy Duty Vehicle

INDC: Intended Nationally Determined Contributions

IOA: Institute of Acoustics

IW: Irish Water

KER: Key Ecological Receptors

NBDC: Natural Biodiversity Data Centre

NHA: Natural Heritage Areas

NPF: National Planning Framework

NPWS: Natural Parks and Wildlife Service

NRA: National Roads Authority

NTA: National Transport Authority

OPW: Office of Public Works

pNHA: Proposed Natural Heritage Areas

R&WMP: Resource & Waste Management Plan

RMP: Record of Monuments and Places

RPS: Record of Protected Structures

RPGs: Regional Planning Guidelines

RSES: Regional Spatial and Economic Strategy

SAC: Special Area of Conservation

SCI: Site of Community Importance

SEA: Strategic Environmental Assessment

SEO: Strategic Environmental Objective

SI No: Statutory Instrument Number

SPA: Special Protection Areas

SSFRA: Site Specific Flood Risk Assessment

TII: Transport Infrastructure Ireland

TMP: Traffic Management Plan

UNFCCC: United Nations Framework Convention on Climate Change

WFD: Water Framework Direction

ZOI: Zone of Influence

2.0 Planning and Policy Context

2.1 Introduction

2.1.1 This chapter has been prepared by Armstrong Fenton Associates Planning Consultants (Tracy Armstrong BA MRUP MIPI MRTPI) and outlines the planning context for the development proposal located on the lands at the junction of Santry Avenue and Swords Road, Santry, Dublin 9.

2.1.2 The planning and policy context gives an overview of the relevant legislation that supports the proposed development at a local, regional and national level and sets out the strategic and statutory context governing the planning and development of the proposed development.

2.1.3 Dwyer Nolan Developments Ltd. wishes to apply for permission for a Large-Scale Residential Development (LRD) on this site, c. 1.5 hectares, located at the junction of Santry Avenue and Swords Road, Santry, Dublin 9. The development site is bounded to the north by Santry Avenue, to the east by Swords Road, to the west by Santry Avenue Industrial Estate, and to the south by the permitted Santry Place development.

2.1.4 The proposed development provides for 321 no. apartments, comprised of 104 no. 1 bed, 198 no. 2 bed, & 19 no. 3 bed dwellings, in 4 no. seven to thirteen storey buildings, over basement level, with 3 no. retail units, a medical suite / GP Practice unit and community/arts & culture space (total c.1,460sq.m), all located at ground floor level, as well as a one storey residential amenity unit, facing onto Santry Avenue, located between Blocks A & D.

2.1.5 Vehicular access to the development will be via 2 no. existing / permitted access points: (i) on Santry Avenue in the north-west of the site and (ii) off Swords Road in the south-east of the site, as permitted under the adjoining Santry Place development.

2.1.6 The site is located within the administrative area of Dublin City Council (hereafter "DCC"). This Planning and Policy Context Chapter describes how the proposed development complies with the stated and statutory requirements of DCC with respect to planning and sustainable development. The relevant local planning policy with which the proposed development complies primarily comprises the Dublin City Development Plan 2022-2028 (hereafter "CDP"). Under the CDP, the proposed development site is located on land zoned "Z3", the objective of which is: *"To provide for and improve neighbourhood facilities".* This is included in the Core Strategy with regards to the availability of land to deliver residential development. Therefore, the proposed development is consistent with the policies and zoning objectives outlined in the Dublin City Development Plan 202 – 2028.

2.1.7 The development now being our forward for permission is a Large-scale Residential Development (LRD). The definition of LRD is largely similar to Strategic Housing Development (SHD), i.e., developments of 100 housing units or more, or student accommodation developments comprising 200 bed spaces or more, or a combination of same. The two main changes under the new LRD arrangements will allow for:

- Up to 30% of the gross floor space of the proposed development to be for other uses, instead of the 15% cap under the SHD arrangements.
- Mixed developments combining housing and student accommodation to be classified as an LRD where the threshold is met for either element.

2.1.8 The new LRD arrangements comprise three stages: (i) pre-application consultation stage, (ii) planning application stage and (iii) appeal stage. Commencement of the Large-scale Residential Development provisions in the Planning and Development (Amendment) (Large-scale Residential Development) Act 2021 (No. 40 of 2021), was signed into law by the President on 14 December 2021. A formal Large Scale Residential Development (LRD) Pre-Consultation Meeting was held with Dublin City Council on 17th November 2023.

2.1.9 Planning Application Boundary

As DCC will note from the Application Form and submitted Site Ownership Map, some of the lands within the site boundary include lands outside the applicant's ownership, within the public roadway / footpath adjacent to the site. These lands are within the control of Dublin City Council who have consented to their inclusion (refer to letter of consent which are included with this application).

2.2. National Planning Context

2.2.1. The National Planning Framework - Project Ireland 2040

Published on published on 16th February 2018, and replacing the previous National Spatial Strategy (NSS), the National Planning Framework (hereafter "NPF") sets out a national spatial strategy for the next 20 years to support sustainable and balanced development approaches to significant demographic changes. The NPF aims to secure the highest quality of life for people and communities through the development of high quality and well managed built and natural environments. The NPF particularly focuses on compact growth and increased densities in appropriate locations. The NPF is accompanied by a 10 year capital investment plan known as the National Development Plan and together these publications as known as Project Ireland 2040

Within the NPF, Santry is noted for its strategic location. The NPF states an objective to support the future growth and success of Dublin as Ireland's leading global city of scale, by better managing Dublin's growth to ensure that more of it can be accommodated within and close to the city. Enabling significant population growth in the Dublin metropolitan area, together with better management of the trend towards overspill into surrounding counties whilst increasing housing supply in the right locations, such as the proposed development in Santry, underlines the need to develop the town in a co-ordinated manner so that sustainable growth and investment can be secured. The importance of developing of Santry in a sustainable manner of scale is emphasised in National Policy Objective 2A & National Policy Objective 6.

The NPF has a number of directly relevant national policy objectives (NPO) that articulate delivering on a compact urban growth programme. These include:

- NPO 3(a) relating to the delivery at least 40% of all new homes nationally, within the built-up footprint of existing settlements;
- NPO 4 relating to attractive, well-designed liveable neighbourhoods;
- NPO 5 relating to sufficient scale and quality of urban development;
- NPO 6 relating to increased residential population and employment in urban areas;

In addition, the NPF contains the following *inter alia* objectives:

- NPO 32 which targets the delivery of 550,000 additional households to 2040 and
- NPO 33 relates to the provision of new homes at locations that can support sustainable development and at an appropriate scale of provision relative to location.

Further details of the development proposal's compliance with the NPF policies and objectives can be found in the Statement of Consistency which accompanies this planning application.

2.2.2. Housing for All | A New Housing Plan for Ireland (2021)

Housing for All - a New Housing Plan for Ireland (published in September 2021) is the government's housing policy to 2030. It is a multi-annual, multi-billion-euro plan which will improve Ireland's housing system and deliver more homes of all types for people with different housing needs.

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

- *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.*

To meet the targets as set out in the National Planning Framework and the measures discussed in the Housing Plan, Ireland needs an average of 33,000 homes constructed per annum until 2030.

The plan sets out the Government's intention to replace the SHD process with new planning arrangements for large-scale residential developments (LSRD) of 100+ homes (or 200+ student accommodation bed spaces) with a view to maintaining the efficiency of decision making for developments of this nature, while returning decision-making to the local level and securing associated benefits in terms of public participation. This change in process came into effect from the 17th of December 2021. This planning application constitutes a Large-Scale Residential Development (LRD) and is being applied in accordance with this process.

The proposed development will contribute to the number of residential homes being constructed and will assist in achieving the Housing Policy Objectives outlined in the Plan. The Government's *Housing for All Plan* as well as the policies outlined in the National Planning Framework support the delivery of residential development, such as that proposed.

The development is situated on a site which is accessible to a wide range of services and amenity areas at both Santry and Dublin City centre. The site is well served by existing public transport, being adjacent to the existing Swords Road QBC and the proposed BusConnects route on same.

The provision of these units will substantially add to the residential accommodation available in Santry / Dublin City thus increasing new housing supply, which will ultimately aid the objective to increase housing affordability. It is envisaged that all, if not the majority, of the dwellings proposed will be for sale to individual buyers thereby supporting homeownership.

The development will also deliver 10% of the proposed no. of dwellings for Part V requirements (32 no. dwellings) and therefore supporting the aim to increase social housing delivery and support social inclusion.

2.2.3 Smarter Travel – A Sustainable Transport Future 2009 – 2020

The Smarter Travel document details the government's policy for delivering a more sustainable transport system and meeting an international obligation to tackle climate change. The document targets five key targets to achieve same being:

- Reduce overall travel demand and commuting distances of private car
- Maximise the efficiency of the transport network
- Reduce reliance on fossil fuels
- Reduce transport emission and
- Improve accessibility to transport

The key targets that the Smarter Travel Policy sets to achieve are:

- Future population and employment growth will predominantly take place in sustainable compact forms, which reduce the need to travel for employment and services.
- 500,000 more people will take alternative means to commute to work to the extent that the total share of car commuting will drop from 65% to 45%.
- Alternatives such as walking, cycling and public transport will be supported and provided to the extent that these will rise to 55% of total commuter journeys to work.
- The total kilometres travelled by the car fleet in 2020 will not increase significantly from current levels.
- A reduction will be achieved on the 2005 figure for greenhouse gas emissions from the transport sector.

The proposed development encourages sustainable and smarter travel by providing a high-density development on a brownfield, underutilised site in close proximity to key employment zones and existing and planned high frequency public transport routes, and through the reduction in car parking and provision of significant cycle facilities.

2.2.4. Transport Strategy for the Greater Dublin Area 2016 – 2035

The Transport Strategy for the Greater Dublin Area 2016 – 2035, as prepared by the National Transport Authority, provides a framework for the planning and delivery of transport infrastructure and services in the Greater Dublin Area (GDA) over the next two decades. It also provides a transport planning policy around which statutory agencies involved in land use planning, environmental protection, and delivery of other infrastructure such as housing, water and power, can align their investment priorities. It is, therefore, an essential component, along with investment programmes in other sectors, for the orderly development of the Greater Dublin Area over the next 20 years.

The Strategy identifies the challenges for transport in the GDA as being:

- An assumed return to sustained economic growth;
- Substantial population growth;
- Full employment;
- That no one is excluded from society, by virtue of the design and layout of transport infrastructure and services or by the cost of public transport use; and
- That the environment in the GDA is protected and enhanced.

It is considered that since the publication of the Strategy in 2016, economic and population growth has continued to substantially increase and as such the objectives of the strategy are critical to ensuring a functional GDA region.

As such the proposed development is consistent with the objectives of the GDA Transport Strategy by providing residential development in proximity to existing employment and public transport networks thereby reducing the requirement of the car and encouraging a shift to more sustainable transport methods.

2.2.5. Sustainable Residential Development and Compact Settlements, Guidelines for Planning Authorities, 2024.

Published in January 2024, the Sustainable Residential Development and Compact Settlements Guidelines for Planning Authorities (hereafter "SCS Guidelines") constitute Ministerial Guidelines under Section 28 of the Planning and Development Act 2000 (as amended), and to which Planning Authorities and An Bord Pleanála shall have regard to and shall apply any specific planning policy requirements (SPPRs) of the SCS Guidelines, in the performance of their functions. They replace the previous 2009 Sustainable Residential Development in Urban Areas Guidelines, and its accompanying Urban Design Manual which translates the Guidelines into practice. Currently, we await the publication of a new Design Manual to accompany the SCS Guidelines.

The SCS Guidelines set out policy and guidance in relation to the planning and development of urban and rural settlements, with a focus on residential development and the creation of sustainable and compact settlements. The SCS Guidelines and build on and update previous guidance to take account of current Government policy and economic, social and environmental considerations.

Section 3.3 "Settlements, Area Types and Density Ranges" of the SCS Guidelines states that *"the strategy for all cities is to support consolidation and intensification within and close to the existing built up footprint of the city and suburbs area and metropolitan towns; and to support sustainable urban extension at locations served by public transport".* It goes onto state that the key priorities for city growth are *inter alia:*

- *"deliver brownfield and infill development at scale at suitable strategic and sustainable development locations within the existing built up footprint of the city and suburbs area or metropolitan towns,*
- *deliver sustainable and compact urban extension at scale at suitable strategic and sustainable development locations that are close to the existing built-up footprint of the city and suburbs area or a metropolitan town and served by existing or proposed high-capacity public transport".*

The SCS Guidelines set out the density ranges for Dublin and Cork, given their overall size and scale, and defines the "City – Urban Neighbourhoods" as: *"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".* (Our emphasis added).

The proposed development is located within the Metropolitan Area of Dublin City, at a prominent junction between Santry Avenue and Swords Road, along an acknowledged public transport corridor and within

the existing built-up urban environs of Dublin. Swords Road, which abuts the subject site to the east, is an established entrance route into Dublin city centre from the north of the city and caters for high frequency public transport i.e. the Swords Road QBC, while the proposed BusConnects Corridor is also planned at this route. The subject site has good, proximate access to a wide range of services, facilities, employment and education opportunities, and amenities, and therefore the scale and quantum of development proposed for the subject site achieves compact growth. The development provides for a density of c. 214 no. dwellings per hectare. It is considered that given the location of the site in close proximity to a number of surrounding services, including public transport links, that the proposed density on site is appropriate in this instance, and accords with the guidance set out in the SCS Guidelines.

2.2.6. Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities, 2023.

The Design Standards for New Apartments Guidelines were originally issued in 2018, as an update of the *Sustainable Urban Housing: Design Standards for New Apartments Guidelines*, published in 2015, and have been subsequently updated in in respect of Shared Accommodation and "Build-to-Rent" developments, with the most up to date version of these guidelines being the July 2023 version. These Guidelines promote sustainable living patterns with the objective to curb urban sprawl and 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 2015 guidelines. The apartment design parameters addressed in these Guidelines include the following:

- General locational consideration;
- Apartment mix within apartment schemes;
- Internal space standards for different types of apartments;
- Dual aspect ratios;
- Floor to ceiling height;
- Apartments to stair/lift core ratios;
- Storage spaces;
- Amenity spaces including balconies/patios;
- Car parking; and
- Room dimensions for certain rooms

The proposed development has been designed to these current standards. This planning application is accompanied by a Housing Quality Assessment (HQA), prepared by AFA Planning Consultants, which demonstrates the compliance of the proposed development with the relevant quantitative standards required under the Apartment Guidelines 2023.

2.2.7. Design Manual for Urban Roads and Streets, 2019

The Design Manual for Urban Roads and Streets were prepared by the Department of Transport, Tourism and Sport, together with the DoECLG to provide guidance and standards for urban roads and streets. These guidelines seek to avoid the creation of traffic corridors for private vehicles and promote a focus on creating places for pedestrians, cyclists and public transport.

DMURS encourages designers to give due consideration to creating a *'sense of place'* which is of core significance to the creation of safe and more integrated street designs. The guidance document notes that four interlinked characteristics influence the sense of place within a street, including:

- **Connectivity:** The creation of vibrant and active places requires pedestrian activity. This in turn requires walkable street networks that can be easily navigated and are well connected.

- **Enclosure:** A sense of enclosure spatially defines streets and creates a more intimate and supervised environment. A sense of enclosure is achieved by orientating buildings toward the street and placing them along its edge. The use of street trees can also enhance the feeling of enclosure.

- **Active Edge:** An active frontage enlivens the edge of the street creating a more interesting and engaging environment. An active frontage is achieved with frequent entrances and openings that ensure the street is overlooked and generate pedestrian activity as people come and go from buildings.

- **Pedestrian Activity/Facilities:** The sense of intimacy, interest and overlooking that is created by a street that is enclosed and lined with active frontages enhances a pedestrian's feeling of security and well-being. Good pedestrian facilities (such as wide footpaths and well-designed crossings) also make walking a more convenient and pleasurable experience that will further encourage pedestrian activity.

The DMURS guidance emphasises that the above mentioned four characteristics represent the basic measures that should be established in order to create people friendly streets that facilitate more sustainable neighbourhoods.

DMURS recommendations have been incorporated into the design of the development and the adopted design approach successfully achieves the appropriate balance between the functional requirements of different network users whilst enhancing the sense of place. The implementation of an efficient car parking provision and a high bicycle parking provision actively promotes a modal shift to alternative forms of transport while also creating high-quality open spaces as part of the development. This scheme prioritises pedestrians and cyclists throughout the development.

2.2.8. The Planning System and Flood Risk Management – Guidelines for Planning Authorities. 2009

The Planning System and Flood Risk Management guidelines provide detailed guidance on the role that flood risk should play at different levels of the planning system. The Guidelines require the planning system at all levels to avoid development in areas at risk of flooding, particularly floodplains, and where the flood risk can be reduced or managed to an acceptable level without increasing flood risk elsewhere; adopt a sequential approach to flood risk management when assessing the location for new development based on avoidance, reduction and mitigation of flood risk; and incorporate flood risk assessment into the process of making decisions on planning applications and planning appeals. Planning Authorities must implement these guidelines to ensure that, where relevant, flood risk is a key consideration in development plans and local area plans and in the assessment of planning applications. The guidelines should also be utilised by developers and the wider public in addressing flood risk in preparing development proposals.

A Site-Specific Flood Risk Assessment (SSFRA) prepared by DBFL Consulting Engineers accompanies this LRD planning application as a separate standalone document. The SSFRA has been prepared to comply with current planning legislation, in particular the recommendations of the guidelines for full details please refer to same; however, for convenience a summary is provided below.

The site is located within Flood Zone C and the enclosed SSFRA confirms that and therefore a Justification Test is not required. The SSFRA asserts that a regularly maintained drainage system will ensure that the network remains effective and in good working order should a large pluvial storm occur. In the event of

extreme pluvial flooding then overland flood routes will direct water towards the open space areas. While the development constitutes 'highly vulnerable' development, it is appropriate for this flood zone and the scheme is designed to ensure that the risk of flooding of the development is reduced as far as is reasonably practicable. The development does not increase the risk of flooding to adjacent areas and roads once mitigation measures are implemented.

2.2.9. The National Cycle Manual, 2011

The National Cycle Manual was established by the National Transport Authority to ensure that prospective developments promote active travel means and support changing transport choices by incorporating cycling within transport networks more proactively. The manual embraces the principles of sustainable safety to offer a safe traffic environment for all road users, including cyclists, and offer guidance on integrating cycling routes in the design of urban areas.

In total, the proposed development caters for 722 no. bicycle parking spaces, provided in the form of basement level parking, surface level parking, and within the proposed buildings. The 722 no. cycle provision includes (i) 672 no. 'long term' spaces in the basement and (ii) 58 no. 'short term' visitor parking located at surface level. In addition, 9 no. Cargo parking spaces are also provided within the basement. Further details of the proposed bicycle parking and rationale for the proposed quantum are set out in the enclosed TTA prepared by DBFL Consulting Engineers – please refer to same.

2.2.10. Urban Development and Building Heights Guidelines for Planning Authorities 2018

The Urban Development and Building Heights Guidelines (2018) reflect the policies and objectives of the NPF which support a move towards performance based criteria to achieve more compact forms of urban growth. The guidelines contain 4 no. Specific Planning Policy Requirements (SPPRs) which should be applied by both Planning Authorities and ABP in their assessment of development proposals. Generally, the SPPR's seek to increase building height and density in appropriate locations even if the development proposal may contradict specific objectives of the relevant development plan or local area plan.

In relation to individual planning applications, the Guidelines identify a presumption favouring buildings of increased height in our town/city cores and other urban locations with good public transport accessibility. In addition, the Guidelines set out national planning policy that '*Applies those requirements in setting out relevant planning criteria for considering increased building height in various locations but principally (a) urban and city-centre locations and (b) suburban and wider town locations*.' The Guidelines seek to secure '*…compact and sustainable urban growth',* which means '*…either reusing or redeveloping existing sites and buildings, in well serviced urban locations, particularly those served by good public transport and supporting services, including employment opportunities*.'
The proposed development will assist in achieving growth within an already built-up commuter area such as Dublin City Centre. In the context of the proposed development, this application is considered to meet the criteria of the Guidelines. The subject site is well served by public transport, both existing and planned, being located adjacent to the Swords Road QBC which is also a planned BusConnects Corridor. The proposed development is fully compliant with all the SPPRs and stated criteria of the Guidelines and therefore the proposed building heights of 7 no. to 13 no. storeys are fully justified in the context of the national policy.

2.2.11. Quality Housing for Sustainable Communities - Best Practice Guidelines (2007)

The Quality Housing for Sustainable Communities Guidelines promote high standards in the design and construction of new residential developments. The Guidelines identify core principles and criteria that have been found, from experience, to be particularly relevant to the creation of high-quality living environments

for future residents. Guidance within this document is arranged under five headings as follows:

- Site Selection
- Design Brief, Procurement and Cost Control
- Urban Design Objectives in the Provision of Housing
- Scheme Layout and Design
- Dwelling Design

The application is accompanied by a Housing Quality Assessment (HQA) which demonstrates that the proposed dwellings conform to the principles and criteria set out within the Quality Housing for Sustainable Communities guidelines, where applicable.

The application is also accompanied by an Architectural Design Statement, prepared by Davey & Smith Architects, and a Planning Statement, prepared by Armstrong Fenton Associates, which demonstrates development's compliance with the aforementioned guidelines and the Apartment Guidelines – for full details please refer to same.

2.2.12. Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities (2009)

The Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities sets out the different steps and stages that are needed to establish whether a plan or project can be implemented without damaging an existing Natura 2000 site. The Guidelines indicate the role to be played by professional ecologists and other professionals in identifying potential impacts on same and provide details on potential mitigation measures to avoid of such impacts. Where such impacts cannot be avoided the Guidelines detail imperative reasons of overriding public interest which may allow a project to proceed.

In accordance with the above guidelines, an Appropriate Assessment (AA) Screening Report has been prepared by Enviroguide Consulting and is submitted as a separate document - please refer to same. The previous and current SHD applications for the subject site were also accompanied by AA Screening Reports, which assessed the development's likely impact upon Natura 2000 sites, both individually and in combination with other projects, and considers whether these impacts are likely to be significant on the qualifying interests of the Natura sites.

The submitted AA Screening concludes that there will be no significant effect on the Natura 2000 sites located within 15km of the subject site, therefore, the AA screening process does not need to progress to Stage 2. Please refer to the submitted AA Screening report for full details.

2.3. Regional Context

2.3.1. Regional Planning Context - Eastern & Midland Regional Assembly Regional Spatial & Economic Strategy 2019-2031

The Eastern & Midland Regional Assembly Regional Spatial & Economic Strategy 2019-2031 (hereafter RSES) was adopted in 2019 to ensure the policies and objectives of the NPF are implemented at a regional level. At this strategic level the guidelines provide a framework to better manage spatial planning and economic development throughout the Eastern & Midland region by setting the context for each local authority to develop their own county development plans / local area plans in a manner that ensures national, regional and local planning policies align.

The Strategy identifies that the region '*is home to over 800,000 households, with 4 out of 5 living in conventional housing while apartments account for around 18% or our housing stock. One of the challenges facing the region is the continued growth rates of household formation coupled with a severe slowdown in the development of new housing stock during the economic recession, resulting in housing supply and affordability pressures in both sale and rental markets, particularly in Dublin and urban areas but affecting all of the region'.*

The Strategy is underpinned by key principles that reflect the three pillars of sustainability: Social, Environmental and Economic, and expressed in a manner which best reflects the challenges and opportunities of the Region. The plan identifies that the central need is for the RSES to be people focussed, as *'quality of life'* encapsulates strong economic output and stability, good environmental performance and a good standard of living for all.

The subject site is located with the Dublin Metropolitan Area, as designated by the Strategy. The Metropolitan Area Strategic Plan (MASP) which is part of the RSES seeks to focus on a number of large scale strategic sites, based on key corridors that will deliver significant development in an integrated and sustainable fashion.

The NPF also sets out ambitious targets to achieve compact growth with 50% of housing to be provided within or contiguous to the built-up area of Dublin city and suburbs. To achieve this *'the MASP identifies strategic residential and employment corridors along key public transport corridors existing and planned, that contain development opportunities.'* The subject site is located adjacent to a high-quality public transport corridor which includes frequent bus services.

The development of the subject lands in Santry consolidate and re-intensify an brownfield site in compliance with Regional Policy Objective 4.3 which seeks to *"support the consolidation and re-intensification of infill/brownfield sites to provide high density and people intensive uses within the existing built up area of Dublin City and suburbs and ensure that the development of future development areas is co-ordinated with the delivery of key water infrastructure and public transport projects."*

The proposed development will contribute to the target to achieve compact growth with 50% of housing to be provided within or contiguous to the built-up area of Dublin City and suburbs. The proposed development has been designed in accordance with the aforementioned guidelines, objectives of the NPF and the RSES EMRA, whereby this application for permission for a LRD enables the consolidation of a strategically located site within the urban envelope north-east of Dublin City centre.

Further details of the development proposal's compliance with the RSES policies and objectives can be found in the Statement of Consistency which accompanies the planning application – please refer to same.

2.4. Local Context

2.4.1 Dublin City Development Plan 2022-2028

The Dublin City Development Plan 2022 - 2028 is the relevant development plan for the settlement of Santry and the subject site. The proposed development site is zoned objective *'Z3'*, the objective of which is: *"To provide for and improve neighbourhood facilities".* Under this land use zoning objective, the CDP notes that Z3 zoned lands generally provide for local facilities within a residential neighbourhood which can range from the traditional parade of shops to larger neighbourhood centres. The CDP goes on to state that Z3 lands: *"can form a focal point for a neighbourhood and provide a range of services to the local population. Neighbourhood centres provide an essential and sustainable amenity for residential areas and it is important that they should be maintained and strengthened, where appropriate. Neighbourhood centres may include an element of housing, particularly at higher densities, and above ground floor level".*

The aim of the Core Strategy of the CDP is to guide how and where development should happen in the city. This strategy sets out the long-term vision for the city and promotes 'compact growth'. Compact growth involves the better use of available land within built up areas close to public transport and the city centre for development opportunities. It is also growth that is in line with developments for public transport, including cycle paths and quality footpaths. The Core Strategy of the CDP seeks to focus development on suitable strategic nodes along existing or planned public transport corridors. The subject lands comprise a strategically located yet underutilised zoned site within the Dublin City and Suburbs settlement boundary.

The Core Strategy contains Table 2-9 *"Summary Table of Existing Zoned Lands with Housing Capacity and Zoning Changes"* which illustrates the extent of the total housing capacity sites of 45,350 on 501 hectares on available already zoned land, with the subject site is identified in same as one of the sites within the county that has capacity for additional residential development (i.e., "Z3" zoned sites).

CDP policies relevant to the development proposal are detailed below, and are not exhaustive, with a more detailed schedule of relevant CDP policies and objectives set out in the separate submitted "Statement of Consistency" which accompanies this LRD planning application and details the proposed development's compliance with same, and we refer the reader to this Statement which is submitted as a separate document.

- ***Policy SC9 (****Key Urban Villages, Urban Villages and Neighbourhood Centres****) – "****To develop and support the hierarchy of the suburban centres, including Key Urban Villages, Urban Villages and Neighbourhood Centres, in order to:*
  - *support the sustainable consolidation of the city and align with the principles of the 15 minute city;*
  - *provide for the essential economic and community support for local neighbourhoods; and*
  - *promote and enhance the distinctive character and sense of place of these areas by ensuring an appropriate mix of retail and retail services*

- ***Policy SC10 (Urban Density) -*** *"To ensure appropriate densities and the creation of sustainable communities in accordance with the principles set out in Guidelines for Planning Authorities on Sustainable Urban Development (Cities, Towns and Villages), (Department of Environment, Heritage and Local Government, 2009), and its companion document, Urban Design Manual: A Best Practice Guide and any amendment thereof."*

- ***Policy SC11 (Compact Growth) -*** *"In alignment with the Metropolitan Area Strategic Plan, to promote compact growth and sustainable densities through the consolidation and intensification of infill and brownfield lands, particularly on public transport corridors, which will:*
  - *enhance the urban form and spatial structure of the city;*
  - *be appropriate to their context and respect the established character of the area;*

- *include due consideration of the protection of surrounding communities and provide for enhanced amenities for existing and future residents;*
- *be supported by a full range of social and community infrastructure such as schools, shops and recreational areas;*
- *and have regard to the criteria set out in Chapter 15: Development Standards, including the criteria and standards for good neighbourhoods, quality urban design and excellence in architecture."*

- ***Policy QHSN10 (Urban Density) -*** *"To promote residential development at sustainable densities throughout the city in accordance with the Core Strategy, particularly on vacant and/or underutilised sites, having regard to the need for high standards of urban design and architecture and to successfully integrate with the character of the surrounding area."*

- ***Policy SC14 - Building Height Strategy:*** *"To ensure a strategic approach to building height in the city that accords with The Urban Development and Building Height Guidelines for Planning Authorities (2018) and in particular, SPPR 1 to 4".*

- ***Policy SC16 - Building Height Locations:*** *"To recognise the predominantly low rise character of Dublin City whilst also recognising the potential and need for increased height in appropriate locations including the city centre, Strategic Development Zones, Strategic Development Regeneration Areas, Key Urban Villages and other locations as identified in Appendix 3, provided that proposals ensure a balance with the reasonable protection of existing amenities and environmental sensitivities, protection of residential amenity and the established character of the area".*

- ***Policy SC17 - Building Height: "****To protect and enhance the skyline of the city, and to ensure that all proposals with enhanced scale and height:*
  - *follow a design led approach;*
  - *include a masterplan for any site over 0.5ha (in accordance with the criteria for assessment set out in Appendix 3);*
  - *make a positive contribution to the urban character of the city and that responds positively to the existing or emerging context;*
  - *deliver vibrant and equitable neighbourhoods that are walkable, compact, green, accessible, mixed and balanced;*
  - *Do not affect the safety of aircraft operations at Dublin Airport (including cranage); and*
  - *have regard to the performance-based criteria set out in Appendix 3*

- ***Policy QHSN2 – National Guidance -*** *To have regard to the DEHLG Guidelines on 'Quality Housing for Sustainable Communities – Best Practice Guidelines for Delivering Homes Sustaining Communities' (2007), 'Sustainable Urban Housing: Design Standards for New Apartments' (2020), 'Sustainable Residential Development in Urban Areas' and the accompanying 'Urban Design Manual: A Best Practice Guide' (2009), Housing Options for our Aging Population 2019, the Design Manual for Quality Housing (2022), the Design Manual for Urban Roads and Streets (DMURS) (2019), the Urban Development and Building Height Guidelines for Planning Authorities (2018) and the Affordable Housing Act 2021 including Part 2 Section 6 with regard to community land trusts and/or other appropriate mechanisms in the provision of dwellings*

- ***Policy QHSN11 - 15-Minute City*** *- To promote the realisation of the 15-minute city which provides for liveable, sustainable urban neighbourhoods and villages throughout the city that deliver healthy placemaking, high quality housing and well designed, intergenerational and accessible, safe and inclusive public spaces served by local services, amenities, sports facilities and sustainable modes of public and accessible transport where feasible.*

- ***Policy QHSN17 - Sustainable Neighbourhoods*** *- To promote sustainable neighbourhoods which cater to the needs of persons in all stages of their lifecycle, e.g. children, people of working age, older people, people living with dementia and people with disabilities.*

- ***Policy QHSN011 - Universal Design*** *- To ensure that 50% of apartments in any development that are required to be in excess of minimum sizes should be designed to be suitable for older people/mobility impaired people, people living with dementia and people with disabilities in accordance with the guidelines set out in the Universal Design Guidelines for Homes in Ireland 2015, the DHLG&H's Design Manual for Quality Housing 2022 and the DHP&LG & DH's Housing Options for Our Ageing Population Policy Statement 2019*

- ***Policy QHSN34 - Social, Affordable Purchase and Cost Rental Housing*** *- To promote the provision of social, affordable purchase, cost rental and rental housing in accordance with the Council's Housing Strategy, Part V of the Planning and Development Act, as amended by the Affordable Housing Act 2021 and government policy as outlined in the DHLGH 'Social Housing Strategy 2020' and support the realisation of public housing*

- ***Policy QHSN47 - High Quality Neighbourhood and Community Facilities*** *- To encourage and facilitate the timely and planned provision of a range of high-quality neighbourhood and community facilities which are multifunctional in terms of their use, adaptable in terms of their design and located to ensure that they are accessible and inclusive to all. To also protect existing community uses and retain them where there is potential for the use to continue.*

- ***Policy QHSN49 - Phasing*** *- To require that larger schemes which will be developed over a considerable period of time are developed in accordance with an agreed phasing programme to ensure that suitable physical, social and community infrastructure is provided in tandem with the residential development and that substantial infrastructure is available to initial occupiers.*

- ***Policy SMT1 - Modal Shift and Compact Growth*** *- To continue to promote modal shift from private car use towards increased use of more sustainable forms of transport such as active mobility and public transport, and to work with the National Transport Authority (NTA), Transport Infrastructure Ireland (TII) and other transport agencies in progressing an integrated set of transport objectives to achieve compact growth.*

- ***Policy SMT27 - Car Parking in Residential and Mixed Use Developments:***
  (i) To provide for sustainable levels of car parking and car storage in residential schemes in accordance with development plan car parking standards (see Appendix 5) so as to promote city centre living and reduce the requirement for car parking.
  (ii) To encourage new ways of addressing the transport needs of residents (such as car clubs and mobility hubs) to reduce the requirement for car parking.
  (iii) To safeguard the residential parking component in mixed-use developments

- ***Policy SMT29 - Expansion of the EV Charging Network*** *- To support the expansion of the EV charging network by increasing the provision of designated charging facilities for Electric Vehicles on public land and private developments in partnership with the ESB and other relevant stakeholders; and to support the Dublin Regional EV Parking Strategy*

- ***Policy SMT34 - Street and Road Design*** *- To ensure that streets and roads within the city are designed to balance the needs and protect the safety of all road users and promote place making, sustainable movement and road safety providing a street environment that prioritises active travel and public transport whilst ensuring the needs of commercial servicing is accommodated.*

- ***Policy SI22 - Sustainable Drainage Systems*** *- To require the use of Sustainable Drainage Systems (SuDS) in all new developments, where appropriate, as set out in the Greater Dublin Strategic Drainage Study (Vol 2: New Development)/ Greater Dublin Regional Code of Practice for Drainage Works and having regard to the guidance set out in Nature-based Solutions to the Management of Rainwater and Surface Water Runoff in Urban Areas, Water Sensitive Urban Design Best Practice Interim Guidance Document (DHLGH, 2021). Sustainable Drainage Systems (SuDS) should incorporate nature-based solutions and be designed in accordance with the Dublin City Council Sustainable Drainage Design & Evaluation Guide (2021) which is summarised in Appendix 12. SuDS should protect and enhance water quality through treatment at source while enhancing biodiversity and amenity.*

- ***Policy SI23 - Green Blue Roofs*** *- To require all new developments with roof areas in excess of 100 sq. metres to provide for a green blue roof designed in accordance with the requirements of Dublin City Council's Green & Blue Roof Guide (2021) which is summarised in Appendix 11.*

- ***Policy GI1 - Green Infrastructure Assets*** *- To identify and protect the integrity of the city's GI assets, as appropriate, and to enhance and expand the connectivity, multi-functionality, and accessibility of the city's green infrastructure network, while addressing gaps in the network*

- ***Policy GI3 - Multi-functionality (GI)*** *- To ensure delivery of multifunctional green and civic spaces that meet community needs, support biodiversity, promote active and passive recreation, flood and surface water management and local habitat improvements. The multi-functionality of spaces will be balanced against the need to protect and enhance local habitat and the recreational and functional requirements of parks.*

- ***Policy GI28 - New Residential Development*** *- To ensure that in new residential developments, public open space is provided which is sufficient in amenity, quantity and distribution to meet the requirements of the projected population, including play facilities for children and that it is accessible by safe secure walking and cycling routes.*

- ***Policy CUO25 - SDRAs and Large Scale Developments*** *- All new regeneration areas (SDRAs) and large scale developments above 10,000 sq. m. in total area* must provide at a minimum for 5% community, arts and culture spaces including exhibition, performance, and artist workspaces predominantly internal floorspace as part of their development at the design stage. The option of relocating a portion (no more than half of this figure) of this to a site immediately adjacent to the area can be accommodated where it is demonstrated to be the better outcome and that it can be a contribution to an existing project in the immediate vicinity. The balance of space between cultural and community use can be decided at application stage, from an evidence base/audit of the area. Such spaces must be designed to meet the identified need. *Such developments shall incorporate both cultural/arts and community uses individually or in combination unless there is an evidence base to justify the 5% going to one sector.*

- ***Policy CUO30 - Co-Design and Audits*** *- Large development applications (over 10,000 sq. m., either in phases or as one application) will, in the absence of a DCC local area culture audit (CUO44 refers), be required to undertake a cultural audit for the local area to identify shortcomings within the area; and to work with DCC Arts Office to identify and agree appropriate arts or cultural uses, preferably as part of a co-design process in advance of lodging an application, for inclusion in the development. Such audits shall be informed by the existing cultural mapping resources in the Dublin City Cultural Infrastructure Study and by Culture Near You maps.*

Further details of the development proposal's compliance with the CDP housing policies and objectives can be found in the Statement of Consistency which accompanies the planning application – please refer to same.

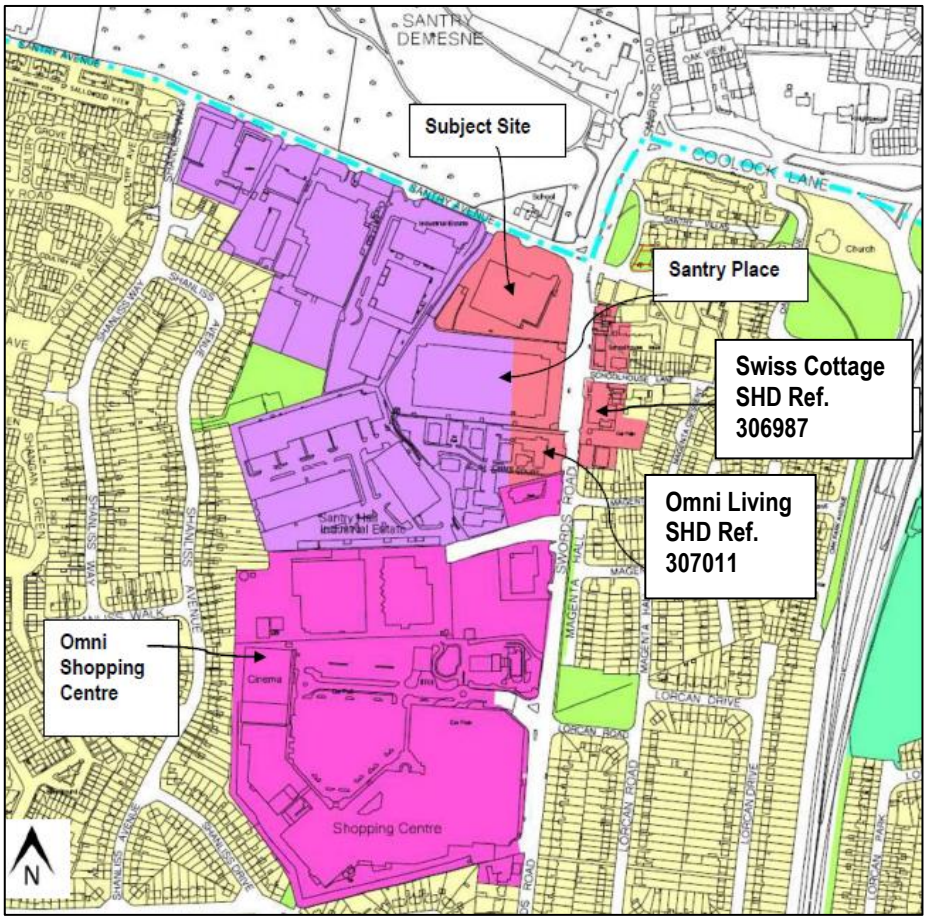


Fig. 2.1:

Zoning Map B, Dublin City Development Plan 2022-2028

(Illustrating location of subject site and designated "Z3" Zoning)

2.5. Conclusion

A review of the relevant planning policy for the proposed development concludes the following:

The subject application site is located on lands zoned for development in the current Dublin City Development Plan, 2022 – 2028. The CDP has been approved by DCC and deemed to be in accordance with national and regional planning policy.

The environmental impacts arising from the implementation of the CDP have been examined in the making of the plan and the SEA assessments undertaken provide a strategic level assessment of the impacts on the receiving environment of implementing the proposals contained within the CDP. These assessments concluded that the implementation of the plan is not likely to result in significant environmental effects.

The development proposal is put forward in compliance with the land-use zoning designation and policy objectives contained within the CDP. Compliance with the above planning policy documents demonstrates the appropriateness of the current proposal from a proper planning and sustainable development perspective.

3.0. Description of Project and Alternatives

3.1. Introduction

This chapter has been prepared by Armstrong Fenton Associates Planning Consultants (Tracy Armstrong BA MRUP MIPI MRTPI) and provides a description of the project site in the context of its receiving environment and a description of the project. As required by the EIA Directive and regulations thereunder, this chapter also outlines the Main Alternatives considered.

In accordance with the EIAR preparation process, various mitigation measures are detailed in this report and can either be incorporated during the planning process or as conditions of a grant of planning permission.

The project description in Section 3.3. should be read in conjunction with the plans and particulars submitted with the planning application including the statutory planning notices and the Planning Statement / Statement of Consistency.

3.2. Site Context

The subject site (i.e. the red line boundary of application detailed on the drawings accompanying the application) measures approximately 1.5ha in area and is located at the junction of Santry Avenue and Swords Road, with frontage onto both roads (being bounded to the east by Swords Road and to the north by Santry Avenue) and is currently occupied by Chadwicks building providers (formerly Heiton Buckley). Access to the subject site is currently limited to an existing site entrance off / onto Santry Avenue.

Under the current Dublin City Development, 2022-2028 (CDP) the subject site is zoned Z3 with the objective *"To provide for and improve neighbourhood facilities."* The CDP recognises the importance of Z3 zoned lands in the contribution of meeting the housing delivery requirements of the city. In line with the CDP, the subject site represents a highly suitable location for the provision of infill residential development. The objective of the Z3 zone is to provide for and improve neighbourhood facilities. The proposed development complies with the requirements of the zoning objective with the provision of 3 no. retail units and a medical suite / GP Practice unit facing onto Swords Road and Santry Avenue, and c.1,460sq.m of floorspace dedicated to community/arts/cultural uses.

3.2.1 Adjoining Development

To the north, the site is bounded by Santry Avenue. Beyond Santry Avenue is Santry Demesne Park which provides a range of open space, sporting and recreational facilities including Morton Stadium and Santry Community Garden.

To the east, Swords Road borders the application site, with retail connivence stores opposite the site.

To the west, the subject site is bounded by the Santry Avenue Industrial Estate.

The neighbouring lands bounding the southern boundary of the site are currently being developed by the Applicant as part of the permitted residential scheme known as Santry Place (Ref.s 2713/17, 2737/19 & 4549/22). The details of the aforementioned permitted developments are set out as follows:

Reg. Ref. 2713/17 - Carnamadra Ltd. received a final grant of permission on 23rd April 2018 for a mixed use development located at Santry Avenue and Swords Road, Santry, Dublin 9. The development included for the partial demolition of existing buildings and the construction of 137 no. residential dwellings, 3 no. retail/commercial units, commercial office uses and a creche in 5 no. four and five storey blocks (Blocks A-E). The development also included for new vehicular and pedestrian accesses via Swords Road, environmental improvements along the Swords Road frontage, basement level car parking, and all ancillary and associated site development works on a site of c. 1.9 hectares.

Subsequent to the granting of permission under Ref. 2713/17, which has the approved name of *"Santry Place",* the site was put up for sale and is now owned by Zoltorn Limited. Our client, Dwyer Nolan Developments Ltd is currently carrying out the construction of this permitted development on behalf of the landowner.

It should be noted that the duration of this permission has been extended until 26th August 2026, as permitted under **Reg. Ref. 2713/17/X1.**

Dwyer Nolan Developments Ltd. submitted an application for modifications to the permitted development to Dublin City Council in April 2019. The details of same are as follows:

Reg. Ref. 2737/19 – permission granted on 1st October 2019 for modifications to the development permitted under Reg. Ref. 2713/17. This permission increased the heights of the permitted Blocks A, B & C from 5 storeys to 7 storeys, and included for a change in unit type and increase in number of apartments (68 no. apartments after design changes at Additional Information stage). The permission included for the provision of balconies and roof terraces (i.e., 240sq.m. each) to Blocks A, B & C.

Reg. Ref. 4549/22 – permission was granted on 9th January 2023 for modifications to the development permitted on site under DCC Reg. Ref.: 2713/17 and 2737/19. The proposal will include construction of an urban block comprising 3 no. 7 storey blocks (Blocks D, E, and F). Block D, and the ground floors of Blocks E and F will provide c. 13,921 sqm office space (an increase of 2,454.7sqm). Residential apartments are proposed on the upper floors of Blocks E and F providing 48 no. apartments (16 no. 1 beds, 24 no. 2 beds, and 8 no. 3 beds) to provide a new total of 253 no. residential units (in increase from 205 units). All residential units will have north/south/east/west facing private open spaces. The development will also include communal open space at podium level, 95 no. car parking spaces and 269 no. cycle parking spaces at surface and undercroft level (an increase of 15 no. car parking spaces and 164 no. cycle parking spaces), and all other site services and works to enable the development including bins, substations/plant areas, boundary treatments and landscaping.

The above three planning applications (Ref.s 2713/17, 2737/19 and 4549/22) relate to the adjoining site to the immediate south known as Santry Place, which is under construction by the applicant, Dwyer Nolan Developments Ltd, and into which the current proposal will directly connect.

Construction of the permitted Santry Place development under Ref.s 2713/17 & 2737/19, is nearing completion with the Developer having submitted the Certificate of Compliance on Completion to the Building Control Management System for the first two blocks (Blocks A & B) on 18th June 2021. The remaining buildings are currently under construction. Further south is the Omni Shopping Centre with industrial/commercial enterprises to the south at St. John's Business Court, to the southwest Santry Hall Industrial Estate and Santry Avenue Industrial Estate to the west.

Subsequent to the commencement of construction of the Santry Place development, the Chadwick (formerly Heiton Buckley) site (i.e. the subject site) was put up for sale, and the applicant purchased same. The subject site remains occupied by Chadwicks (formerly Heiton Buckley) building providers, until their

lease expires. All buildings on site are associated with this established use.

With the Santry Place development to the south currently nearing completion, the subject application is considered to represent an ideal opportunity for an integrated mixed-use development which will continue the recent regeneration of the Santry area.

To this end, we note the following developments in the vicinity of the subject site which have been recently permitted and /or are under construction:

- **ABP-306987-20 -** Permission for the development of 120 no. apartments and associated site development works on the former Swiss Cottage lands, Swords Road, Santry, Dublin 9. The development included for building heights of 3 no. storeys to 7 no. storeys and caters for a density of c. 250 no. dwellings per hectare. The development supersedes and amended the previously permitted development granted under ABP-303358-19. The site is located approximately 100 meters to the south-east of the subject application site.

- **ABP-307011-20 -** Permission for the development 324 no. apartments, a creche and associated site development works on lands to the northeast of Omni Park Shopping Centre, Swords Road, Santry, Dublin 9. The development included for building heights of 5 no. storeys to 12 no. storeys and caters for a density of c. 250 no. dwellings per hectare. The site is located approximately 250 meters to the south of the subject application site.

It is considered that the proposed development is in keeping with the aforementioned permitted developments at Santry Place, Swiss Cottage and the site to the northeast of Omni Shopping Centre, particularly in terms of height and density, and represents sustainable and coherent planning of this important corner location on an entrance route into Dublin city. The EIAR submitted at this time is deemed appropriate, to review the cumulative impact of the proposed scheme given the quantity of units permitted in the permissions listed above.

3.3. Description of the Physical Characteristics of the Proposed Development

Dwyer Nolan Developments Ltd. wishes to apply for permission for a Large-Scale Residential Development (LRD) on this site, c. 1.5 hectares, located at the junction of Santry Avenue and Swords Road, Santry, Dublin 9. The development site is bounded to the north by Santry Avenue, to the east by Swords Road, to the west by Santry Avenue Industrial Estate, and to the south by the permitted Santry Place development (granted under Dublin City Council Ref.s. 2713/17 (as extended under Ref. 2713/17/X1), 2737/19 & 4549/22).

The proposed development provides for 321 no. apartments, comprised of 104 no. 1 bed, 198 no. 2 bed, & 19 no. 3 bed dwellings, in 4 no. seven to thirteen storey buildings, over basement level, with 3 no. retail units, a medical suite / GP Practice unit and community/arts & culture space (total c.1,460sq.m), all located at ground floor level, as well as a one storey residential amenity unit, facing onto Santry Avenue, located between Blocks A & D.

The proposed development consists of the following:

1. Demolition of the existing building on site i.e. the existing Chadwicks Builders Merchants (c. 4,196.8m^2).

2. Construction of 321 no. 1, 2, & 3 bed apartments, retail units, medical suite / GP Practice, community/arts & culture space, and a one storey residential amenity unit in 4 no. buildings that are subdivided into Blocks A-G as follows:

- Block A is a 7-13 storey block consisting of 52 no. apartments comprised of 22 no. 1 bed, 24 no. 2 beds & 6 no. 3 bed dwellings, with 2 no. retail units located on the ground floor (c. 132sq.m & c.172sq.m respectively). Adjoining same is Block B, which is a 7 storey block consisting of 44 no. apartments comprised of 22 no. 1 bed, 15 no. 2 bed, & 7 no. 3 bed dwellings, with 1 no. retail unit (c.164sq.m) and 1 no. medical suite / GP Practice unit located on the ground floor (c. 130sq.m). Refuse storage areas are also provided for at ground floor level.

- Block C is a 7 storey block consisting of 53 no. apartments comprised of 14 no. 1 bed & 39 no. 2 bed dwellings. Adjoining same is Block D which is an 8 storey block consisting of 44 no. apartments comprised of 22 no. 1 bed, 15 no. 2 bed, & 7 no. 3 bed dwellings. Ground floor, community/arts & culture space (c.583sq.m) is proposed in Blocks C & D, with refuse storage area also provided for at ground floor level.

- Block E is an 8 storey block consisting of 49 no. apartments comprised of 7 no. 1 bed & 42 no. 2 bed dwellings. A refuse storage area, substation, & switchroom are also provided for at ground floor level. Adjoining same is Block F which is a 7 storey block consisting of 52 no. apartments comprised of 13 no. 1 bed & 39 no. 2 bed dwellings. Ground floor, community/arts & culture space (c.877sq.m) is proposed in Blocks E & F. A refuse storage area, bicycle storage area, substation, & switchroom are also provided for at ground floor level of Blocks E & F.

- Block G is a 7 storey block consisting of 34 no. apartments comprised of 20 no. 1 bed & 14 no. 2 bed dwellings. A refuse storage area & bicycle storage area are also provided for at ground floor level.

3. Construction of a 1 storey residential amenity unit (c. 166.1sq.m) located between Blocks A & D.

4. Construction of basement level car park (c.5,470.8sq.m), accommodating 161 no. car parking spaces, 10 no. motorbike parking spaces & 672 no. bicycle parking spaces. Internal access to the basement level is provided from the cores of Blocks A, B, C, D, E, & F. External vehicular access to the basement level is from the south, between Blocks B & C. 33 no. car parking spaces & 58 no. bicycle parking spaces are also provided for within the site at surface level.

5. Public open space of c. 1,791sq.m is provided for between Blocks C-D & E-F. Communal open space is also proposed, located between (i) Blocks E-F & G, (ii) Blocks A-B & C-D, and (iii) in the form of roof gardens located on Blocks A, C, & F and the proposed residential amenity use unit, totalling c.2,896sq.m. The development includes for hard and soft landscaping & boundary treatments. Private open spaces are provided as terraces at ground floor level of each block and balconies at all upper levels.

6. Vehicular access to the development will be via 2 no. existing / permitted access points: (i) on Santry Avenue in the north-west of the site (ii) off Swords Road in the south-east of the site, as permitted under the adjoining Santry Place development (Ref. 2713/17).

7. The development includes for all associated site development works above and below ground, bin & bicycle storage, plant (M&E), sub-stations, public lighting, servicing, signage, surface water attenuation facilities etc.

The locational context of the application site and the objectives of the CDP have been carefully considered as part of the development put forward for permission, whereby the proposed site layout plan provides for:

- Integration with the Santry Place development to the south of the subject site;
- Provision of a landscape details to minimize potential noise and visual impacts;

- Provision of pedestrian and cyclist connections through the site
- Provision of 3 no. retail units, a medical suite / GP Practice unit, c.1,460sq.m of community/arts/cultural uses and a residential amenity unit.

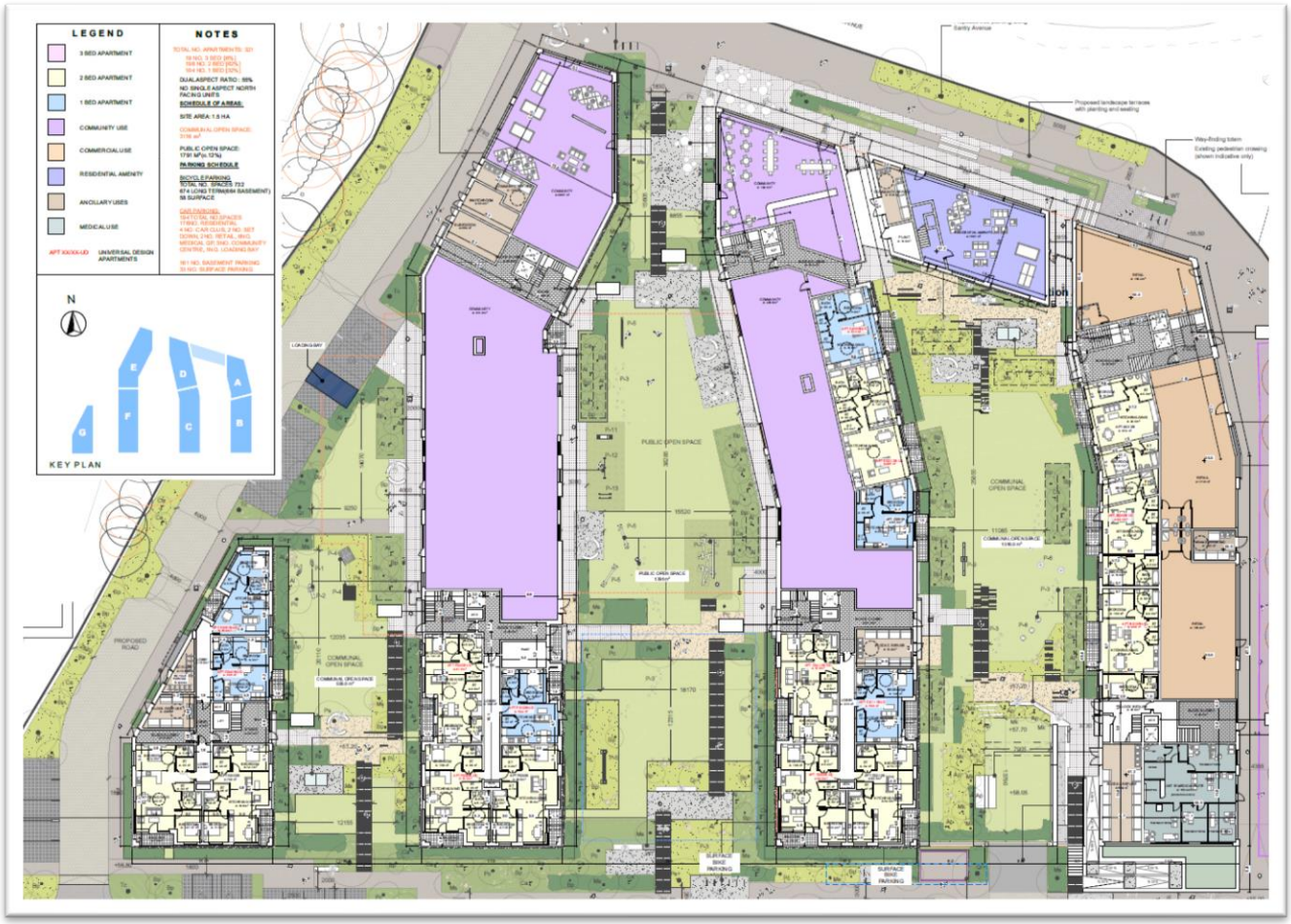


Figure 3.1 Proposed Site Layout / Ground Floor Plan

3.4. Site and Development Works

The project includes the following works:

- Residential development (321 no. dwellings);
- C. 1,460sq.m of floorspace to accommodate community/arts/cultural uses
- A residential amenity unit
- 3 no. retail units,
- A medical suite / GP Practice unit;
- Public and private open spaces;
- Landscaping;
- Services infrastructure, utilities and public lighting;
- Public and private open spaces;
- Car parking and bin storage;
- Substation;
- Building and directional signage and
- All associated site and development works.

Further details are provided in the plans and reports submitted with the planning application.

3.5 Project Life-Cycle

Beyond the construction and operational phases, there are no further phases of development envisaged for this project.

3.6. Demolition

Permission is sought for the demolition of the existing buildings on site (4,196.8m^2).

3.7 Residential Development

In summary, the proposed development comprises the construction of 321 no. apartments consisting of 104 no. 1 bed units, 198 no. 2 bed units and 19 no. 3 bed units.

Unit Type	1 bed	2 bed	3 bed	Total
Apartments	104	198	19	**321**
Overall Mix	**32%**	**62%**	**6%**	**(100%)**

Table 3.1 – Overall Residential Development Mix

A wide variety of dwelling typologies are included in the proposal, comprising 321 no. apartments in 1, 2 and 3 no. bedroom units in 4 no. apartment blocks, all dispersed throughout the proposed development.

The design intent is to strategically locate apartment blocks throughout the site in order to achieve place making, fronting onto important roads and streets. In addition, variety is provided by way of building height dispersed throughout the entire application site. This built form provides variety in the street scape.

3.8 Non-Residential Development

3.8.1 Proposed Community / Arts / Cultural Uses

The development proposal includes for c. 1,460m² of floorspace dedicated to community/arts/culture uses, all located on the ground floor of Blocks C-D and E-F. These intended uses can be catered for on the ground floor of the aforementioned blocks fronting onto Santry Avenue and the centrally located public open space which will provide high-quality community / arts / cultural space. It is considered that the proposed community / arts / cultural space will form an important community / artist space capable of catering for a number of potential functions such as workshops / meeting rooms etc. and will offer focal point for both local, existing residents in the area as well as future residents of the proposed development.

3.8.2 Proposed Retail Units

The development proposal includes for 3 no. ground floor retail / commercial units located in Blocks A and B of the proposed development. The 3 no. units combine to provide a total floorspace of c.466.5m^2. These units face onto both Santry Avenue and Swords Road.

3.8.3 Proposed Residential Amenity Unit

The development proposal includes for a residential amenity unit measuring c. 166.1m^2, located at ground floor level between Blocks A and D of the proposed development. The proposed residential amenity unit fronts onto Santry Avenue. It is considered that the proposed residential amenity unit will form an important space capable of catering for a number of potential functions relative to modern apartment type living and will offer focal point for future residents of the development.

3.8.4 Proposed Medical Suite

On the ground floor of Block B, it is proposed to accommodate a medical suite / GP use in Unit E, measuring c. 130.4m^2. Under the Z3 "*Neighbourhood Centres*" land use zoning objective attached to the site, *"medical and related consultants"* is a permissible use in accordance with the CDP.

3.9 Car Parking and Cycle Parking Provision

Car parking for the proposed development is provided for in the form of basement level parking and surface level parking. In total, the proposed development caters for 194 no. car parking spaces.

The basement level measures c. 5,470.8m^2 and includes for 161 no. car parking spaces (inclusive of 12 no. disabled parking spaces). The basement level is internally accessible from cores of Blocks A, B, C, D, E & F, while vehicular access to the basement is from the south between Blocks B & C.

An additional 33 no. car parking spaces (inclusive of 4 no. disabled parking spaces, 4 no. club car/car sharing spaces & 3 no. set down / loading spaces) are also provided for within the site at surface level.

Cycle parking for the proposed development is also provided in the form of basement level parking and surface level parking. The development proposes to provide a total of 732 no. cycle parking spaces with 674 no. long term stay (672 no. within basement) and a further 58 proposed as short term stay on surface level.

Please refer to the enclosed Traffic & Transport Assessment (TTA) carried out by DBFL Consulting Engineers for full details of parking in the proposed scheme.

3.10 Access

Vehicular access to the proposed development will be via two proposed access points: (i) on Santry Avenue to the north and (ii) off Swords Road to the east.

The proposed development provides for pedestrian and cyclist connectivity to adjoining lands as follows:

- The neighbouring lands bounding the southern boundary of the site are currently being developed as part of the permitted residential scheme known as Santry Place (Ref.s 2713/17, 2737/19 & 4549/22). The proposed site layout provides for direct connectivity and permeability into Santry Place. The proposed scheme has been designed to allow for it to assimilate with Santry Place to the south, with a view to developing this area of Santry as a landmark setting, creating a sense of place.

- The site is to be accessed via Santry Avenue and Swords Road which allows for direct accessibility to Santry Demesne Park and proposed retail units and community/arts/cultural space(s).

- The proposed scheme will provide footpaths facing onto both Santry Avenue and Swords Road which will enable the flow of footfall to safely visit the proposed community/arts/cultural space(s), 3 no. retail units, medical suite / GP Practice unit and residential amenity unit.

- The lands are easily accessible via the R132 Swords Road which connects the subject lands both to other parts of north Dublin and Dublin Airport to the north and the city centre to the south. The lands are also located in close proximity to the M50 which provides access to the Port Tunnel

- The site is well served by bus services with Dublin Bus routes No.'s 16, 16c, 33, 41m 41a, 41b and 41c connecting the site to Dublin Airport, Ballbriggan and Swords to the north and the city centre and Ballinteer to the south. The site is also located along the proposed BusConnects Corridor.

3. 11 Construction

3.11.1. Construction Management

A Resource & Waste Management Plan (R&WMP) has been prepared for the proposed development and accompanies the planning application. Certain assumptions are made in the R&WMP based on the information available at this time and, for the avoidance of doubt, it is not proposed or intended that the applicant / contractor(s) are bound by these proposals which may change depending on the timing and circumstances pertaining at the time of construction.

On receipt of a grant of planning and prior to the commencement of works, a detailed final Construction Management Plan (CMP) will be prepared. The contractor will be required to comply with and implement the requirements and mitigation measures as set out in this EIAR and any conditions imposed as part of planning permission. An Outline CMP has been prepared for the proposed project and is included with the planning application documentation. In addition, a Mobility Management Plan (MMP) has also been prepared and is also included as part of this application. Certain assumptions are made in both the Outline CMP and MMP based on the information available at this time and, for the avoidance of doubt, it is not proposed or intended that the applicant / contractor(s) are bound by these proposals which may change depending on the timing and circumstances pertaining at the time of construction.

A Construction and Environmental Management Plan has also been prepared by DBFL Consulting Engineers, and is enclosed, which addresses noise and vibration, traffic management, working hours, pollution control, dust control, road cleaning, compound/public health facilities and staff parking associated with the construction works, and is submitted as part of this LRD planning application.

All of the aforementioned plans include further information on the construction programme and construction related activities. The plans also address issues relating to site access, compounds, site security, waste management contractors' responsibilities etc.

3.11.2. Construction Programme / Phasing

It is estimated that construction of the development will take approximately five years to complete. A phasing plan also accompanies the planning application – please refer to Davey & Smith Architects drawing no. D1809.P30 and extract of same is illustrated in Fig. 3.2 below. The intended sequence of development may change post grant of planning permission as a detailed construction programme is dependent on contractor appointment, market and other considerations.

- **Phase 1** will consist of the delivery of the basement, Blocks A & B (89 no. units) and communal open space beside them (west of same between Blocks C & D);

- **Phase 2** will consist of the delivery of Blocks C & D (97 no. units) and public open space;
- **Phase 3** will consist of the delivery of Blocks E, F & G (135 no. units) and the remainder of works/open space etc.

Phasing Sequence	No. of Units	Other
First Phase	89	Blocks A & B, Communal Open Space
Second Phase	97	Blocks C & D, Public Open Space
Third Phase	135	Blocks E, F & G, Remainder of Works

Table 3.2 - Summary of phasing proposals

Figure 3.2 – Proposed Phasing

3.11.3. Site Preparation

Permission is sought for the demolition of all structures on site (4,196.8m^2). Car parking is to be provided in the form of ground parking and basement car parks. Blocks A, B, C, D, E & F are located above the proposed basements, accommodating 161 no. car parking spaces, 10 no. motorbike parking spaces and 672 no. cycle parking spaces. There are an additional 33 no. surface car parking spaces also proposed (including 4 no. car club spaces and 3 set down / loading spaces). Excavated material on site will predominantly be re-used on site / within the developer's control.

The contractor(s) will require connections to the following services / utilities for the duration of the works:

- Water supply
- Foul sewer
- Surface water sewer
- Electricity
- Telecommunications

Existing services / utilities within and adjoining the site will be protected during construction.

3.11.4. Construction Activities

The construction works associated with the project will be contained within the application site boundary. These works will include excavation, earthworks, etc.

Some construction activity may take place off-site within the control of the developer. These activities may include access and haul routes, site compound(s), storage of materials and soil/excavated material, screening and processing of existing materials for re-use within the development works, construction parking, staff welfare facilities etc. These areas will be identified in the detailed CMP.

Typically, construction will commence at 07.00 to 19.00 Mondays to Fridays inclusive, between 08.00 to 14.00 on Saturdays and not at all on Sundays and public holidays. During the construction period, due to exceptional circumstances, construction work may be necessary outside these standard hours. If necessary, this will be agreed in advance with DCC.

The contractor will be guided by the Resource & Waste Management Plan which accompanies the application with regard to re-use, recovery, recycle and disposal of waste produced during construction. Chapter 12 of this EIAR, Material Assets: Resource and Waste Management, also considered the re-use recovery, recycle and disposal of waste arising from the development.

3.11.5. Construction Material

The proposed development will have a requirement for imported materials, primarily concrete, steel, stone and asphalt. The estimated quantities for the overall development are provided in the R&WMP. The majority of new materials brought to site will be used immediately. The remainder will be stored within the site boundary.

Material excavated on the site will be used in construction. The re-use of this material reduces the quantity of materials being imported to the site. Prior to use, this material will be subject to appropriate testing to ensure material is suitable for construction. Locations to stockpile this material will be identified by the contractor(s) in the CMP.

3.11.6. Construction Traffic

A Construction Traffic Management Plan will form part of the detailed CMP to be prepared by the appointed contractor prior to commencement of development and will outline proposals for construction deliveries and staff accessing the compounds and construction sites.

During all phases of construction, access to all existing properties adjoining the development lands will be maintained. Local traffic management procedures will be put in place where required.

Site access / egress routes and construction traffic generation are discussed in the Traffic and Transport

Assessment and reflected in the CMP and CEMP which accompanies the application.

3.12 Energy Statement

Conservation and Renewable Technologies that will be employed in part or in combination with each other for this development. These techniques will be employed to achieve compliance with the building regulations Part L and NZEB standards currently in public consultation.

3.12.1 Environment / Global Issues

Increasing levels of greenhouse gases have been linked with changes in climate and predicted global warming. By far the biggest human contribution to the greenhouse gases is in emissions of carbon dioxide. The development is likely to increase carbon dioxide levels in the atmosphere by the embodied emissions in the building materials used, and in the operational energy consumed during the life of each building. To minimise the embodied emissions impact, materials will be sourced locally where possible (reducing carbon dioxide emissions associated with transportation), and preference will be given to reusing materials, and using materials in their natural state (reducing the emissions associated with processing).

3.13 Emissions and Waste

3.13.1 Effluents

Effluent arising from foul drainage from the proposed development will be discharged through piped systems to the local authority sewers. Operation of the development will involve the discharge of uncontaminated surface water from the impermeable areas to a proposed network all linking into the established public system in the environs. Details of the impacts and remedial and reductive measures for surface water and foul drainage are recorded at Chapter 7 *"Water"* of this Environmental Impact Assessment Report.

3.13.2 Municipal Waste/Waste Management

A Waste Management Plan (WMP) will be prepared and shall be submitted to the Planning Authority for agreement prior to commencement of development on site. The WMP will demonstrate how the Construction Phase will comply with the following relevant legislation and relevant Best Practice Guidelines:

- *Waste Management Act 1996 - 2021 (No. 10 of 1996) as amended*
- *Environmental Protection Agency (EPA) 'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021)*
- *Waste Management (Collection Permit) Regulations 2007 (SI No. 820 of 2007)*
- *Waste Management (Collection Permit) Amendment Regulations 2008 (SI No. 87 of 2008)*
- *Department of the Environment, Heritage and Local Government – Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects – July 2006*

The Waste Management Plan will present the potential environmental impacts, proposed monitoring methodologies, limit values where applicable, based on the concept of Best Practice and the proposed

mitigation measures to be implemented at the development site. Reference to National and International Standards shall also be included where relevant.

Waste materials generated by construction activities will be managed according to the Department of the Environment, Heritage and Local Government's 2006 Publication - *Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects.*

Waste minimisation and prevention shall be the primary responsibilities of the Construction Project Manager who shall ensure the following:

1) Materials will be ordered on an *"as needed"* basis to prevent over supply
2) Materials shall be correctly stored and handled to minimise the generation of damaged materials
3) Materials shall be ordered in appropriate sequence to minimise materials stored on site
4) Sub-contractors will be responsible for similarly managing their wastes

Construction Waste Disposal Management

It is proposed that from the outset of construction activities, a dedicated and secure compound containing bins, and/or skips, and storage areas, into which all waste materials generated by construction site activities, will be established within the active construction phase of the development site.

Contaminated Soil

In the unlikely event that contaminated soils are discovered, these areas of ground will be isolated, tested for contamination in accordance with *2002 Landfill Directive (2003/33/EC),* and pending the results of laboratory testing, will be excavated and exported off-site by an appropriately Permitted Waste Contractor holding an appropriate Waste Collection permit and that this hazardous material will be sent for appropriate treatment / disposal to an appropriately Permitted / Licenced Waste Facility.

Domestic Waste Management

It shall be the responsibility of the Facilities Management Company to ensure that all domestic waste generated by apartment residents is managed to ensure correct storage prior to collection by an appropriately waste permitted waste collection company on a weekly basis.

Sufficient domestic waste storage areas shall be provided throughout the proposed residential development. It shall be the responsibility of the Facilities Management Company to ensure that appropriate signage is provided in each area notifying apartment residents of the importance to recycle domestic waste items in accordance with the requirements of the contracted Waste Collection contractor.

The proposed development shall be constructed and developed to minimise the generation of construction waste. During the construction phase, construction waste shall be stored and segregated in dedicated waste storage areas which shall optimise the potential for off-site reuse and recycling. All construction waste materials shall be exported off-site by an appropriately permitted waste contractor.

The development shall be designed to provide adequate domestic waste storage areas for common residential areas. This will promote the appropriate segregation at source of domestic generated waste from all residential units at the development. Waste bin storage areas shall be designed in a manner to ensure that appropriate signage for the correct waste disposal and recycling is available for residents.

The residential amenity unit, community/arts/cultural use floorspace, 3 no. retail units and medical suite /

GP Practice unit shall have designated commercial waste bins for both general and recyclable waste which shall be stored within the boundaries of the building areas. Waste shall be collected on a weekly basis by an appropriately permitted commercial waste contractor.

3.14 Emissions

The principal forms of air emissions relate to discharges from motor vehicles and heating appliances. With regard to heating appliances, the emission of nitrogen oxides and carbon monoxide will be minimised by the use of modern, efficient heating appliances and as a result, the potential impact is estimated to be negligible. Exhaust gases from motor vehicles will arise from car parking areas and will be discharged directly to the atmosphere. Car parking for motor vehicles is provided at basement and surface levels. In general, it is noted that approximately 80% of all cars in Ireland run on unleaded fuel which can be expected to have a reductive effect on air emissions. Furthermore, 50% of the proposed car parking spaces in the basement have EV charging points. It is expected therefore that the potential impact will be negligible.

Noise may be considered in two separate stages, during construction, and when the development is operational. Construction related noise impacts are an inevitable short term, limited inconvenience feature which, in general, is accepted by members of the public, subject to the standard controls typical of planning conditions attached to urban based development projects. These impacts can be reduced in a number of ways. It is standard practice to limit construction to normal working hours during the day. In addition, there are a number of regulations relating to noise during construction which the contractor will be expected to adhere to throughout the construction phase.

3.15 Direct and Indirect Effects Resulting from Use of Natural Resources

Details of significant direct and indirect effects arising from the proposed development are outlined in Chapters 4-14 which deal with *'Aspects of the Environment Considered'*. No significant adverse impact is predicted to arise from the use of natural resources.

3.16 Direct and Indirect Effects Resulting from Emission of Pollutants, Creation of Nuisances and Elimination of Waste

Details of emissions arising from the development together with any direct and indirect effects resulting from same have been comprehensively assessed and are outlined, where relevant, in the relevant in Chapters 4-14 which deal with '*Aspects of the Environment Considered'*. There will be no significant direct or indirect effects arising from these sources.

3.17 Forecasting Methods Used for Environmental Effects

The methods employed to forecast and the evidence used to identify the significant effects on the various aspects of the environment are standard techniques used by each of the particular individual disciplines. The general format followed was to identify the receiving environment, to add to that a projection of the *"loading"* placed on the various aspects of the environment by the development, to put forward amelioration measures, to lessen or remove an impact and thereby arrive at net predicted impact.

Where specific methodologies are employed for various sections they are referred to in the Receiving Environment (Baseline Scenario) sections in the EIAR. Some of the more detailed/specialised information sources and methodologies for a number of the environmental assessments are outlined hereunder.

3.18 Transboundary Impacts

Large-scale transboundary projects[3] are defined as projects which are implemented in at least two Member States or having at least two Parties of Origin, and which are likely to cause significant effects on the environment or significant adverse transboundary impact.

Having regard to the nature and extent of the proposed development, which comprises a residential development, located in Santry, within the administrative area of County Dublin, transboundary impacts on the environment are not considered relevant, in this regard.

3.19. Alternatives Examined

The consideration of Alternatives is an important part of the EIA process. By examining alternatives considered and indicating the main reasons for choosing the proposed development, it is possible to reduce or minimise environmental impacts and ensure that better solutions are not overlooked.

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."*

Article 94 and Schedule 6, paragraph 1(d) of the Planning and Development Regulations 2001 (as amended) provides for, an outline of the main alternatives studied by the developer and an indication of the main reasons for his or her choice, taking into account the effects on the environment, i.e.:

"(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."

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

- Alternative locations;
- Alternative uses;
- Alternative layouts;
- Alternative processes.

Pursuant to Section 3.4.1 of the Draft Environmental Protection Agency (EPA) Guidelines on the *Information to be Contained in Environmental Impact Assessment Reports* (EPA, 2017), the consideration of alternatives also needs to be cognisant of the fact that "*in some instances some of the alternatives described below will not be applicable - e.g. there may be no relevant 'alternative location'…"*

In accordance with Draft EPA Guidelines (EPA, 2017), different types of alternatives may be considered at

[3] The definition is based on Articles 2(1) and 4 of the EIA Directive and Article 2(3) and (5) of the Espoo Convention, respectively. http://ec.europa.eu/environment/eia/pdf/Transboundry%20EIA%20Guide.pdf

several key phases during the process. As environmental issues emerge during the preparation of the EIAR, alternative designs may need to be considered early on in the process or alternative mitigation options may need to be considered towards the end of the process.

The Draft 2017 Guidelines also state *"Analysis of high-level or sectoral strategic alternatives cannot reasonably be expected within a project level EIAR… It should be borne in mind that the amended Directive refers to 'reasonable alternatives… which are relevant to the proposed project and its specific characteristics'".*

The DHPLG 2018 EIA Guidelines state:

"Reasonable alternatives may relate to matters such as project design, technology, location, size and scale. The type of alternatives will depend on the nature of the project proposed and the characteristics of the receiving environment. For example, some projects may be site specific so the consideration of alternative sites may not be relevant. It is generally sufficient for the developer to provide a broad description of each main alternative studied and the key environmental issues associated with each. ***A 'mini-EIA' is not required for each alternative studied."*** *(Our emphasis added).*

Thus, the consideration and presentation of the reasonable alternatives studied by the project design team is an important requirement of the EIA process, and the main alternatives considered are identified below.

The location and type of development proposed has been determined by the land use zoning objectives contained in the 2022-2028 Dublin City Development Plan (CDP), which has been environmentally assessed, and statutorily adopted.

In the preparation of the CDP, screenings for SEA and AA were carried out. The SEA screening concluded that the Plan will not have significant adverse effects on the environment if implemented. The AA screening concluded that six European sites that have the potential to be significantly affected by the implementation of the Dublin City Development Plan 2022-2028 and therefore, a Stage 2 Appropriate Assessment of the plan was carried out. The Natura Impact Report concludes that *"the implementation of mitigatory measures identified in Section 8 of the NIR (and included as objectives and policies of the Plan),that the Plan will not adversely affect (either directly or indirectly) the integrity of any European site, either alone or in combination with other plans or projects"* and that *"Following on from this, the elected members of Dublin City Council, as the competent authority formally recorded their determination (published separately) at the end of the special council meetings held on November 1st and 2nd 2022 that the Plan would not adversely affect (either directly or in directly) the integrity of any European site, either alone or in combination with other plans of projects".*

As the CDP, approved and adopted by Dublin City Council, already provides a strategic framework indicating the manner in which the site may be developed, the range of alternatives was therefore lessened. The overall development for the site in this case should comprise of:

- Residential uses
- Retail uses
- Recreational uses
- Community / arts / cultural uses
- Employment uses
- Open Space uses
- Development of pedestrian and cycle routes

Numerous considerations of alternatives for the overall form and content for the proposed development considered during the design stage explored details such as:

- Residential layout and mix
- Residential density
- Design and layout of open spaces
- Form and layout of the new access routes
- Form and layout of pedestrian and cycle routes

The development proposal in this case considered alternatives which are in keeping with the local, regional and national guidelines. In the first instance, the proposed development is considered relative to the *"do-nothing*", "*do-minimum*" and "*do-maximum"* scenarios.

3.19.1. Alternative Locations

The suitability of the proposed development location has been directed by the land use zoning objectives contained in the CDP.

The area of Santry is identified as a Neighbourhood Centre in the CDP. DCC states that the Neighbourhood Centres *"can form a focal point for a neighbourhood and provide a range of services to the local population. Neighbourhood centres provide an essential and sustainable amenity for residential areas and it is important that they should be maintained and strengthened, where appropriate. Neighbourhood centres may include an element of housing, particularly at higher densities, and above ground floor level".*

Within the CDP, the subject site is zoned *'Z3'* with a stated objective *'to provide for and improve neighbourhood facilities*' where residential development/use is a *'permitted use'.* This land bank represents a considerable resource not only in the context of the CDP but in the context of Dublin city realising the population targets prescribed for the city in national, regional and local policy. The overarching policies and objectives contained in the CDP guide the proposed development, with the proposal designed to be consistent with provisions of the CDP and the Core Strategy contained therein.

Taking all the aforementioned into consideration, it is put forward that the most logical and practical location solution to addressing the current housing shortage is through facilitating the development of lands which consider residential development as an acceptable, permissible land use. The subject site comes within this category and therefore it seems appropriate that the proposed development is sited here. This approach is in line with EPA Guidelines (2002 and 2017 Draft Guidelines) which recognises that it is not realistic to consider alternative options for projects which have been previously determined by a higher plan as detailed below:

"Hierarchy EIA is only concerned with projects. Many projects, especially in the area of public infrastructure, arise on account of plans, strategies and policies which have previously been decided upon. It is important to acknowledge that ***in some instances neither the applicant nor the competent authority can be realistically expected to examine options which have already been previously determined by a higher authority*** *(such as a national plan or regional programme for infrastructure or a spatial plan)."* (Source: EPA Guidelines on the information to be contained in Environmental Impact Statements, Section 2.4.3 Alternatives, page 12).

3.19.2. Alternative Uses

The subject lands are currently occupied by the Chadwicks (formerly Heiton Buckley) builder's providers in a large industrial type building and associated yard and have no specific / relevant previous grant of permission for similar residential development attached to them.

As noted above, the development proposal is located on lands zoned in the existing CDP for land use objective '*Z3*', which aims 'T*o provide for and improve neighbourhood facilities'* where residential development is a *'permitted use',* therefore; it is evident that the Local Authority supports the provision of residential development on the subject lands.

The CDP states that in both new and established residential areas, a range of uses will be permitted in principle, which has the potential to strengthen communities and encourage the enjoyment of residential amenity. Such uses include *inter alia* the provision of local shops, open space and recreation facilities, provided they are appropriate in scale.

The design parameters for the development proposal are set down in the first instance in the CDP which has determined the land use mix, the building height / plot ratio and other physical characteristics. The development proposal is put forward having been guided by detailed discussions with the relevant DCC departments i.e. Planning, Roads & Traffic, Parks and Water and Drainage prior to this LRD planning application for the proposed development being prepared. These detailed discussions highlighted the environmental issues to be addressed, which informed the design process.

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 main alternative use for the subject lands would be to keep a tenant in place in the large industrial type building and associated yard. In any event, it is envisaged that in the long term, these lands will be developed for residential purposes to accommodate much needed new housing in Dublin.

As such it was not considered necessary to consider alternative uses for the proposed development. This approach is in line with EPA Guidelines (2002 and 2017 Draft Guidelines) which recognises that it is not realistic to consider alternative options for projects which have been previously determined by a higher plan as follows: *"Hierarchy EIA is only concerned with projects. Many projects, especially in the area of public infrastructure, arise on account of plans, strategies and policies which have previously been decided upon. It is important to acknowledge that* ***in some instances neither the applicant nor the competent authority can be realistically expected to examine options which have already been previously determined by a higher authority*** *(such as a national plan or regional programme for infrastructure or a spatial plan)."* (Source: EPA Guidelines on the information to be contained in Environmental Impact Statements, Section 2.4.3 Alternatives, page 12).

3.19.3. Alternative Design & Layouts

The development proposal is put forward with the consent of the landowner and as such, the development process has seen the Applicant and the local authority work together to ensure that a number of design alternatives and layouts have been considered.

The design parameters for the development proposal are set down in the first instance in the CDP which has determined the land use mix, the building height / plot ratio and other physical characteristics. The development proposal has been guided by detailed discussions with the relevant DCC departments, Planning, Roads & Traffic, Parks & Water and Drainage prior to the Proposed Development being prepared. These detailed discussions highlighted the issues to be addressed, which informed the design process.

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.

It is prudent to note that the following planning history / context attached to the subject site is worthy of consideration in terms of alternative design and layouts.

The site is currently occupied by Chadwicks Builders Merchants, in a large industrial type building, with an associated yard and car parking, and aside from same, we are not aware of any significant planning history associated with the site prior to the acquisition of the site by our client.

Since the acquisition of the subject site in 2019, the applicant has submitted two no. Strategic Housing Development (hereafter "SHD") planning applications, which are detailed as follows:

Ref. ABP-310910-21 - A Strategic Housing Development planning application was submitted on this site under Ref. ABP-310910-21 proposing the development of 350 no. apartments, comprised of 113 no. 1 bed, 218 no. 2 bed, & 19 no. 3 bed dwellings, in 7 no. seven to fourteen storey blocks, over basement level, with 5 no. retail / commercial units and a community use unit located at ground floor level facing onto Santry Avenue and Swords Road. A one storey residential amenity unit, facing onto Santry Avenue, is also provided for between Blocks A & D.

A decision to refuse permission was made on 4th November 2021 for one reason only which related to the fact that proposed mix of dwelling units was not addressed in the Material Contravention Statement submitted with the application which precluded An Bord Pleanála from granting permission. We note that Dublin City Council recommended a grant of permission subject to conditions and having read the Inspector's Report it is also considered that An Bord Pleanála had no objection in principle to the proposed development.

Ref. ABP-314019-22 - A Strategic Housing Development planning application was submitted on this site under Ref. ABP-314019-22 in July 2022 proposing the development of 350 no. apartments, comprised of 113 no. 1 bed, 218 no. 2 bed, & 19 no. 3 bed dwellings, in 4 no. seven to fourteen storey buildings, over basement level, with 4 no. retail / commercial units, a medical suite / GP Practice unit and a community use unit located at ground floor level facing onto Santry Avenue and Swords Road. A one storey residential amenity unit, facing onto Santry Avenue, is also provided for between Blocks A & D.

To date, no decision has been received on this SHD application from An Bord Pleanála. It is our understanding that it has been at Board level since December 2022 and the applicant is currently awaiting a decision on same. Given the time that has elapsed since the initial SHD application was lodged in 2021, the applicant is now submitting the subject LRD application for permission.
Based upon the foregoing, and the associated extensive pre-planning consultation undertaken to date via three planning application processes with DCC and ABP, the following analyses the alternative development options that were considered for the subject site, then describing design options and changes which were incorporated into the scheme as the proposals progressed through the design process and pre-application discussions with / feedback from the Planning Authority i.e. (i) S.247 pre-planning consultation, and (ii) Stage 2 LRD meeting, as well as receipt of the LRD Opinion (Ref. LRD6044/23-S2). In addition, given the planning history attached to the site, feedback from the SHD planning application process has also been incorporated into the proposed design / development proposal.

The earliest proposals for the development of the site considered a greater focus on the layout and form of apartment blocks for the subject site as shown in Figure 3.3.

Figure 3.3 Earlier alterative design layout for the subject lands

Figure 3.4 Earlier Sketch Layout of the proposed scheme

These considerations have informed the consideration of alternative layouts and designs, open space provision, the layout of the proposed north-south throughway through the subject lands, addressing the issues of population and human health, biodiversity, archaeology and traffic and access arrangements.

The layout put forward for permission has also been informed by the feedback received at the pre-application consultation meetings held with DCC Planning Department under Section 247 of the Planning and Development Act.

Under the current LRD planning application process, a formal Section 247 pre-planning consultation meeting was held between the applicant and Dublin City Council via Microsoft Teams on 19th July 2023. The Dublin City Planning Officers chairing the meeting were Siobhan O'Connor and Natalie de Roiste.

The development proposal discussed proposed 336 no. dwellings accommodated in in 4 no. seven to thirteen storey buildings, with 7 no. community use units and 1 no. medical suite / GP Practice located at ground floor level. A one storey residential amenity unit, facing onto Santry Avenue, was also proposed between Blocks A & D.

Based upon the recent planning history attached the site as well as the fact that previous pre-planning consultation had been held regarding the subject site with Ms O'Connor, the proposed design and mix of uses, as well as building height and open space provision were discussed at this meeting.

In October 2023, an updated version of the proposed development was submitted at "Stage 2" of the LRD planning process. The "Stage 2 / LRD meeting" was held between the applicant and Dublin City Council via Microsoft Teams on 17th November 2023 (under Ref. LRD6044/23-S2) whereby the following development proposal was discussed: 317 no. apartments, comprised of 102 no. 1 bed, 196 no. 2 bed, & 19 no. 3 bed dwellings, in 4 no. seven to eleven storey buildings, over basement level, with 3 no. retail / commercial units, a medical suite / GP Practice unit and community/arts & culture space, all located at ground floor level, and a one storey residential amenity unit, facing onto Santry Avenue, located between Blocks A & D.

The outcome of the various aforementioned meetings, as well as the receipt of the Planning Authority's Notice of LRD Opinion (Ref. LRD6044/23-S2) have been carefully considered, taken on board and incorporated into the development proposal now submitted to Dublin City Council for permission.

Figure 3.5 below details the layout submitted to Dublin City Council in October 2023 at Stage 2 of the LRD application process.

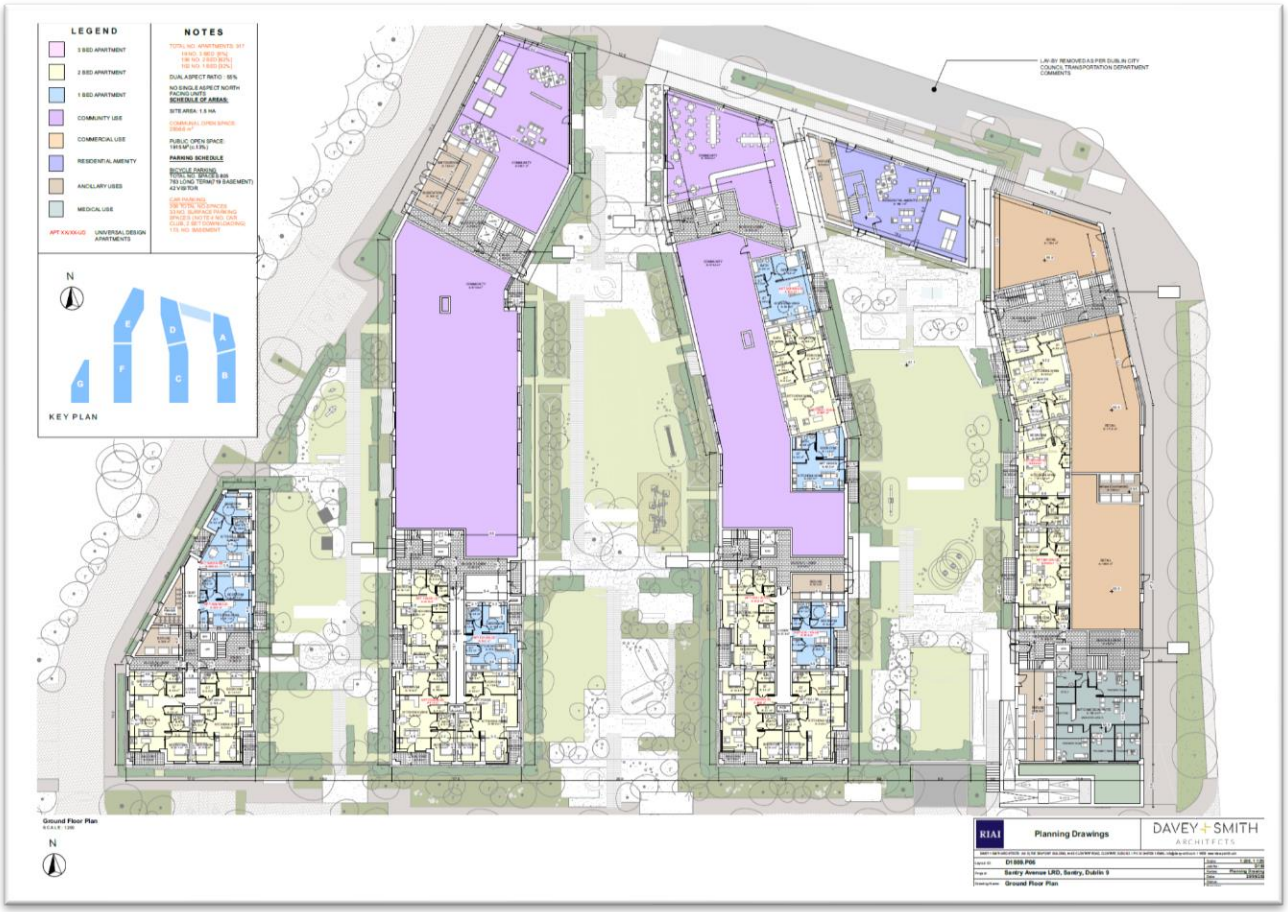


Figure 3.5 Layout submitted at Stage 2 LRD to Dublin City Council

Insofar as the EIA is concerned, a number of iterations of the site layout and alternative designs were prepared and considered for the project. This involved taking into account the various technical and environmental considerations which are addressed in the EIA and which informed the design of the proposed development.

The design process, having taken into consideration the discussions held with the DCC, individual consultants who inform the chapter of this EIAR, and the feedback received from An Bord Pleanála in the past and more recently from Dublin City Council as part of the LRD pre-planning consultations, has resulted in the layout now put forward for permission. It is considered that this layout and proposed building heights represents the best utilization of these zoned lands, complies with the objectives for the lands contained in the CDP and mitigates against significant environmental impacts.
In summary, the development proposal will, *inter alia*:

- Comply with the land-use zoning designation for the subject site.
- Provide appropriate accommodation which can cater for different life stages by delivering apartments in a mix of 1, 2 & 3 bedroom units.
- Provide an appropriate density of development, which will develop a new urban quarter in Santry.
- Comply with the Planning Authority's detailed quantitative standards for residential development as set out in the existing Dublin CDP and, where appropriate, Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities (2023).

- Provide a level of social housing (32 no. units) with equates to circa 10% of the overall quantum of proposed dwellings.

- Support sustainable transport modes via the creation of pedestrian and cycle connections.

- The proposed development also provides for 3 no. retail units and a medical suite / GP Practice unit at ground floor level facing onto Santry Avenue and Swords Road. The development also provides for c. 1,460sq.m of community/arts/cultural uses at ground floor level of Blocks C-D and E-F and a residential amenity unit (c.166m^2) at ground floor level located between Blocks A and D.

- Protect the existing residential amenity enjoyed by the residents of neighbouring developments.

- Preserve, where feasible, the natural amenity characteristics of the site, and provide for new features where necessary in order to ensure that the visual impact of the development is minimised. This has been achieved by allocating areas of open space for recreation, all of which will be developed in accordance with the overall Landscape Plan for this proposed development.

Figure 3.6 Extract from Site Layout Plan being put forward for permission

With regard to the layout put forward for permission, the iterative process included alternative site layouts that were considered with the objective of submitting an overall high-quality designed scheme which has undergone a robust consideration of relevant alternatives in reference to the comparison of environmental effects and meets the requirements of the EIA Directive, based on the multidisciplinary review across all environmental topics.

The final design now put forward for permission presents the most effective utilization of this significant site whilst also fulfilling the objectives of the Planning Authority and providing for long term, sustainable housing for which there is a considerable demand at present and providing for a use of materials, architectural form and colour to create a high level of visual amenity.

Dublin City Council LRD Opinion (Ref. LRD6044/23-S2)

During the course of the pre-planning process for this proposed LRD, detailed discussions took place at two stages with the Planning Authority, Dublin City Council (DCC), and within the LRD Opinion of (DCC), which was issued thereafter, details were set out regarding the specific information to be included as part of a LRD planning application. The LRD Opinion stated that the reinstatement of the commercial uses is welcomed. Commentary was also received regarding the bulk, massing, height and scale and layout of the proposal, requesting that consideration be *"given to revising the proportions, footprint, and roofline of this corner element, rather than the removal of several storeys from the previously submitted design. It is acknowledged that the Planning Authority recommended the reduction in height by way of condition on previous proposals, however, the opportunity to design this building from first principles, to an appropriate height, should not be ignored at this juncture".*

Following the receipt of detailed feedback from the Planning Authority, during the course of the pre-application meeting, and following receipt of the LRD Opinion, which advised on further consideration relating to aspects of the proposed development, the applicant and design team have undertaken a number of revisions to the development proposal which is reflected within the final development proposal submitted for permission as part of a LRD planning application.

As noted within the development description sections of this chapter, the scheme now comprises a quantum of residential development consisting of 321 no. dwellings.

The key changes proposed related to:

- Increase of height of Block A from 11 storeys to 13 storeys, with the top floor accommodating an outdoor roof terrace,
- Changes to the mix of dwelling types,
- Greater enclosure of streets through the location of buildings,
- Updates to design and function of open spaces.

Responses to each of these items have been provided as part of the LRD planning application pack, and the scheme has been updated and improved where necessary as a result.

The proposed development takes into account all effects raised with respect to the pre-application design submitted to Dublin City Council, and within DCC's LRD Opinion, and provides for a sustainable development that has been optimised to emphasise positive environmental effects whilst reducing negative environmental impacts wherever possible.

The main consideration has been to achieve a design solution for the preferred layout which would enable all of the functional and operational requirements of the scheme to be met, whilst also ensuring the sensitive siting of new elements within the site. Having established the quantum, type and mix of both uses and residential units, a series of alternatives were considered by the design team. This process has enabled the final proposal to evolve. The need to provide for a suitable level of urban design at this prominent corner location, appropriate building height and design, enclosure of open spaces through the built form, in addition to landscaping, has driven the final layout form and design solution as proposed as part of the LRD planning application.

Alternative locations for the various built elements of the development were considered and examined at the design stage.

3.19.4. Alternative Processes

This is a residential / mixed-use urban development and therefore there are no alternative processes to be considered.

3.20. The *"Do Nothing"* Scenario

The "*Do Nothing"* Scenario describes the impacts of the proposed development, if it were not carried out. The positive benefits to the national, regional and local community arising from the development of this site would not materialise in the *"Do Nothing"* scenario. In addition, the *"Do Nothing"* scenario would result in non-compliance with the NPF which contains the following relevant objectives:

- **National Policy Objective 3a** - Deliver at least 40% of all new homes nationally, within the built-up footprint of existing settlements.
- **National Policy Objective 32** - To target the delivery of 550,000 additional households to 2040.

This alternative is therefore not attractive with the site possibly remaining occupied by a tenant in the large industrial type building and associated yard on site.

3.21. The *"Do Minimum"* Scenario

The *"Do Minimum"* Scenario could involve the construction of the subject site at the minimum density prescribed in the CDP for this area, i.e. net residential density of c.35 units per hectare. As outlined in the Planning Statement which accompanies the application the net developable area is c. 1.50 hectares, which would therefore result in a development of approximately 53 no. dwellings. However, the current proposal is supported by national and local planning policy to provide housing and intensify land use through increased densities. The CDP supports higher densities in appropriate areas in line with the standards set out in the CDP will promote the development of high quality, sustainable densities and the consolidation of urban form. This approach is consistent with, and has been informed by the recently published Sustainable Residential Development and Compact Settlements Guidelines for Planning Authorities (2024),

Alternatively, the *"Do Minimum"* scenario could involve the construction of the application site via a number of individual planning applications. While this alternative may reduce the level of construction activity in the short term, it is considered that it would have the effect of spreading construction over a longer period of time and could result in incoherent development which will not deliver the objectives of the CDP. The *"Do-Minimum"* scenario would also result in reduced efficiencies in construction and delays.

3.22. The "*Do Maximum"* Scenario

The *"Do Maximum"* Scenario could involve the construction of the entire site in one phase of development i.e. circa 321 no. residential units. This would involve a greater degree of disruption to the receiving environment in the short term. This alternative was discounted on the basis of practical considerations relating to phasing of development, funding and feasibility.

3.23. Conclusion on Assessment of Alternatives

Based on the foregoing, it is considered that all reasonable alternatives to the proposed development were considered, and no alternatives have been overlooked which would significantly reduce or further minimise environmental impacts.

3.24. The Existence of the Project

Pursuant to the EIA Directive an EIAR document is required to set out a description of the project processes, activities, materials and natural resources utilised; and the activities, materials and natural resources and the effects, residues and emissions anticipated by the operation of the project.

The proposed development is a mixed-use and residential development including associated infrastructural works, 3 no. retail units, a medical suite / GP Practice unit, community/arts/cultural uses, a residential amenity unit and areas of open space. The primary, direct, significant environmental effects will arise during the construction stage. As a result, post-construction, the operation of the proposed development is therefore relatively benign and not likely to give rise to any significant additional impacts in terms of activities, materials or natural resources used or effects, residues or emissions which are likely to have a significant impact on population and human health, biodiversity, soils, water, air, climate, or landscape.

The primary likely and significant environmental impacts of the operation of the proposed development are fully addressed in this EIAR document; and relate to Population and Human Health, Landscape and Visual Impact and Noise and Air impacts associated with the traffic generated.

The proposed development also has the potential for cumulative, secondary and indirect impacts particularly with respect to such topics as traffic – which in many instances – are often difficult to quantify due to complex inter-relationships. However, all cumulative secondary and indirect impacts are unlikely to be significant; and where appropriate, have been addressed in the content of this EIAR document.

3.24.1 Description of Changes to the Project

Guidelines on the information to be contained in environmental impact assessment reports were published by the EPA in May 2022.

The guidelines state in relation to change:

"Very few projects remain unaltered throughout their existence. Success may bring growth; technology or market forces may cause processes or activities to alter. All projects change and- like living entities - will someday cease to function. The lifecycles of some types of projects, such as quarries, are finite and predictable. Such projects often consider their closure and decommissioning in detail from the outset, while for most projects a general indication of the nature of possible future changes may suffice. While the examination of the potential consequences of change (such as growth) does not imply permission for such growth, its identification and consideration can be an important factor in the determination of the application."

- *Descriptions of changes may cover:*
- *Growth*
- *Decommissioning*
- *Other Changes."*

As per the EPA guidelines and in the interests of proper planning and sustainable development, it is important to consider the potential future growth and longer-term expansion of a proposed development in order to

ensure that the geographical area in the vicinity of the proposed development has the assimilative carrying capacity to accommodate future development.

Given the proposed site layout extent, the limitations of physical boundaries and adjoining land uses, the potential for growth of the proposed development is considered limited and confined which will have a negligible impact.

The parameters for the future development of the area in the vicinity of the subject site are governed by the CDP. The future (re)development of adjacent lands will be the subject of separate planning applications in the future, where they are identified as being suitable for development, and where the provision of the requisite physical and other infrastructure is available.

3.24.2 Description of Secondary and Off-Site Developments

No significant secondary enabling development is deemed necessary to facilitate the proposed development. The planning application includes details of the necessary road works, which are required to facilitate this development. These works are assessed within this Environmental Impact Assessment Report.

3.24.3 Risks of Major Accidents and/or Disasters

The surrounding context consists of a mix of residential, agricultural, employment, educational and open space public amenity lands. It does not include any man-made industrial processes (including SEVESO II Directive sites (96/82/EC & 2003/105/EC) which would be likely to result in a risk to human health and safety.

Article 3 of the Environmental Impact Assessment (EIA) Directive 2014/52/EU, requires the assessment of expected effects of major accidents and/or disasters within an EIA. Article 3(2) of the Directive states that *"The effects referred to in paragraph 1 on the factors set out therein shall include the expected effects deriving from the vulnerability of the project to risks of major accidents and/or disasters that are relevant to the project concerned".*

3.25. Construction Phase

Upon a grant of permission under the LRD process, the Construction Phase would be expected to commence in Q1 2025, and accordingly, the projected completion of the buildings by Q4 2029.

The Construction Environmental Management Plan (CEMP) and Resource & Waste Management Plan (R&WMP), which are included with this LRD planning application, should be referred to for more detail on the Construction Phasing and Environmental Measures associated with same. The appointed Contractor will prepare a detailed final CEMP, including detailed construction phasing and a Traffic Management Plan (TMP).

3.26. Description of the Operational Phase

The proposed development consists of residential apartments in buildings ranging in height from 7 to 13 no. storeys. The proposed development also provides for 3 no. retail units, a medical suite / GP Practice unit at ground floor level facing onto Santry Avenue and Swords Road. The development also includes c.1,460m² of floorspace dedicated to community/arts/cultural uses at ground floor level of Blocks C-D and E-F, and a residential amenity unit (c.166m^2) at ground floor level located between Blocks A and D.

The primary direct significant environmental effects will arise during the Construction Phase. As a result, the Operational Phase of the development is therefore relatively benign and not likely to give rise to any significant additional impacts in terms of activities, materials or natural resources used or effects, residues or emissions which are likely to have a significant impact on human beings, flora and fauna, soils, water, air and climate.

3.27. Related Development and Cumulative Impacts

The proposed development also has the potential for cumulative, secondary and indirect impacts particularly with respect to such topics as traffic which in many instances are often difficult to quantify due to complex inter-relationships. However, all cumulative, secondary and indirect impacts are unlikely to be significant and, where appropriate, have been addressed in Chapter 16 (Interactions) and the cumulative impacts are fully addressed in the relevant specialist Chapters of this EIAR.

Each Chapter of the EIAR includes a cumulative impact assessment of the proposed development with other planned projects in the immediate area. The potential cumulative impacts primarily relate to traffic, dust, noise and other nuisances from the construction of the development, with other planned or existing projects, and each of the following EIAR chapters has regard to these in the assessment and mitigation measures proposes.

As such, with the necessary mitigation for each environmental aspect, it is anticipated that the potential cumulative impact of the proposed development in conjunction with the other planned developments will be minimal.

Part B – Effects on the Environment

4.0. Population and Human Health

4.1. Introduction

This chapter of the EIAR provides an assessment of the potential impacts of the development proposal on human beings, population, and human health within the vicinity of the application site and an assessment of these issues.

One of the principal concerns in the development process is that people, as individuals or communities, should experience no diminution in their quality of life from the direct or indirect impacts arising from the construction and operation of a development. Ultimately, all the impacts of a development impinge on human beings, directly and indirectly, positively and negatively.

The potential impacts on people identified in this EIAR, arising from the proposed development, relate to noise and dust nuisance, visual amenity and traffic etc. Most of these issues are addressed in specific chapters within the EIAR, including the risk of major accidents / disasters associated with same.

This Chapter has been prepared by Armstrong Fenton Associates Planning Consultants (Tracy Armstrong, BA, MRUP, MIPI, MRTPI).

4.2. Assessment Methodology

European Commission guidance relating to the implementation of the 2014 Directive, in reference to "human health" states: *"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 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*[4]".

The assessment involved a desktop study of the relevant planning sources and other demographic information relevant to the area outlined in Chapter 2 of this EIAR and information from the Central Statistics Office (CSO).

Census information used in this chapter has been divided into State, County, Town and District Electoral Division (DED) level where possible. While the primary focus of this EIAR is the lands located within the immediate vicinity the development proposal i.e. Santry lands, Census statistics at a DED level have been used to assess the effects on the existing population as the DED level data generally provides the most accurate picture of existing population in the vicinity of a development. The proposed development lies within Whitehall C DED, as shown in Figure 4.1, with the 2022 Census declaring the total population of the Whitehall C DED as 2,908 persons.

Based on this study, it was possible to consider the presence, importance and sensitivity of the population and the potential likely significant impacts on both the local and wider community. Based on these sources, the assessment involved a desk study of a range of planning and other sources. A profile of the residential communities adjacent to the proposed development is presented under the following headings:

- Land Use/ Settlement Patterns;
- Population Growth;

[4] *Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report,* European Commission, 2017 http://ec.europa.eu/environment/eia/eia-support.htm

- Socio-economic Profile;
- Community Facilities;
- Movement and Transportation.
- Landscape and Visual
- Human Health

Chapter 1 of this EIAR noted the likely environmental effects which were assessed at a Strategic Level as part of the CDP. The public was consulted in the making of the CDP and their views taken into account by DCC in finalising and adopting the CDP.

Perceptions of the proposed development are subjective however it is considered that the impacts presented are representative of the impacts on the majority of those residing/working within the study area.

4.2.1. Significant of Impacts

In line with the EPA's "*Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports"* (EPA, 2017); seven generalised degrees of impact significance are used to describe impacts as detailed in Table 4.1 below.

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

Table 4.1 Definition of Significance of Effects

In addition, the following terms detailed in Table 4.2 & 4.3 below are defined when quantifying the quality of effects and the duration and frequency of effects.

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

Table 4.2 Definition of Quality of Effects

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

Table 4.3 Definition of Duration of Effects

4.3. Characteristics of Proposed Development

The development proposal is described in detail in Section 1.2 of this EIAR. The development proposal comprises of, *inter alia*, 321 no. residential dwellings, 3 no. retail units and a medical suite / GP Practice unit at ground floor level facing onto Santry Avenue and Swords Road. The development also provides c.1,475sq.m of floorspace dedicated to community/arts/cultural uses on the ground floors of Blocks C-D and E-F, and a residential amenity unit (c.166m^2) at ground floor level located between Blocks A and D, public and communal open spaces and all associated site development works.

Vehicular access to the proposed development will be via two proposed access points: (i) on Santry Avenue and (ii) off Swords Road, and as permitted under the adjoining development at Santry Place. Permission is sought for the demolition of the existing buildings on site (4,196.8m^2).

4.4. The Existing Receiving Environment (Baseline Situation)

4.4.1. Introduction

A description of the relevant aspects of the current state of the environment (baseline scenario) in relation to population and human health is provided below.

The existing environment is considered in this section under the following headings:

- Land-Use Planning / Settlement Patterns;
- Population Growth
- Socioeconomic Profile
- Community and Outdoor Facilities
- Movement and Transport
- Landscape and Visual
- Human Health

4.4.2. Study Area

The application site measures c. 1.5 hectares and forms part of the lands zoned *'Z3'* in the CDP which permits in principle residential development. The application site is bounded to the north by Santry Avenue, to the east by Swords Road, to the south by the permitted Santry Place development (Ref.s 2713/17, 2737/19 & 4549/22) and to the west by the Santry Avenue Industrial Estate.

The application site is currently occupied by the Chadwicks (formerly Heiton Buckley) building providers in a large industrial type building and associated yard.

The primary focus of this EIAR are the lands in the immediate vicinity of the application site. The entirety of the development site is contained within the Whitehall C DED. A DED is the smallest area for which Census statistical data is published and therefore provides a detailed analysis of population fluctuations and demographic trends. For purpose of this EIAR, the "study area" is therefore the Whitehall C DED.

The EPA Guidelines (2002) and Advice Notes (2003) identify sensitive receptors as neighbouring landowners, local communities and other parties which are likely to be directly affected by the project. In particular homes, hospitals, hotels, schools, community facilities and commercial premises are noted. Regard is also given to transient populations including drivers, tourists and walkers.

The sensitive receptors impacted upon by Air, Noise and Visual effects are identified in the relevant Chapters of this EIAR (Chapters 8, 10 and 15 respectively). The existing receptors specifically relevant to this Chapter include:

- The residents of the Santry Place to the south of the subject site and the former "*Swiss Cottage"* site to the south-east
- Users of Santry Demesne Park to the north
- Staff of the Santry Avenue Industrial Estate to the west of the subject site

Future receptors will be the residents of the proposed development and the users of the proposed 3 no. retail units and medical suite / GP Practice unit at ground floor level facing onto Santry Avenue and Swords Road, the proposed community/arts/cultural floorspace at ground floor level of Blocks C-D and E-F and the residential amenity unit at ground floor level located between Blocks A and D.

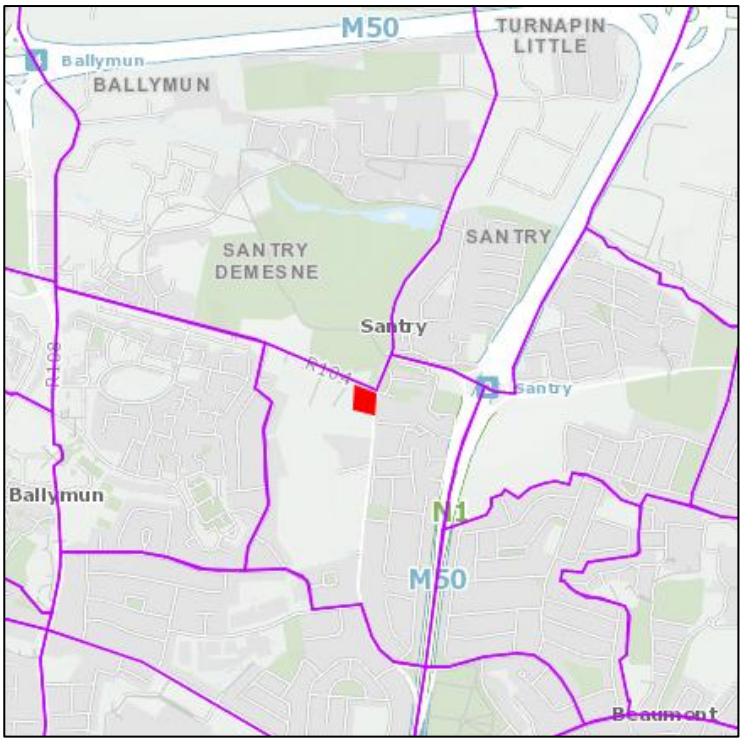


Figure 4.1 Whitehall C DED (subject site in red)

4.4.3. Land Use Planning/Settlement Patterns

The application site is currently occupied by the Chadwicks (formerly Heiton Buckley) builder's providers in a large industrial type building and associated yard. There is no other relevant or significant planning history attached to the site.

To the immediate west of the site is Santry Avenue Industrial Estate. The application site is bounded to the north by the Santry Avenue, north of which lies Santry Demesne Park. To the south of the subject site, the permitted Santry Place development (Ref.s 2713/17, 2737/19 & 4549/22), is currently being developed by the Applicant. To the east, the site abuts Swords Road.

Within the study area, the existing settlement pattern provides for a varied mix of uses including residential, light industrial, recreational, retail and service uses. Residential and proposed residential uses occupy the largest proportion of the study area. Enterprise and employment uses are concentrated to the south of the study area. Education, community and institutional uses also permeate the study area.

4.4.4. Population Change

For the purposes of population evolution and growth forecasting, this EIAR has examined Census results from both the 2016 and 2022 Census in terms of the State, County and Local Level i.e. both the catchment area of Santry and the Whitehall C DED. The Study Area for the purposes of this methodology is therefore the Whitehall C DED.

The Whitehall C DED experienced increase in population between 2016 and 2022 with the population increasing by 755 persons from 2016 to a total population of 2,908 persons in 2022. This equates to a increase of circa 25% for the study area over the five year period. Prior to this, the Whitehall C had a decline rate of circa 1.9 % between 2011 and 2016.

Please refer to Table 4.4 below for details of population changes at State, County and Local Level from 2016 to 2022.

	2016 Population	2022 Population	Actual Change	% Change
State	4,761,865	5,149,139	387,274	7.5%
Dublin County	1,347,359	1,458,154	110,795	7.5%
Santry Catchment Area	15,679	16,125	446	2.7%
Whitehall C DED	2,153	2,908	755	25%

Table 4.4 Population Change at State, County and Local Level 2016-2022

In addition to the resident population, there is also a significant working population within the study area.

4.4.5. Socioeconomic Profile

The socio economic profile of the study area is presented using 2016 and 2022 Census data under the headings of household formation, age profile, dependant age cohorts (0-14 and 65+ years), the working age group (15-64 years) and the 25-44 age cohort.

4.4.5.1. Household Formation

The 2022 Census results state that the total number of households in the study area was 1,131. This is a increase of 307 no. dwellings (27% change) from the 2016 Census.

The average household size for the State as a whole was 2.74 persons in 2022 with county Dublin having average household size of 2.76. Based on the above, the study area has a generally consistent household size when compared with both the State as a whole and county Dublin.

4.4.5.2. Age Profile

This section provides a comparative demographic breakdown of the study area with Whitehall C DED, County Dublin and the State. For the purposes of analysing the receiving environment, three factors will be examined:

(i) the dependant population (i.e. those persons within the 0-14 and 65+ age cohorts)

(ii) the working/independent population (i.e. those persons residing in the 15-64 year age cohorts) and

(iii) those persons within the family formation age cohorts, aged 25-44

Tables 4.5 & 4.6, below, detail the demographic breakdown of the Whitehall C, Dublin City and the State from both the 2016 and 2022 Census.

	0-14 years	15-24 years	25-44 years	45-64 years	65+ years	Total Population
State	1,006,552	576,542	1,406,291	1,135,003	637,567	4,761,865
Dublin City	83,213	73,265	207,338	118,383	72,355	554,554
Santry Catchment Area	2,410	3,160	4,279	3,248	2,582	15,679
Whitehall C	322	300	585	549	397	2,153

Table 4.5 Age Profile at State, County and Local Level 2016

	0-14 years	15-24 years	25-44 years	45-64 years	65+ years	Total Population
State	1,012,287	644,771	1,422,424	1,293,342	776,315	5,149,139
Dublin City	88,603	76,176	216,141	132,425	79,368	592,713
Santry Catchment Area	2,296	2,452	5,071	3,710	2,596	16,125
Whitehall C	391	380	1,107	616	414	2,908

Table 4.6 Age Profile at State, County and Local Level 2022

Tables 4.7 & 4.8, below, detail the percentile of each age cohort in Whitehall C DED, County Dublin and the State from both the 2016 and 2022 Census.

	0-14 years	15-24 years	25-44 years	45-64 years	65+ years
State	21.1%	12.1%	29.5%	23.8%	13.4%
Dublin City	15.0%	13.2%	37.4%	21.3%	13.0%
Santry Catchment Area	15.4%	20.2%	27.3%	20.7%	16.5%
Whitehall C DED	15.0%	13.9%	27.2%	25.5%	18.4%

Table 4.7 Age Profile as percentile at State, County and Local Level 2016

	0-14 years	15-24 years	25-44 years	45-64 years	65+ years
State	19.7%	12.5%	27.6%	25.1%	15.1%
Dublin	14.9%	12.9%	36.5%	22.3%	13.4%
Santry Catchment Area	14.2%	15.2%	31.4%	23.0%	16.1%
Whitehall C DED	13.4%	13.1%	38.1%	21.2%	14.2%

Table 4.8 Age Profile as percentile at State, County and Local Level 2022

Figure 4.2, below, illustrates the demographic breakdown of age cohorts in Whitehall C DED, Santry Catchment Area, County Dublin and the State from the 2022 Census

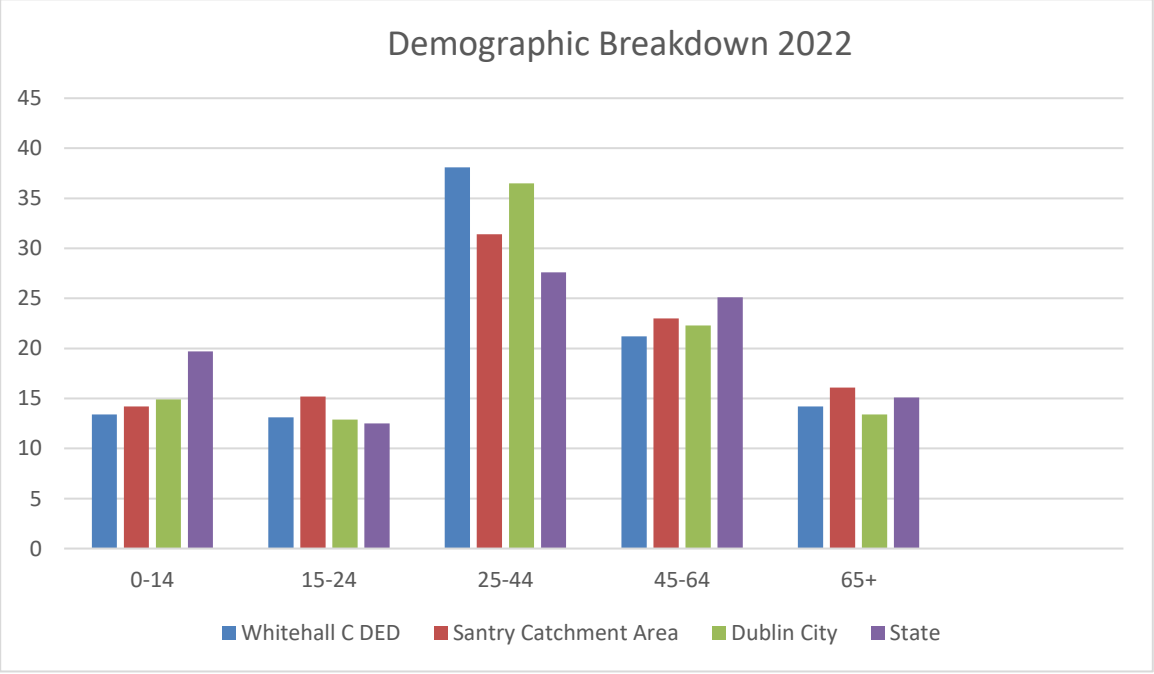


Figure 4.2 Age profile of the defined areas 2022

4.4.5.3. Dependant Age Cohorts (0-14 and 65+ years)

The proportion of dependants (aged 0-14 and 65+ years) within the study area was recorded at 30.3% of the population in the 2022 Census. This is a slight decrease from the 2016 Census results which recorded the age dependant cohort within the study area at 31.9%.

The proportion of dependants (aged 0-14 and 65+ years) for the State as a whole was recorded at 34.8% of the population in the 2022 Census. This is a slight increase from the 2016 Census results which recorded the age dependant cohort for the State at 34.5%.

Based on the above, the study area can be seen to be not following the national trend for an increase in the age dependant cohort. At the study level, the younger age group (0-14 years) represents the minority of the age dependant cohort (44% of the study area dependant age population and 56% of the State dependant age population).

These figures indicate that the study area has a slightly older population likely made of up older dependants than young families. It is evident that it is the 65+ age cohort that contributes most heavily to the dependant population, which has implications for the level and type of service provision across CDP area with a likely demand for retirement care facilities. However, it should be noted that the split of the dependant age cohorts is a 44/56 split and as such over the next decade the younger proportion of this age cohort will move into the working age groups and will likely increase pressure on future housing demands

4.4.5.4 The Working Age Group (15-64 years)

The Working Age Group is defined as those persons residing within the 15-64 year age cohort. The majority of the population, in all areas examined, resides within this age cohort, which again reflects the youthful population structure of the study area and the State as a whole.

The working age group demographic within the study area represented 69.6% of the population in the 2022. This is a slight increase from the 2016 Census results which recorded the working age group demographic within the study area at 66.6%.

The working age group demographic for the State represented 65.2% of the population in the 2016. This is a slight decrease from the 2016 Census results which recorded the working age group demographic for the State at 65.4%.

Based on the above, the study area can be seen to be not following the national trend for a decrease in the working age cohort. Notwithstanding same, the high percentile of the working age group residing in the study area (69.6% of the population) has implications on demand for housing, services, etc. in order to service this population age, which the proposed development may contribute to satisfying this demand.

4.4.5.5. The 25-44 Age Cohort

The 25-44 age cohort is most likely to look to purchase a home, start a family and settle into a long-term community. It is therefore important to analyse this age cohort in particular as they will have the greatest impact on the social and economic conditions for the short and medium term, with regard to housing, employment and childcare facilities.

The 25-44 age cohort within the study area represented 31.4% of the population in the 2022. This is a slight increase from the 2016 Census results which recorded the 25-44 age cohort within the study area at 27.3%.

The 25-44 age cohort for the State as whole represented 27.6% of the population in the 2022. This is a slight decrease from the 2016 Census results which recorded the 25-44 age cohort for the State at 29.5%.

For both the study area and the State the 25-44 age cohort represents the largest age demographic of the population. It is considered that the current demand for housing reflects the large percentage of this age cohort in the existing population. It is largely this age cohort that begins to have families and set up independent households, all of which has medium and long term social and economic implications and impacts on the demand for housing. The provision of housing for these group will also have an impact on workforce retention and therefore future economic growth of the area.

4.4.6 Community and Outdoor Facilities

The subject site area and its environs are well served with a range of existing community facilities.

To the immediate north of the subject lands, Santry Demesne hosts a number of sporting and recreation facilities, including the Morton Stadium, Clonliffe Harriers Athletic Club, Trinity College Sports Ground and playing fields and open areas.

South of the subject site the Omni Shopping Centre is located, providing retail options, restaurants and cinema. Numerous creche, national schools and secondary schools are within a 2km catchment area of the site also. Trinity Comprehensive School, Ballymun Comprehensive School and St. Aidan's CBS are within that stated catchment area.

The Whitehall C DED also includes a number industrial centres with a wide variety of businesses operating from there. Please refer to the Social Infrastructure Assessment which accompanies the planning application for a complete list of said businesses.

4.4.7 Movement and Transport

4.4.7.1. Road Network

Vehicular access to the development will be via 2 no. existing / permitted access points: (i) on Santry Avenue in the north-west of the site (ii) off Swords Road in the south-east of the site, as permitted under the adjoining Santry Place development (Ref. 2713/17).

4.4.7.2. Pedestrian & Cycle Network

The proposed development also provides for pedestrian and cyclist access from both Swords Road and Santry Avenue, whilst enabling direct access to the permitted development south of the application site at Santry Place. The proposed connections are made in compliance with Greater Dublin Area Cycle Network Plan, 2013 and the Transport Strategy for the Greater Dublin Area 2016-2035.

The front of the site will be highly accessible to pedestrians with the opening up of the lands to the public realm, as opposed to the current gated situation as a result of the existing builders merchants. In addition, a strong, pedestrian frontage on Santry Avenue and Swords Road will be provided, providing access for the public to access the proposed commercial units, open spaces and residential units, through the set back of the buildings from the public realm.

4.4.7.3. Public Transport

The site is served well by public transport. The subject lands are in close proximity to a high frequency public transport (Swords Road Quality Bus Corridor and the planned BusConnects corridor), and the accessibility of M50 / M1 motorways. The current layout of the proposed development also takes into account the latest route proposal[5] along Swords Road for BusConnects and will not impact on the delivery of same.

4.4.8. Landscape and Visual

The application site measures c. 1.5 hectares and is currently occupied by Chadwicks Builders Merchants (formerly Heiton Buckley Builders Merchants) in a large industrial type building with an associated yard and car parking. The site is roughly square in shape and is generally level with the road but raises slightly at the southern end.

The existing boundary to the Swords Road comprises a steel fence and mature hedging, while the boundary at Santry Avenue, consists of a low wall with a steel fence on top. Existing vehicular access to the site is from Santry Avenue to the north.

The site is currently fenced off from the Santry Place development to the south, and the existing access to same from the Swords Road; however, the proposed development will see integration between permitted and proposed developments in this regard upon completion of both developments.

As part of the subject application, a number of views have been taken from sensitive points where the site maybe visible from third party lands. Verified views and 3D CGI's have been prepared by 3D Design Bureau and are submitted as separate document(s) as part of this SHD planning application. In addition, Chapter 14 "*The Landscape*" of this EIAR takes into account the visual receptor sensitivity from the selected view locations.

[5] Core Bus Corridor No. 2 – Swords to City Centre - Preferred Route Corridor – information taken from Map No. 19 from the corridor information Brochure (Third Round of Public Consultation November 2020 – www.busconnects.ie)

4.4.9. Human Health

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

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

Health Status of Whitehall C	Very Good	Good	Fair	Bad	Very Bad	Not Stated
Total no. of People	1,524	821	253	37	12	261
Total % of People	52.4%	28.2%	8.7%	1.3%	0.4%	9.0%

Table 4.9 Health Status of Whitehall C DED

Table 4.9 above shows that most people (a combined 80.6%) in the Whitehall C DED have identified themselves as being in '*very good'* or *'good'* health.

4.5. Construction Impacts, Mitigation and Monitoring Measures

Overall, subject to adherence to best practice and implementation of appropriate mitigation measures detailed below and elsewhere in this EIAR, the overall temporary impacts associated with the construction phase (excluding employment ,which will be positive) are considered to be negative and slight/moderate.

The main areas of impact are as follows:

Population and Demographic

There will be no impact on the demographic profile during the Construction Phase.

Residential Amenity

Construction of the proposed development will last for approximately five years. During this time, the proposed development will cause a certain amount of loss of amenity, disruption and inconvenience to local residents, particularly the residents of the existing Santry Place and Swiss Cottage residential developments located to the south and south-east and users of Santry Demesne Park to the north.

These impacts will be related to construction traffic (particularly HGVs) and travel disruption and also to the generation of noise and dust which is generally associated with the construction of such infrastructural projects. These issues are considered elsewhere in this EIAR and mitigation measures identified. In particular, the access constraints arising in respect of receptors are considered in Chapter 12 - Materials Assets: Transportation, and impacts arising from the generation of noise and dust are considered in

Chapter 8 - Air Quality and Chapter 10 Noise and Vibration respectively. The visual impacts of the development are considered in Chapter 14 – The Landscape.

The overall impacts associated with the construction phase are temporary/short term and moderate.

Land Take, Use and Planning Policy

The construction works associated with the proposed development will generally be contained within the application site boundary and the lands under the control of the applicant. The development proposal is for a residential development on lands zoned to accommodate / permit for such use.

Planning Permissions

It is possible that other construction projects may be taking place at the same time as the proposed development. Where relevant, the cumulative effect of any adjoining projects being under construction at the same time will be considered in the relevant sections of this EIAR, which have also been considered under the aforementioned environmental reports and EISs/EIARs for the subject and adjoining lands.

Employment

During the Construction Phase, the proposed development will have a short-term positive effect in terms generating economic activity. It is anticipated that up to c.200 no. construction personnel will be employed either directly or indirectly during the Construction Phase which is anticipated to extend over a period of approximately 60 months. Apart from the direct employment associated with the project, additional employment will be generated through the multiplier effect. In this case, the multiplier effect refers to the indirect impact that new spending has when it is circulated through the local economy. In the context of the overall economy of the area, the impact of the project in terms of employment (direct and indirect) will be slight and positive.

Travel and Commuting

During the Construction Phase there will be some traffic impacts on the receiving environment by virtue of the works related traffic. Measures to address these impacts are detailed in the R&WMP and they will be slight and short-term.

Health and Safety

The construction of any project of this nature has potential to give rise to an impact on health and safety of human beings if such activities are not managed properly. These concerns are addressed in the R&WMP and Outline CMP submitted as part of this planning application.

Landscape and Visual

Impacts on the visual amenity of the surrounding area are fully addressed in Chapter 14 Landscape of this EIAR. During the Construction Phase, general construction, disturbance and site development has the potential to result in significant temporary and short-term negative landscape and visual impact on the surrounding areas.

Human Health

The proposed development is likely to give rise to a short-term direct negative impact on the surrounding settlements during the Construction Phase, in particular the existing Santry Place and Swiss Cottage residential developments located to the south and south-east. This will be a short-term significant effect on a localised scale and this is further discussed in Chapter 8 (Air Quality) Chapter 10 (Noise) and Chapter 15 (Landscape and Visual Amenity) of this EIAR.

The Construction Phase will result in an element of noise, mobility of heavy vehicles, dust and the arrival and departure of construction workers into the area. This impact will be negative, short-term, significant and localised.

Mitigation

Mitigation measures for the Construction Phase are outlined in each of the relevant chapters (No.s 4-14) and are also provided in Chapter 16 "*Summary of EIA Mitigation and Monitoring Measures*". During the Construction Phase a number of mitigating measures should be considered, including *inter alia:*

- Maintain a Construction Environment Management Plan (CEMP) in effect for duration of works;
- Restrict working hours from 07:00 to 18:00; Monday to Friday and from 08:00 to 14;00 on Saturdays. No general works are envisaged to be carried out on Sundays. Should there be a need to work Sundays/Bank Holidays, a written request will be made to DCC for permission to do so. Any conditions from DCC relating to out of hours working will be followed including any required notifications to relevant parties;
- Maintain a Traffic Management Plan (TMP) in effect for duration of works;
- The CEMP will be agreed with the Planning Authority upon receipt of planning permission. The construction of the proposed development shall adhere to the relevant provisions of this Plan; and;
- As part of the CEMP, maintain a Dust and Noise abatement plan in operation.

Monitoring

Measures to monitor potential negative effects on people in respect of noise, air, traffic etc. are included in the following relevant Chapters of this EIAR.

In respect of the impacts assessed above, the contractor will monitor development during the construction phase to ensure compliance with the parameters of the Construction Management Plan. Remedial action will be taken, if required, to ensure construction activities conform to its requirements.

Reinstatement

It is not considered that reinstatement works are required during the Construction Phase.

4.6. Operational Impacts, Mitigation and Monitoring Measures

Population and Demographic

During the Operational Phase of the proposed development, the demographic profile will change with additional people moving into the locality. The changing demographic profile during the Operational Phase of the proposed development is likely to ensure a balanced age profile within the local area. Projected residential population from the proposed development will be approximately 880 persons. This is based on the average number of persons per household 2.74 persons.

The impact on population is considered to be permanent but slight, and appropriate to the land-use zoning designation for the site, and the Core Strategy of the Development Plan.

Residential Amenity

All of existing local amenities will remain in place during the Operational Phase of the proposed development. Furthermore, the potential viability of these amenities going forward will be strengthened from the increased population of the area. The population increase will result in a greater demand for community and outdoor facilities in the study area. The CDP's zoning of the subject site has made provision for the development of new community facilities and requires for a detailed land use and function strategy, which sees the Developer provide for the delivery of 3 no. retail units and a medical suite / GP Practice unit on the subject lands. The subject development proposal also includes for over 1,470sq.m of floorspace dedicated to community/arts/cultural uses as well as a residential amenity unit which will act as focal points for future residents.

Therefore, the effects on community and amenities is deemed to be slightly positive or neutral in the long-term.

Land Take, Use & Planning Policy

The existing CDP set out the overall land use patterns for the lands on which this residential project is proposed. The nature of the development is permanent and will in time change the character of the area from a brownfield site to residential. The proposed land use (i.e. residential, open space, amenity and employment) and will not impact on human health. Overall, the impact on land use and settlement is considered to be moderate, permanent and positive.

Planning Permissions

It is possible that other construction projects may be take place subsequent to the carrying out of the development of the subject application (should it be permitted). The development proposal is put forward in compliance with the land use and function set out for the lands in the CDP. Future development during the operational phase will be subject to the planning process and compliance with planning policy.

Employment

During the Operational Phase, the proposed development will have a slight, positive long-term impact. The proposed development will result in the creation of jobs associated with the proposed 3 no. retail units and a medical suite / GP Practice unit, permanent apartment building management jobs and transient employment in the proposed floorspace dedicated to community/arts/cultural uses and residential amenity unit. Other associated jobs such as gardening and window cleaning, with spin-off economic activity created for local retail and service providers.

Travel and Commuting

During the Operational Phase of the proposed development, there are likely to be some impacts on the receiving environment in relation to travel and commuting. The proposed development will provide additional people to sustain the public transport network. The impact due to the increase in number of persons potentially travelling and commuting will be significant and permanent, with a neutral long-term effect. Detailed information on the traffic impacts of the proposed development are set out in Chapter 11 Material Assets: Transportation.

Health and Safety

The operational phase of the development is unlikely to give rise to any additional risks of health and safety on human beings. Maintenance and building management plans will form part of the programme of development upon receipt of a grant of permission.

Landscape and Visual

The proposed development is designed to seamlessly integrate into the surrounding urban context. A Daylight & Sunlight Analysis, prepared by Chris Shackleton Consulting, demonstrates that the proposed heights will not negatively impact the amenity areas of the development. Therefore, during the Operational Phase, the landscape or visual impacts arising from the proposed development will be not significant from these areas. Chapter 14 of this EIAR examines the landscape visual impact of the proposed development in detail.

Human Health

The changes in the area will have a positive impact in terms of changing the age profile and increasing the longevity of local schools and facilities. The proposed development will create a modern living environment adjacent to a wide range of amenities, within easy commuting distance of Dublin city centre, providing locally positive health benefits to its residents.

Mitigation

Where relevant, mitigation measures to address the potential impacts of noise, air traffic etc. on people are included in the appropriate chapters of this EIAR. No likely significant impacts have been identified for population, or land use, accordingly no mitigation measures are required for the Operational Phase.

The proposed development has been designed to avoid significant impacts in relation to local amenities and recreational facilities by:

- Incorporating the provision of a over 1,470sq.m of floorspace dedicated to community/arts/cultural uses within the design proposal;
- Incorporating the provision of a new residential amenity facility within the design proposal;
- Incorporating the provision of 3 no. retail units and a medical quite / GP Practice Unit within the design proposal;
- The provision of c.1,791 sq.m of public open space representing c. 12% of the site area.

Accordingly, no further mitigation measures are required.

Monitoring

No additional monitoring is proposed for the Operational Phase other than that proposed in other Chapters of this EIAR.

Reinstatement

It is not considered that reinstatement works are required during the Operational Phase.

4.7 Residual Impacts

The residual effects of the construction and operational phase of the project on the socio-economic character of the area and the local community (i.e. population and human health), subject to the implementation of the various mitigation measures outlined in this EIAR are identified as follows:

- The development will facilitate the implementation of the CDP proposals for the subject lands;
- The proposed development will provide new pedestrian and cycling links through the subject site connecting to the public realm and onwards to Santry Demesne Park.

4.8 Interactions

As noted above, there are numerous inter-related environmental topics described in detail throughout this EIAR which are of relevance to human health. During the Construction Phase noise, air, traffic and consumption of materials will be the key environmental factors that will have an impact on population and human health.

This chapter of the EIAR has been instructed by updated guidance documents reflecting the changes within the 2014 EIA Directive. These documents are the Draft Guidelines on the information to be contained in environmental impact assessment reports, published by the EPA in August 2017 and the Key Issues Consultation Paper on the Transposition of 2014 EIA Directive (2014/52/EU) in the Land Use Planning and EPA Licencing Systems, published by the Department of Environment, Community and Local Government in May 2017. In line with the guidance documents referred, this chapter of the EIAR focuses primarily on the potential likely and significant impact on Population and Human Health in relation to health effects/issues and environmental hazards from the other environmental factors and interactions that

potentially may occur.

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.

However, the reader is directed to the relevant environmental topic chapter of this EIAR document for a more detailed assessment.

During the Operational Phase, it is anticipated that water and traffic will be the key environmental factors impacting upon population and human health during the Operational Phase as a new residential landscape will be created. The increase in population will result in increased traffic and increased demands on water supply and increased requirements for wastewater treatment. These are addressed in the appropriate sections of this EIAR.

4.9 Reinstatement

While not applicable to every aspect of the environment considered within the EIAR, certain measures may be proposed to ensure that in the event of the proposal being discontinued, there will be minimal impact to the environment.

There are no reinstatement works proposed specifically with respect to population and human health.

4.10 Cumulative Impacts

An increase in local housing, and some increase in employment opportunities and service provision (commercial / retail units, residential amenity unit and community use unit) have the potential to generate direct, indirect impacts. The visual appearance of the landscape will be altered with the introduction of the proposed built elements including infrastructure, in cumulation with other development in the area. Implementation of the remedial and reductive measures in respect of noise/traffic management etc. in the EIAR would ensure a minimal impact on the existing communities of this area during the construction phase.

The development of the proposed scheme will open up the lands to improved connectivity from Santry Place to the south to Santry Demesne Park to the north whilst also catering for public transport services and will require works that will likely entail some localised impacts to residents. It is anticipated that a Construction Traffic Management Plan would be agreed with DCC, by the contractor. The objective of which is to minimise the short term disruption to existing local residents.

There will be some short term impacts during the construction phase as the infrastructural / site development works are undertaken, particularly in respect of traffic management with regards to sensitive receptors. This may cause local short term inconvenience and disturbance to residents in the vicinity of the works. However, the works would normally be undertaken in sections on a phased/rolling programme so that the number of persons experiencing local inconveniences at any one time is kept to a minimum.

4.11 Difficulties Encountered in Compiling

No difficulties were encountered when compiling this Chapter.

4.12 *'Do Nothing'* Scenario

A do-nothing scenario would result in the site remaining in brownfield use. If the proposed development were not to proceed there would be no immediate impact on the existing population, or economic activity for residents living in the area.

If the lands were to remain undeveloped, this would be an under-utilisation of zoned lands from a sustainable planning and development perspective, particularly considering the location of the lands and the objectives of the CDP. The positive benefits to the national, regional and local community arising from implementing the residential development proposals of the CDP for the subject lands would therefore not materialize.

4.13 References

- Central Statistics Office www.cso.ie
- Dublin City Development Plan, 2022-2028
- Healthy Ireland Framework, 2013-2025

5.0. Biodiversity

5.1 Introduction

5.1.1 Overview and Aims

Enviroguide Consulting was commissioned by Dwyer Nolan Developments Limited to prepare this Biodiversity Chapter of an Environmental Impact Assessment Report (EIAR) as part of an application for a Large-scale Residential Development (LRD) at the Junction of Santry Avenue and Swords Road, Santry, Dublin 9, hereafter referred to as 'Proposed Development' or 'Site' when referring to the site area of the Proposed Development.

A separate stand-alone Appropriate Assessment (AA) Screening Report is also included in the planning application documentation. Under Article 6(3) of the Habitats Directive a screening for '*appropriate assessment'* of projects must be carried out to determine if significant effects are likely to arise to 'European sites' or 'Natura 2000 sites'. This assessment is carried out by the competent authority, in this case Dublin City County Council.

This Biodiversity Chapter details the Ecological Impact Assessment (EcIA) of the Proposed Development and assesses the potential effects of the Proposed Development on habitats and species; particularly those protected by national and international legislation or considered to be of particular nature conservation importance on or adjacent to the Site. This chapter will describe the ecology of the Site, with emphasis on habitats, flora and fauna, and will assesses the potential effects of the Construction and Operational Phases of the Proposed Development on these ecological receptors. The chapter follows Guidelines for Ecological Impact Assessment in the UK and Ireland, by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018) and supplemented by the National Roads Authority (2009) guidelines for Assessment of Ecological Impacts of National Road Schemes. The purpose of this chapter is to:

- Set out the methodologies used to inform the assessment.
- Identify Key Ecological Receptors (KERs) within the Zone of Influence (ZOI).
- Assess the impacts from the Proposed Development on the KERs and the resulting significant effects.
- Set out measures to avoid or mitigate negative impacts.
- Assess the residual effects after the incorporation of agreed avoidance or mitigation measures to ensure legal compliance.
- Set out agreed measures to offset significant residual effects.
- Set out opportunities for ecological enhancement.

5.1.2 Quality Assurance and Competence

Enviroguide Consulting is a multi-disciplinary consultancy specialising in the areas of the Environment, Waste Management and Planning. All of our consultants carry scientific or engineering qualifications and have a wealth of experience working within the Environmental Consultancy sectors, having undergone extensive training and continued professional development. Enviroguide Consulting as a company remains fully briefed in European and Irish environmental policy and legislation. Enviroguide staff members are highly qualified in their field. Professional memberships include the Chartered Institution of Wastes Management (CIWM), the Irish Environmental Law Association and Chartered Institute of Ecology and Environmental Management (CIEEM).

All surveying and reporting have been carried out by qualified and experienced ecologists and

environmental consultants. Eli Kane (EK) and Liam Gaffney (LG) of Enviroguide undertook the habitat, fauna and flora surveys and desktop research for this Chapter. Previous Bat surveys conducted as part of an SHD application at the Site were conducted by AW of Ash Ecology Environmental Ltd.

EK has a BSc in Psychology from the University of Maryland, USA and an MSc in Biodiversity and Conservation from Trinity College Dublin. His experience includes desktop research, literature-scoping review, and report writing as well as vegetation surveys, rare species surveys, and habitat mapping.

LG is a Senior Ecologist with Enviroguide and has a B.Sc. in Zoology (Hons) and a M.Sc. (Hons) in Wildlife Conservation and Management from University College Dublin and a wealth of experience in desktop research, literature scoping-review, and report writing; as well as practical field experience (Habitat surveys, winter bird surveys, large mammals, fresh water macro-invertebrates identification etc.) LG is experienced in compiling Biodiversity Chapters of EIARs, Ecological Impact Assessments (EcIA), Appropriate Assessment (AA) screening and Natura Impact Statements (NIS) reports, and in the overall assessment of potential impacts to ecological receptors from a range of developments. LG is also a Qualifying member of the Chartered Institute of Ecology and Environmental Management (CIEEM).

Professional Ecologist and director of Ash Ecology Environmental Ltd., MSc in Biodiversity and Conservation (TCD), A BSc (Hons) Zoology (NUIG), a Diploma in Applied Aquatic Sciences (GMIT), a Post Graduate Diploma in Statistics (TCD), and a Certificate in Environmental Noise (Institute of Acoustics); full membership of the Chartered Institute of Ecology and Environmental Management (CIEEM).

5.1.3 Legislative Context

An EcIA is a process of identifying, quantifying, and evaluating potential effects of development-related or other actions on habitats, species and ecosystems (CIEEM, 2018). When an EcIA is undertaken as part of an EIA process (in the form of an EIAR Biodiversity Chapter) it is subject to the EIA Regulations (under the Planning and Development Regulations 2001-2023). An EcIA is not a statutory requirement, however it is a best practice evaluation process. The EcIA detailed within this Biodiversity Chapter is provided to assist the Competent Authority with its decision making in respect of the Proposed Development.

There is a number of pieces of legislation, regulations and policies specific to ecology which underpin this assessment. These may be applicable at a European, National or Local level. Legislation at the International level relevant to the Proposed Development are listed below:

- *Council Directive 92/43/EEC* on the Conservation of Natural Habitats and of Wild Fauna and Flora; hereafter the 'Habitats Directive'.
- *Directive 2009/147/EEC*, hereafter the 'Birds Directive'.
- *Directive 2011/92/EU*, hereafter the 'EIA Directive'.
- EU Regulation 1143/2014, on Invasive Alien Species.
- *Convention on the Conservation of European Wildlife and Natural Habitats 1982*, hereafter the 'Bern Convention'
- *The Convention on the Conservation of Migratory Species of Wild Animals 1983*, hereafter the 'Bonn Convention'.
- *Ramsar Convention on Wetlands 1971*, hereafter referred to as 'Ramsar'.
- *Water Framework Directive 2000/60/EC*, hereafter the 'WFD'.

National legislation and policy relevant to the Proposed Development are listed below:

- Wildlife Act 1976, as amended in 2000.
- Flora (Protection) Order 2022.
- The Planning and Development Act 2000.
- National Biodiversity Plan 2023-2030.

Additionally, Natural Heritage Areas (NHAs) are designations under the Wildlife Acts to protect habitats, species, or geology of national importance. The boundaries of many of the NHAs in Ireland overlap with Special Areas of Conservation (SAC) and/or Special Protection Area (SPA) sites. Although many NHA designations are not yet fully in force under this legislation (referred to as 'proposed NHAs' or pNHAs), they are offered protection in the meantime under planning policy which normally requires that planning authorities give recognition to their ecological value.

Local plans and policies relevant to the Proposed Development are listed below:

- Dublin County Development Plan 2022-2028
- Dublin City Biodiversity Action Plan 2021-2025

Further details on legislation and policy relevant to the Proposed Development are detailed in Appendix 5.1.

5.2 Consultation

Consultation was undertaken between the client and Dublin City Council through the various LRD preapplication stages with regard to the Proposed Development. No further consultation with external bodies in terms of biodiversity was deemed necessary based on the nature of the Site of the Proposed Development and its inherent lack of significant ecological value based on the assessments detailed in this chapter.

5.3 Methodology

This study has been undertaken to support the Proposed Development planning application and assesses the potential impacts that the Proposed Development may have on the ecology of the Site and its environs. Where potential for a risk to the environment is identified, mitigation measures are proposed on the basis that by deploying these mitigation measures the risk is eliminated or reduced to an insignificant level.

This section details the steps and methodology employed to undertake an ecological impact assessment of the Proposed Development.

5.3.1 Scope of the Assessment

The specific objectives of the study were to:

- Undertake a baseline ecological survey of the site and evaluate the nature conservation importance of the site;
- Identify and assess the direct, indirect, and cumulative ecological implications or impacts of the project during its lifetime;
- Where possible, proposed mitigation measures to remove or reduce those impacts at the Design, Construction and Operational Phases; and

5.3.2 Desk Study

A desktop study was carried out to collate and review available information, datasets and documentation sources pertaining to the site's natural environment. The desk study, completed in February 2024, relied on the following sources:

- Information on species records and distributions, obtained from the National Biodiversity Data Centre (NBDC) at https://maps.biodiversityireland.ie/
- Information on waterbodies, catchment areas and hydrological connections obtained from the Environmental Protection Agency (EPA) at www.gis.epa.ie ;
- Information on bedrock, groundwater, aquifers and their statuses, obtained from Geological Survey Ireland (GSI) at www.gsi.ie ;
- Information on the network designated conservation sites, site boundaries, qualifying interests and conservation objectives, obtained from the National Parks and Wildlife Service (NPWS) at www.npws.ie ;
- Satellite imagery and mapping obtained from various sources and dates including Google, Digital Globe, Bing and Ordnance Survey Ireland;
- Information on the existence of permitted development, or developments awaiting decision, in the vicinity of the proposed development from Dublin City Council, available at: https://mapzone.dublincity.ie/MapZonePlanning/MapZone.aspx?map=PlanningApplication&search=Plan_Ref&tooltip=Plan_Ref and An Bord Pleanála .
- Information on the extent, nature and location of the proposed development, provided by the applicant and/or their design team;

A comprehensive list of all the specific documents and information sources consulted in the completion of this report is provided in 0, References.

5.3.3 Zone of Influence

The ZOI for a project is the area over which ecological features may be affected by changes as a result of the Proposed Development and associated activities. This is likely to extend beyond the development site, for example where there are ecological or hydrological links beyond the site boundaries (CIEEM, 2018). The ZOI will vary with different ecological features, depending on their sensitivities to an environmental change.

Furthermore, ZOI in relation to European sites is described as follows in the 'OPR Practice Note PN01 - Appropriate Assessment Screening for Development Management' (OPR, 2021):

> "*The zone of influence of a proposed development is the geographical area over which it could affect the receiving environment in a way that could have significant effects on the Qualifying Interests of a European site. This should be established on a case-by-case basis using the Source-Pathway-Receptor framework and not by arbitrary distances (such as 15 km).*"

5.3.4 Identification of Relevant Designated Sites

To determine the ZOI of the Proposed Development for designated sites, reference was made to the OPR Practice Note PN01 - Appropriate Assessment Screening for Development Management' (OPR, 2021), a practice note produced by the Office of the Planning Regulator, Dublin. This note was published to provide guidance on screening for AA during the planning process, and although it focuses on the approach a

planning authority should take in screening for AA, the methodology is also readily applied in the preparation of Biodiversity Chapters such as this to identify all relevant designated sites potentially linked to the Proposed Development.

As noted above, the most recent guidance advises against the use of arbitrary distances that serve as precautionary ZOI (e.g., 15km), and instead recommends the application of the Source-Pathway-Receptor (S-P-R) model in the identification of designated sites, stating that "*This should avoid lengthy descriptions of European sites, regardless of whether they are relevant to the proposed development, and a lack of focus on the relevant European sites and issues of importance*". Although this statement refers to European sites, it is also applicable to other designated sites.

Thus, the methodology used to identify relevant designated sites comprised the following:

- Identification of potential sources of effects based on the Proposed Development description and details;
- Identification of potential pathways between the Site of the Proposed Development and any designated sites within the ZOI of any of the identified sources of effects.
    - Water catchment data from the EPA (www.epa.ie) were used to establish or discount potential hydrological connectivity between the Proposed Development and any designated sites.
    - Groundwater and bedrock information used to establish or discount potential hydrogeological connectivity between the Proposed Development and any designated sites.
    - Air and land connectivity assessed based on Proposed Development details and proximity to designated sites.
    - Consideration of potential indirect pathways, e.g., impacts to flight paths, *ex-situ* habitats, etc.
- Review of Ireland's designated sites to identify those sites which could potentially be affected by the Proposed Development in view of the identified pathways, using the following sources;
    - European sites and nationally designated sites (e.g., NHAs and pNHAs) from the NPWS (www.npws.ie);
    - Ramsar sites from the Irish Ramsar Wetland Committee (https://irishwetlands.ie/irish-sites/);
    - Other internationally designated sites e.g., UNESCO Biosphere's; and
    - Regional development plans to identify any remaining sites or areas designated for nature conservation at a local level.

5.3.5 Field Survey Work

5.3.5.1 Habitat surveying, mapping and evaluation

Habitat surveys of the site of the Proposed Development were carried out by Enviroguide Ecologists on the 13th of May 2021 and the 14th of February, 2024. Habitats were categorised according to the Heritage Council's '*A Guide to Habitats in Ireland*' (Fossitt, 2000) to Level 3. The habitat mapping exercise had regard to the *'Best Practice Guidance for Habitat Survey and Mapping'* (Smith et al., 2010) published by the Heritage Council. Habitat categories, characteristic plant species and other ecological features and resources were recorded on field sheets. Habitats within the surrounding area of the Proposed

Development were classified based on views from the site and satellite imagery where necessary (Google Earth, Digital Globe and OSI).

5.3.5.2 Bird Surveys

Bird surveys were carried out in conjunction with the habitat and mammal surveys on the 13th of May 2021 and 14th of February 2024. The survey methodology employed was based on that recommended in standard literature used by for example the British Trust for Ornithology (BTO) (Gillings et al, 2007; Bibby et al, 1992 and Gilbert et al, 1998), which has subsequently been adapted into guidelines for ecological consultants by the Bird Survey & Assessment Steering Group. (2022). During the surveys, the Site was walked slowly, approaching all habitat within and adjacent to the Proposed Development and scanning and listening for birds. The locations of birds seen and heard were mapped using standard BTO codes and activity symbols.

5.3.5.3 Invasive Species Surveys

The Site was assessed for the presence of invasive plant species during the habitat surveys undertaken on the 13th of May 2021 and 14th of February 2024, with a particular focus on those listed on the Third Schedule of SI No. 477/2011, and their location and extent recorded.

5.3.5.4 General Fauna Surveys

A general fauna survey of the Site was carried out in conjunction with the other field surveys on the 13th of May 2021 and 14th of February 2024. The habitat types recorded throughout the survey area were used to assist in identifying the fauna considered likely to utilise the area. Furthermore, the Site was searched for tracks and signs of mammals as per Bang and Dahlstrom (2001) and the National Road Authority (NRA, 2005). This survey considers protected or notable fauna that may occur within the Site or in the adjacent lands, but for which no historical records from the relevant grid square(s) exist or no targeted surveys were carried out.

5.3.6 Ecological Assessment

This EcIA has been undertaken following the methodology set out in Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2018); and with reference to the National Roads Authority 'Guidelines for Assessment of Ecological Impacts of National Road Schemes' (NRA, 2009) and the Environmental Protection Agency (EPA) 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' (EPA, 2022) and BS 42020:2013 Biodiversity: Code of practice for planning and development (BSI, 2013).
The evaluation of significant effects should be based on available scientific evidence. Based on the precautionary principle, if the available information is not sufficient, then a significant effect may be assumed likely to occur.

5.3.6.1 Evaluation of Ecological Features

The value of the ecological features – the habitats and species present or potentially present was determined using the ecological evaluation guidance provided in the National Roads Authority's Ecological Assessment Guidelines (NRA, 2009). This evaluation scheme, with values ranging from locally important to internationally important, seeks to provide value ratings for habitats and species present that are considered ecological receptors of impacts that may ensue from a proposal.

As per the NRA guidelines, impact assessment is only undertaken of Key Ecological Receptors (KERs).

The ecological features identified within the Site of the Proposed Development and the wider area are evaluated based on their value. These values are detailed in Table 5.1 below. Based on best practice (CIEEM, 2018), any features considered to be less than of local value are not assessed within this EcIA.

Importance	Criteria
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. - Proposed Special Protection Area (pSPA). - 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: o Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or o 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 Acts; 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 is of some importance in maintaining habitat links.

Table 5.1: Description of values for ecological resources based on geographic hierarchy of importance (NRA, 2009).

5.3.6.2 Impact Assessment Criteria

As per the NRA guidelines, impact assessment is only undertaken of KERs. The assessment of the potential impact of the Proposed Development on the identified KERs was carried out with regard to the criteria outlined in the EPA Guideline (EPA, 2022). These guidelines set out a number of parameters that should be considered when determining which elements of the Proposed Development could constitute impact or sources of impacts. These include:

- Positive, neutral or negative effect;
- Significance;
- Extent;
- Probability;
- Duration;
- Timing;
- Frequency; and
- Reversibility.

The impact assessment process considers both direct and indirect impacts: direct ecological impacts are changes that are directly attributable to a defined action, e.g. the physical loss of habitat. Indirect ecological impacts are attributable to an action, but which affect ecological resources through effects on an intermediary ecosystem, process, or feature, e.g., the creation of roads which cause hydrological changes, which, in the absence of mitigation, could lead to an adverse effect of a sensitive habitat.

Identification of a risk does not constitute a prediction that it will occur, or that it will create or cause significant impact. However, identification of the risk does mean that there is a possibility of ecological or environmental damage occurring, with the level and significance of the impact depending upon the nature and exposure to the risk and the characteristics of the ecological receptor.

5.6.3.3 Criteria used to Define Quality of Effects

In line with the EPA EIAR Guidelines (EPA, 2022), the following terms are defined when quantifying the quality of effects. See Table 5.2 below.

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

Table 5.2: Definition of Quality of Effects

5.3.6.4 Criteria Used to Define Significance of Effects

EC Guidance on EIAR (EC, 2017) states that assessment of significance should be determined using appropriate, clear, and unambiguous criteria which take *'the characteristics of the impact and the values associated with the environmental issues affected into account'.* Consequently, in line with the EPA EIAR Guidelines (EPA, 2022), the following terms are defined when quantifying the significance of impacts. See Table 5.3, below.

Significance of Effects	Definition
Imperceptible	An effect capable of measurement but without significant consequences.
Not significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight Effects	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate Effects	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant Effects	An effect which, by its character, magnitude, duration, or intensity alters a sensitive aspect of the environment
Very Significant	An effect which, by its character, magnitude, duration, or intensity significantly alters most of a sensitive aspect of the environment.
Profound Effects	An effect which obliterates sensitive characteristics. No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error

Table 5.3: Definition of Significance of Effects

5.3.6.5 Criteria Used to Define Duration of Effects

In line with the EPA Guidelines (EPA, 2022), the following terms are defined when quantifying duration and frequency of effects. See Table 5.4 below.

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

Table 5.4: Definition of Duration of Effects

5.3.6.6 Assessment of Cumulative Impacts and Effects

Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location. Cumulative effects can occur where a Proposed Development results in individually insignificant impacts that, when considered in combination with impacts of other proposed or permitted plans and projects, can result in significant effects.

Relevant plans and policies (see Appendix 5.1) were reviewed to identify any potential for negative cumulative impacts with the Proposed Development. Additionally, existing planning permissions from the past five years (from 2018 onwards) within the ZOI of the Proposed Development were reviewed, with particular focus on potential cumulative impacts on the identified KERs. Long-term developments were also considered where applicable.

5.3.6.7 Avoidance, Mitigation, Compensation and Enhancement Measures

Where potentially significant effects have been identified, the mitigation hierarchy has been applied, as recommended in the CIEEM Guidelines. The mitigation hierarchy sets out a sequential approach beginning with the avoidance of impacts where possible, the application of mitigation measures to minimise unavoidable impacts and then compensation for any remaining impacts. Once avoidance and mitigation measures have been applied residual effects are then identified along with any necessary compensation measures, and incorporation of opportunities for enhancement. When seeking mitigation or compensation solutions, efforts should be consistent with the geographical scale at which an effect is significant. For example, mitigation and compensation for effects on a species population significant at a county scale should ensure no net loss of the population at a county scale. The relative geographical scale at which the effect is significant will have a bearing on the required outcome which must be achieved.

It is important for the EcIA to clearly differentiate between avoidance, mitigation, compensation and enhancement and these terms are defined here as follows:

- Avoidance is used where an impact has been avoided, e.g., through changes in scheme design. In practice, avoidance measures are typically implemented during the design stage via discussions and re-design (e.g., avoiding a sensitive habitat by relocating a building). Avoidance measures are therefore rarely reported within an EcIA, which focuses on assessing the final design.
- Mitigation is used to refer to measures to reduce or remedy a specific negative impact *in-situ*.
- Compensation describes measures taken to offset residual effects, i.e. where mitigation *in-situ* is not possible.
- Enhancement is the provision of new benefits for biodiversity that are additional to those provided as part of mitigation or compensation measures, although they can be complementary.

5.4 Limitations

An extensive search of available datasets for records of rare and protected species within proximity to the proposed development has been undertaken as part of this assessment. However, the records from these datasets do not constitute a complete species list. The absence of species from these datasets does not necessarily confirm an absence of species in the area.

No limitations were encountered in the preparation of the EIAR Chapter.

5.5 Description of the Proposed Development

5.5.1 Site Location

The Proposed Development is located at the site of a current home improvement wholesaler (Chadwick's Builders Merchants) warehouse (See Figure 5.1). The Site and surrounding lands are predominantly urban/suburban, and the Site sits at the intersection of two large roads: Santry Avenue and Swords Road, a main throughline north from Dublin City. The M50 Motorway passes approximately 400m east of the Site. The Site is served by several Dublin Bus lines. Across Santry Avenue from the Site is Santry Demesne, approximately 20m to the north.

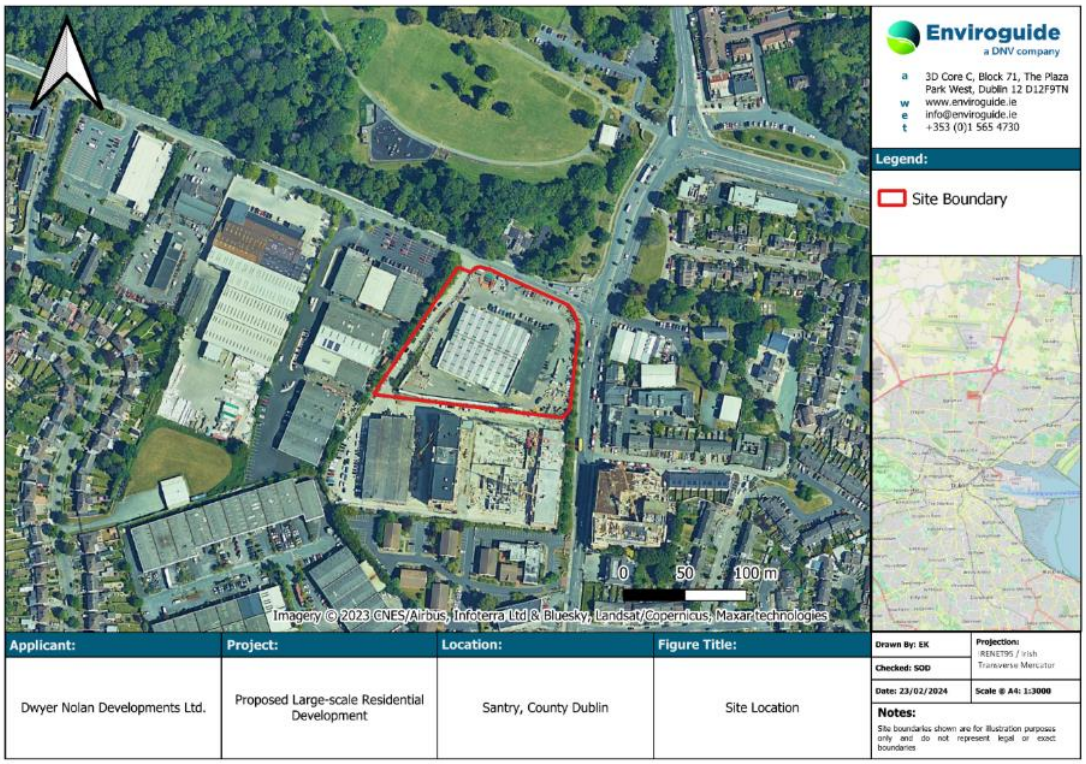


Figure 5.1: Site Location (Source: Enviroguide)

5.5.2 Proposed Development Description

The Proposed Development entails the construction of a large-scale residential development as summarised below. Full details of the Proposed Development are discussed in Chapter 3. The Proposed Site Layout is shown in Figure 5.2.

Dwyer Nolan Developments Ltd. wishes to apply for permission for a Large-Scale Residential Development (LRD) on this site, c. 1.5 hectares, located at the junction of Santry Avenue and Swords Road, Santry, Dublin 9. The development site is bounded to the north by Santry Avenue, to the east by Swords Road, to the west by Santry Avenue Industrial Estate, and to the south by the permitted Santry Place development (granted under Dublin City Council Ref.s. 2713/17 (as extended under Ref. 2713/17/X1), 2737/19 & 4549/22).

The proposed development provides for 321 no. apartments, comprised of 104 no. 1 bed, 198 no. 2 bed, & 19 no. 3 bed dwellings, in 4 no. seven to thirteen storey buildings, over basement level, with 3 no. retail units, a medical suite / GP Practice unit and community/arts & culture space (total c.1,460sq.m), all located at ground floor level, as well as a one storey residential amenity unit, facing onto Santry Avenue, located

between Blocks A & D.

The proposed development consists of the following:

1. Demolition of the existing building on site i.e. the existing Chadwicks Builders Merchants (c. 4,196.8m^2).

2. Construction of 321 no. 1, 2, & 3 bed apartments, retail units, medical suite / GP Practice, community/arts & culture space, and a one storey residential amenity unit in 4 no. buildings that are subdivided into Blocks A-G as follows:

- Block A is a 7-13 storey block consisting of 51 no. apartments comprised of 22 no. 1 bed, 23 no. 2 beds & 6 no. 3 bed dwellings, with 2 no. retail units located on the ground floor (c. 132sq.m & c.172sq.m respectively). Adjoining same is Block B, which is a 7 storey block consisting of 38 no. apartments comprised of 6 no. 1 bed, 26 no. 2 bed, & 6 no. 3 bed dwellings, with 1 no. retail unit (c.164sq.m) and 1 no. medical suite / GP Practice unit located on the ground floor (c. 130sq.m). Refuse storage areas are also provided for at ground floor level.
- Block C is a 7 storey block consisting of 53 no. apartments comprised of 14 no. 1 bed & 39 no. 2 bed dwellings. Adjoining same is Block D which is an 8 storey block consisting of 44 no. apartments comprised of 22 no. 1 bed, 15 no. 2 bed, & 7 no. 3 bed dwellings. Ground floor, community/arts & culture space (c. 583sq.m) is proposed in Blocks C & D, with refuse storage area also provided for at ground floor level.
- Block E is an 8 storey block consisting of 49 no. apartments comprised of 7 no. 1 bed & 42 no. 2 bed dwellings. A refuse storage area, substation, & switchroom are also provided for at ground floor level. Adjoining same is Block F which is a 7 storey block consisting of 52 no. apartments comprised of 13 no. 1 bed & 39 no. 2 bed dwellings. Ground floor, community/arts & culture space (c.877sq.m) is proposed in Blocks E & F. A refuse storage area, bicycle storage area, substation, & switchroom are also provided for at ground floor level of Blocks E & F.
- Block G is a 7 storey block consisting of 34 no. apartments comprised of 20 no. 1 bed & 14 no. 2 bed dwellings. A refuse storage area & bicycle storage area are also provided for at ground floor level.

3. Construction of a 1 storey residential amenity unit (c. 166.1sq.m) located between Blocks A & D.

4. Construction of basement level car park (c.5,470.8sq.m), accommodating 161 no. car parking spaces, 10 no. motorbike parking spaces & 672 no. bicycle parking spaces. Internal access to the basement level is provided from the cores of Blocks A, B, C, D, E, & F. External vehicular access to the basement level is from the south, between Blocks B & C. 33 no. car parking spaces & 58 no. bicycle parking spaces are also provided for within the site at surface level.

5. Public open space of c. 1,791sq.m is provided for between Blocks C-D & E-F. Communal open space is also proposed, located between (i) Blocks E-F & G, (ii) Blocks A-B & C-D, and (iii) in the form of roof gardens located on Blocks A, C, & F and the proposed residential amenity use unit, totalling c.2,986sq.m. The development includes for hard and soft landscaping & boundary treatments. Private open spaces are provided as terraces at ground floor level of each block and balconies at all upper levels.

6. Vehicular access to the development will be via 2 no. existing / permitted access points: (i) on Santry Avenue in the north-west of the site (ii) off Swords Road in the south-east of the site, as permitted under the adjoining Santry Place development (Ref. 2713/17).

The development includes for all associated site development works above and below ground, bin & bicycle storage, plant (M&E), sub-stations, public lighting, servicing, signage, surface water attenuation facilities etc.

5.5.3 Description of the Construction Phase

It is estimated that construction of the Proposed Development will take approximately five years to complete. The intended sequence of works may change post grant of planning permission as a detailed construction programme is dependent on contractor appointment, market and other considerations.

- **Phase 1** will consist of the delivery of the basement, Blocks A & B (89 no. units) and communal open space beside them (west of same between Blocks C & D);
- **Phase 2** will consist of the delivery of Blocks C & D (97 no. units) and public open space;
- **Phase 3** will consist of the delivery of Blocks E, F & G (135 no. units) and the remainder of works/open space etc.

The Project Engineers (DBFL) have estimated that c. 20,000 m^3 of material will require excavation. It is envisaged that all of this material will be removed off-site and none is expected to be kept for on-site reuse. These estimates will be refined prior to commencement of construction.

5.5.3.1 Construction Phase Dewatering

Shallow groundwater may be encountered during the construction works of the basement excavation. Disposal of this water to sewer will require a consent/licence issued under Section 16 of the Local Government (Water Pollution) Acts and Regulations and must be obtained from Irish Water. Any such discharge licence is likely to be subject to conditions regarding the flow (rates of discharge, quantity etc.); effluent quality prior to discharge and pre-treatment (e.g., settlement/filtration, hydrocarbon separation etc.) and monitoring requirements. All dewatering will be undertaken in strict compliance with the conditions of the discharge licence for the project.

5.5.4 Description of the Operational Phase

The Operational Phase of the Proposed Development will comprise the occupancy of the completed residential development.

5.5.5 Drainage

Site drainage information is excerpted from the Engineering Services Report (ESR) that accompanies this submission (DBFL, 2024a).

5.5.5.1 Foul Water

Existing Network adjacent to the Site

There is an existing 300mm diameter public foul sewer located on the Swords Road (R104) to the east of the Site. As part of Uisce Éireann Connection Reference, No: CDS19003221 a 225mm diameter foul sewer has been constructed within the previously approved mixed-use development (Planning Ref: 2713/17& 2737/19) to the south of the Site. This foul sewer has been constructed from the development Site boundary across Swords Road and connected to the existing 300mm diameter public foul sewer noted above under a Connection Agreement with Uisce Éireann. Note, no diversion works of existing Uisce Éireann infrastructure are required to facilitate this Proposed Development. Any existing private foul infrastructure present on Site will be grubbed up and removed.

Proposed Foul Water Drainage Strategy

The foul sewerage from the Proposed Development is proposed to discharge via gravity by means of a new 225mm diameter sewer which will discharge to a manhole constructed as part of the previously approved mixed-use development (Planning Ref: 2713/17 & 2737/19) to the south of the Site. This will negate the requirement for any construction outside of the Site boundary and minimise any disruption to the public. The new sewer will be designed and constructed in accordance with Uisce Éireann Code of

Practice and Standard Detail requirements.

A Pre-Connection Enquiry was submitted to Uisce Éireann (CDS23007437). The Applicant will enter into conversation with Uisce Éireann to progress required works following receipt of Planning Approval. The Developer will enter into a Connection Agreement with Uisce Éireann, post planning, to facilitate the proposed foul connection and any upgrade works that may be required.

Foul sewage in apartment blocks located over the basement will be drained on separate systems via 150mm diameter pipes slung from the underside of basement roof slabs and adjacent to the basement walls. Service pipes from individual properties will project through ground floor slabs and connect into the slung drainage system which in turn will connect by gravity to the proposed external foul drainage system.

Any surface water from the basement car park generated by incidental run-off/spillage will drain through an underground system of collector pipes, gullies and ACO drains which in turn will pass through a petrol interceptor prior to discharging into a foul pumping well located under the basement. The run-off will then be pumped via a rising main which will connect to the gravity foul drainage system for the Site at ground level via an outfall manhole in accordance with the requirements of the Greater Dublin Strategic Drainage Study (GDSDS) and Uisce Éireann. For further details, please refer to the ESR (DBFL, 2024a).

Foul water from the Site will eventually be treated at Ringsend Wastewater Treatment Plant (WwTP) prior to discharge into Dublin Bay.

5.5.5.2 Surface Water

Existing Surface Water Network

As per the ESR (DBFL, 2024a), there is an existing 225mm diameter public surface water sewer located on the Swords Road (R104) to the east of the Site. A surface water network was constructed within the previously approved proposed mixed-use development (Planning Ref: 2713/17 & 2737/19) to the south of the Proposed Development. This system contains an attenuation system, hydrobrake and petrol interceptor on the outfall surface water sewer. This outfall sewer discharges to the existing 225mm diameter sewer noted above. A connection to the public sewer has been made at the junction of the Swords Road with Schoolhouse Lane under permission of Dublin City Council. This connection has been approved under Planning Ref: 2713/17 & 2737/19. Any existing private infrastructure present onsite will be grubbed up and removed.

Proposed Surface Water Drainage

As detailed in the ESR (DBFL. 2024), the surface water drainage from the Proposed Development is proposed to discharge, following attenuation and hydrobrake flow control device, via a new 225mm diameter surface water sewer to a manhole constructed as part of the previously approved mixed-use development (Planning Ref: 2713/17 &2737/19) to the south of the Site.

The location of the proposed connection/outfall point will be on the existing 225mm surface water sewer constructed for the mixed-use development (Planning Ref: 2713/17 & 2737/19), following the installed hydrobrake and before the petrol interceptor. The petrol interceptor, placed under the aforementioned planning reference, has been designed to accommodate the combined permitted discharge rate from both of the Proposed Development and the permitted development located to the south(Planning Ref: 2713/17 & 2737/19).

The proposed petrol interceptor 'Kingspan' NSBE010 bypass petrol interceptor class 1 is designed to accommodate a flow rate of 10 l/s. The combined permissible discharge rate from both the Proposed Development and neighbouring development (Planning Ref: 2713/17 & 2737/19) is 8.9l/s. This proposed connection location will negate the requirement for any construction outside of the Site boundary and minimise any disruption to the public.

Surface water management for the Proposed Development is designed to comply with the 'Greater Dublin

Strategic Drainage Study (GDSDS) Regional Drainage Policies Technical Document–Volume 2, New Developments, 2005' and the 'Greater Dublin Regional Code of Practice for Drainage Works, V6.0 2005'. CIRIA Design Manuals C753, C697 and C609 have also been used to design the surface water drainage system within the Site.

The GDSDS guidelines require the following main 4 main criteria to be provided by the development's surface water design;

- Criterion 1: River Water Quality Protection–satisfied by providing interception storage and treatment of run-off within the SuDS features e.g. green roofs, blue roofs and permeable paving and on-line cellular storage attenuation systems.
- Criterion 2: River Regime Protection–satisfied by attenuating run-off with flow control device prior to discharge to the outfall.
- Criterion 3: Level of Service (flooding) for the site–satisfied by the Site being outside the 1000 year coastal and fluvial flood levels. Pluvial flood risk addressed by development designed to accommodate a 100-year storm as per GDSDS. Planned flood routing for storms greater than 100-year level considered in design and development run-off contained within Site.
- Criterion 4: River flood protection–attenuation provided within the SuDS features e.g., permeable paving construction and on-line cellular storage attenuation systems.

5.5.5.3 SuDS Measures incorporated into the Surface Water Design

The following description of SUDS features at the Site of the Proposed Development is taken from the ESR that accompanies this submission (DBFL, 2024a).

It is proposed to use a sustainable drainage system (SuDS) approach to stormwater management throughout the Site, 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, contributing to amenity, aesthetics and biodiversity enhancement and allow for the maximum collection of rainwater for re-use where possible. In addition, SuDS features aim to replicate the natural characteristics of rainfall runoff for any site by providing control of run-off at source and this has been achieved by the current proposals.

SuDS are a requirement of Dublin City Council under their 'Regional Code of Practice for Drainage Works' and 'The Greater Dublin Strategic Drainage Study'. Additionally, these systems are recommended under the 2009 guidelines, 'The Planning System and Flood Risk Management'. There are a number of SuDS features proposed which have been designed in accordance with CIRIA documents C753, C697 and C609 as follows:

- **Permeable Pavement**: Porous surfacing (paving block or open graded material) which can treat rainwater, at source, and allow infiltration through to an underlying porous sub-base where water can be stored within the voids of the sub-base before being slowly released to the drainage collection system through natural flow via the porous medium. As well as reducing the amount of run-off from the surface, permeable paving will slow down the rate of runoff from the pavement in extreme rainfall events contributing to attenuation of flows. In addition, permeable paving will increase the quality of water which is intercepted by the system through filtration, biodegradation, pollutant adsorption and settlement and retention of solids, also the reduction in peak flows to the outfall will enhance settlement and biodegradation of pollutants.

- **Extensive Green Roofs**: A planted roof area with low growing, low maintenance plants consisting of self-sustaining mosses, sedums, succulents, herbs or grasses over a drainage layer and waterproofing membrane. Extensive green roofs provide ecological, aesthetic and amenity benefits and intercept, treat and retain rainfall, reducing the volume of runoff and attenuation of peak flows. Extensive roofs are usually only accessed for maintenance.
- **Intensive Green Roofs**: Planted, accessible podium areas with high amenity benefits which include planters or trees over a drainage layer and waterproofing membrane which provide similar benefits to extensive green roofs.
- **Blue Roofs**: Blue roofs are designed to hold rain water at podium level and to release rain water at a controlled rate via a flow control device. Green/Blue roofs that provide attenuation storage is a preference of Dublin City Council as set out in DCC's Green and Blue roof design guide. Green/Blue roofs for the proposed development are to be of the extensive type and are to be a minimum of 150mm. All necessary safety requirements will be designed and constructed to ensure safe maintenance can occur. The green roof will provide interception and reduction of flow rates at the beginning of the treatment train. After surface water has passed through the Green Roof medium, it will be stored in blue roof storage and discharged via a flow control as per specialist design then conveyed to the proposed attenuation tank before being discharged to the existing drainage infrastructure.
- **Catchpit Manhole**: Catchpit manholes collect silt and debris from the surface water drainage system to prevent blockages and help ensure proper function and reduced maintenance of treatment and storage systems downstream of the catchpit manhole. Catchpit manholes are easily accessible and simple to clean. For these reasons catchpit manholes are recommended to reduce risk of system flooding due to blockages and help the surface water system perform optimally.
- **Petrol Interceptor**: A proprietary oil/water separator which prevents hazardous chemical and petroleum products from entering watercourses and public sewers. There are 2no. petrol interceptors proposed for the development. One is proposed within the basement of the building for treating incidental run off and before discharge to the proposed foul drainage network. A second has been constructed as part of the adjacent mixed-use development (Planning Ref: 2713/17 & 2737/19).

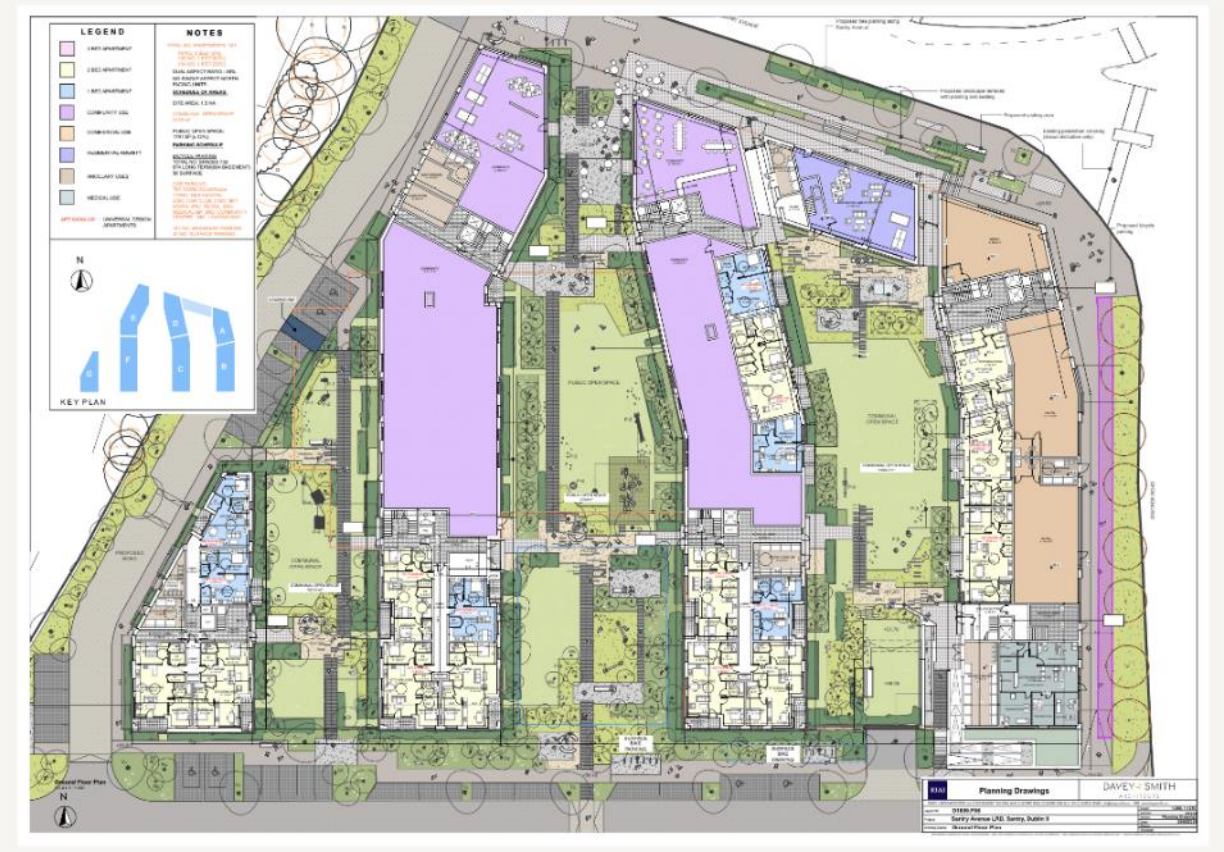


Figure 5.2: Site Layout (Source: Davey Smith Architects, Drg No. D1809.P06)

5.6 Ecological Baseline Conditions

This section sets out the baseline conditions for the ecological features within the Site using the findings of the desk study and field surveys.

5.6.1 Geology, Hydrology and Hydrogeology

The Site of the Proposed Development is located within the Liffey and Dublin Bay catchment (Catchment ID: 09) and the Mayne_SC_010 sub-catchment (Sub-catchment ID: 09_17) (EPA, 2024).

The Santry 2nd order River passes approximately 674m north of the Site and continues in an easterly direction for 6.7km before discharging into North Bull Island transitional waterbody. This, in turn, discharges into the Dublin Bay 3.4km further northeast.

The Water Framework Directive (WFD) ecological status of the Santry River is classified as 'Poor' for the 2016-2021 monitoring period and was 'At Risk' of failing to meet its WFD objectives for the same period (EPA, 2024). North Bull Island that that receives waters from the Santry River is of 'Moderate' ecological status and its risk status was under review (EPA, 2024). The ultimate waterbody in this network, Dublin Bay, was of 'Good' ecological status for the 2016-2021 monitoring period and was considered to be 'Not at Risk' of meeting its WFD objectives. (EPA, 2024).

The EPA water quality monitoring data for the stations on the Santry River located closest to the Site are summarised in **Error! Reference source not found.**. There were no upstream monitoring stations; all m onitoring stations in **Error! Reference source not found.** are located downstream of the Site. The

reported Q-value results indicate that water quality in the Santry River proximal to the Site is 'Poor' to 'Bad'

The Site of the Proposed Development is situated on the Dublin (EU Code: IE_EA_G_008) groundwater body. The Site occurs on a bedrock aquifer mapped as "Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones" (Ll) (GSI, 2024). The level of vulnerability to groundwater contamination from human activities beneath the Site is 'Low' (GSI, 2024).

The bedrock units underlaying the Site are classified as Lucan Formation (Stratigraphic Code: CDLUCN), which comprises dark limestone & shale (GSI, 2024). The soil beneath the Site is not mapped. The quaternary sediments beneath the Site are 'Till derived from limestones' (TLs; GSI, 2024) while the subsoil beneath the Site is mapped as 'Manmade' (EPA, 2024).

The Waterbody Status for river, groundwater, and coastal water bodies relevant to the Site as recorded by the EPA (2024) in accordance with European Communities (Water Policy) Regulations 2003 (SI no. 722/2003) are provided in Table 5.6.

EPA Monitoring Station name	Station Code	Location from Site	Distance from Site	Assigned Q value
Clonshaugh Rd Br	RS09S010300	Southeast/downstream	1.9km	2-3 (poor)
SANTRY - Harmonstown Rd Br	RS09S010800	Southeast/downstream	6.6km	1 (bad)
Bettyglen	RS09S011100	Southeast/downstream	8.4km	3 (poor)

Table 5.5: EPA monitoring stations on the Santry River and assigned Q values

Waterbody Name	Water body; EU code	Location from Site	Distance from Site (km)	WFD water body status (2016-2021)	WFD 3rd cycle Risk Status	Hydraulic Connection to the Site
Surface Water Bodies						
Santry River	IE_EA_09S010300	Northeast	674m	Poor (2-3)	At Risk	Downstream of Site
Groundwater Bodies						
Dublin	IE_EA_G_008	N/A	N/A	Good	Review	Underlying GWB
Transitional Waterbodies						
North Bull Island	IE_EA_090_0100	Southeast	7.3km	Moderate	Review	Downstream of Site
Tolka Estuary	IE_EA_090_0200	Southeast	7.3km	Poor	At Risk	Downstream of Site (indirect)
Coastal waterbodies						
Dublin Bay	IE_EA_090_0000	Southeast	10.7km	Good	Not at Risk	Downstream of Site

Table 5.6: WFD Risk and Water Body Status

5.6.2 Designated Areas

All European sites potentially linked to the Proposed Development have been identified and fully assessed in the AA Screening Report (Stage 1 AA) accompanying this submission under separate cover. A summary of the AA conclusions is given below.

Other nationally or internationally designated sites potentially linked to the Proposed Development are identified in section 0.

5.6.2.1 European Sites – Appropriate Assessment

The AA Screening concluded that no European sites are at risk of likely significant effects as a result of the Proposed Development. The following conclusion is extracted from the AA Screening accompanying this application under separate cover:

"*In conclusion, upon the examination, analysis and evaluation of the relevant information and applying the precautionary principle, it is concluded by the authors of this report that, on the basis of objective information; the possibility* ***may be excluded*** *that the Proposed Development will have a significant effect on the European sites listed below:*

- *North Dublin Bay SAC (000206)*
- *South Dublin Bay SAC (001266)*
- *North Bull Island SPA (004006)*
- *North-west Irish Sea SPA (004236)*
- *South Dublin Bay and River Tolka Estuary SPA (004024)*

The screening exercise above used the best available scientific knowledge and objective information to assess potential impacts to European sites arising from the project itself or in combination with other plans and projects. Based on this assessment, and in light of these sites' conservation objectives, the possibility of any likely significant effects on the above listed European sites ***may be excluded****. Thus, there is no requirement to proceed to Stage 2 of the Appropriate Assessment process and the preparation of an NIS is not required.*"

5.6.2.2 Other Designated Sites

Designated sites within the Proposed Development's ZoI (section 0) were assessed for potential S-P-R connections (section 0) to the Proposed Development.

Table 5.7 below presents details of the key ecological features of the designated sites with potential S-P-R connections to the Proposed Development. The result of this preliminary screening concluded that there is a total of two pNHAs, a RAMSAR site, and a UNESCO Biosphere site sharing a direct S-P-R connection with the Proposed Development Site.

Site Name & Site Code	Qualifying Interests (*= priority habitats)	Distance to Site	Potential Pathways and Impacts
Nationally Designated Sites			
Santry Demesne pNHA (000178)	**Site Synopsis, NPWS (2009)** • Santry Demesne pNHA is designated for Hairy St. John's Wort (*Hypericum hirsutum*), protected by the Flora Protection Order (2022) and its woodland habitats.	~20m N (overland)	**Construction phase** The pNHA is designated for its woodland habitats and the protected Hairy St. John's Wort plant recorded previously at the Site. Although unlikely to be significant, the potential for Construction Phase dust to adversely affect the pNHA is considered as a precaution.
North Dublin Bay pNHA	Conservation objectives overlap with the EU site of the same name—North Dublin Bay SAC (000206)	~7.4km (channel length) southeast	**Construction Phase** A weak direct hydrological connection exists via potential surface runoff, e.g., during a heavy rainfall event, to the Santry River north of the Site. This is not deemed to be an impact pathway capable of facilitating likely significant effects to this pNHA and no direct or indirect effects are therefore foreseen. **Operational Phase** A weak direct hydrological connection exists via potential surface runoff, e.g., during a heavy rainfall event, to the Santry River north of the Site. An indirect hydrological connection exists via treated foul water discharge from the Ringsend WWTP. These are not deemed to be impact pathways capable of facilitating likely significant effects to this pNHA and no further direct or indirect effects are foreseen.
South Dublin Bay pNHA	Conservation objectives overlap with the EU site of the same name—South Dublin Bay SAC (000206)	~7.8km (overland-indirect pathway)	**Construction Phase** No direct or indirect connections exist between the Proposed Development and this pNHA during the construction phase. **Operational Phase** An indirect hydrological connection exists via treated foul water discharge from the Ringsend WWTP.

Site Name & Site Code	Qualifying Interests (*= priority habitats)	Distance to Site	Potential Pathways and Impacts
			This is not deemed to be an impact pathway capable of facilitating likely significant effects to this pNHA and no further direct or indirect effects are foreseen.
Dolphins, Dublin Docks pNHA	This site is a component of South Dublin Bay and River Tolka Estuary SPA (004024) and is protected for the Terns—Arctic (*Sterna paradisaea*) and Common (*Sterna hirundo*) —that nest on the Dolphin structures. Thus, the conservation objectives overlap with South Dublin Bay and River Tolka Estuary SPA (004024).	~6.6km (overland-indirect pathway)	**Construction Phase** No direct or indirect connections exist between the Proposed Development and this pNHA during the construction phase. **Operational Phase** An indirect hydrological connection exists via treated foul water discharge from the Ringsend WWTP. This is not deemed to be an impact pathway capable of facilitating likely significant effects to this pNHA and no further direct or indirect effects are foreseen.
Internationally Designated Sites			
Sandymount Strand/Tolka Estuary Ramsar site	**Ramsar Sites Information Service (2023).** This Ramsar site is noted for the presence of: • Seagrass beds (*Zostera noltii*) And a significant population of: • Mediterranean gull (*Larus melanocephalus*) • Light-bellied brent goose (*Branta bernicla hrota*) • Black-tailed godwit (*Limosa limosa*) • Bar-tailed godwit (*Limosa lapponica*)	Overlaps South Dublin Bay SAC: ~7.8km (overland-indirect pathway)	**Construction Phase** No direct or indirect connections exist between the Proposed Development and this Ramsar site during the construction phase. **Operational Phase** An indirect hydrological connection exists via treated foul water discharge from the Ringsend WWTP. This is not deemed to be an impact pathway capable of facilitating likely significant effects to this Ramsar site and no further direct or indirect effects are foreseen.
North Bull Island Ramsar Site	**Ramsar Sites Information Service (2023).** This Ramsar site is noted for a significant population of: • Black-tailed godwit (*Limosa limosa*) • Bar-tailed godwit (*Limosa lapponica*)	Overlaps North Bull Island SAC: ~7.4km (channel	**Construction Phase** A weak direct hydrological connection exists via potential surface runoff, e.g., during a heavy rainfall event, to the Santry River north of the Site. This is not deemed to be an impact pathway capable of facilitating likely

Site Name & Site Code	Qualifying Interests (*= priority habitats)	Distance to Site	Potential Pathways and Impacts
		length) southeast	significant effects to this Ramsar site and no direct or indirect effects are therefore foreseen. **Operational Phase** A weak direct hydrological connection exists via potential surface runoff, e.g., during a heavy rainfall event, to the Santry River north of the Site. An indirect hydrological connection exists via treated foul water discharge from the Ringsend WWTP. These are not deemed to be impact pathways capable of facilitating likely significant effects to this Ramsar site and no further direct or indirect effects are foreseen.
UNESCO Dublin Bay Biosphere	**UNESCO, 2024** The biosphere reserve is significant from a conservation perspective since it supports well-developed salt marshes and dune systems displaying all stages of development from the earliest phase of colonization to stable and full maturity. It also qualifies for international importance as the numbers of three species exceed the international threshold – Light-bellied Brent Goose (*Branta bernicla hrota*), Black-tailed Godwit (*Limosa limosa*) and Bar-tailed Godwit (*Limosa lapponica*). Species such as Grey Heron (*Ardea cinerea*), Goldeneye (*Bucephala*), Red-breasted Merganser (*Mergus serrator*) and Greenshank (*Tringa nebularia*) are regular in winter in numbers of regional or local importance. The North Bull Island and parts of the buffer zone in north Dublin include populations of Irish Mountain Hare (*Lepus timidus hibernicus*), a uniquely Irish sub-species of a species of national and international importance, but under severe pressure from recreational	Overlaps North Bull Island SAC: ~7.4km (channel length) southeast	**Construction Phase** A weak direct hydrological connection exists via potential surface runoff, e.g., during a heavy rainfall event, to the Santry River north of the Site. This is not deemed to be an impact pathway capable of facilitating likely significant effects to Dublin Bay Biosphere and no direct or indirect effects are therefore foreseen. **Operational Phase** A weak direct hydrological connection exists via potential surface runoff, e.g., during a heavy rainfall event, to the Santry River north of the Site. An indirect hydrological connection exists via treated foul water discharge from the Ringsend WWTP. These are not deemed to be impact pathways capable of facilitating likely significant effects to Dublin Bay Biosphere and no further direct or indirect effects are foreseen.

Site Name & Site Code	Qualifying Interests (*= priority habitats)	Distance to Site	Potential Pathways and Impacts
	disturbance and illegal poaching.		

Table 5.7: Designated sites of Conservation Importance within the Precautionary Zone of Influence of the Proposed Development

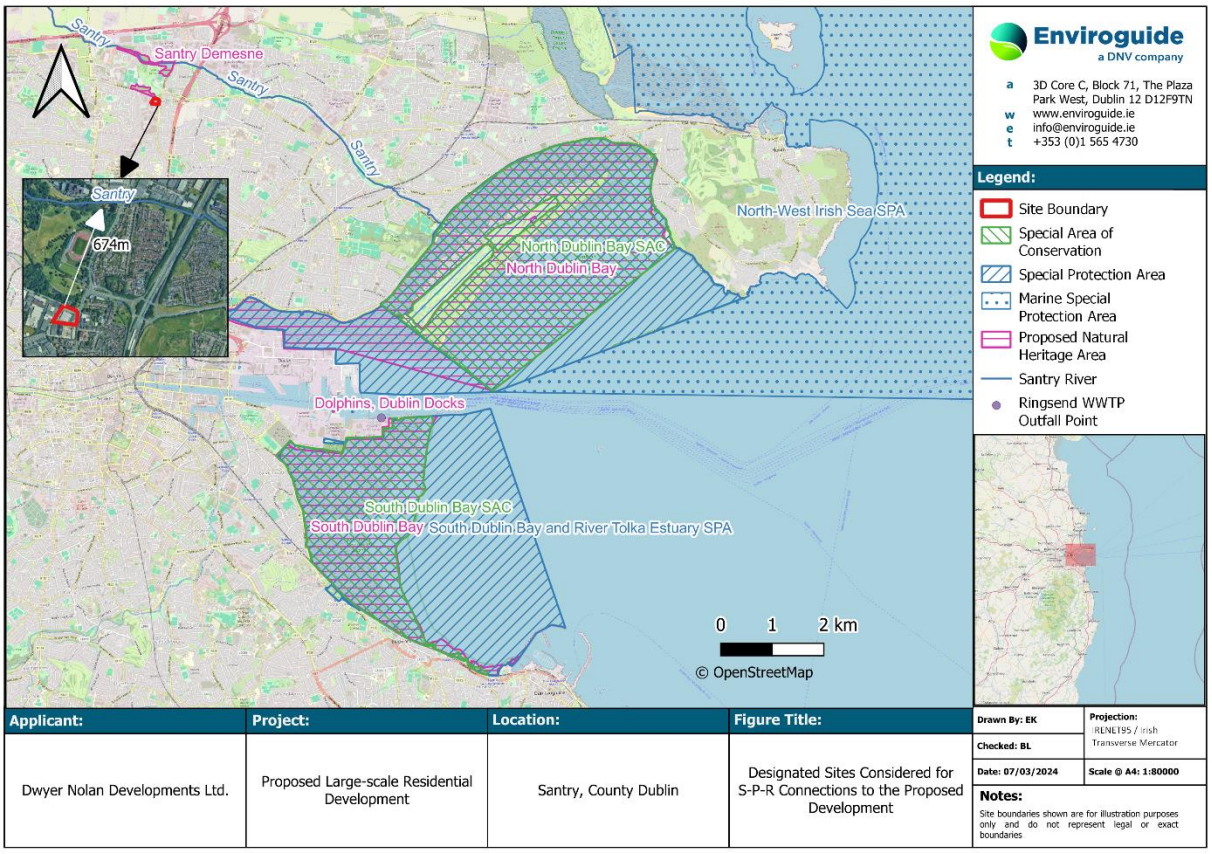


Figure 5.3: Designated Sites with a Source Pathway Receptor connection to the Proposed Development

5.6.3 Records of Habitats

Several distinct habitat types, as well as mosaics of different habitats (codes follow Fossitt, 2000) were recorded within the habitat survey area. These are described below and shown in Figure 5.3. Habitat classification was initially completed in May 2021. No change to the habitats and species assemblages present on Site was recorded in the second survey in February 2024 i.e., the Site remains as built-land; ecologically poor, anthropogenic in nature.

5.6.3.1 Buildings and Artificial Surfaces (BL3)

The majority of the Site is comprised of buildings and artificial surfaces – BL3 which consist of the Chadwicks building and associated hardstanding areas. The premises is currently operational, and some ornamental species of plants have been planted here, although these are small in number and the level of vegetation cover is negligible.

Figure 5.4: Buildings and artificial surfaces – BL3 habitat at the Site

5.6.3.2 Hedgerows – WL1

The majority of the external boundaries of the Site of the Proposed Development contain areas of scrubby predominately native, self-seeded hedgerow species. The most prominent hedgerow at the Site is of planted Beech *Fagus sylvatica* along the eastern boundary of the Site.

Species in the south-western corner of the Site include Gorse *Ulex europaeus*, Bramble *Rubus fruticosus,* Goat willow *Salix caprea*, Hawthorn *Crataegus monogyna,* with an understorey including Herb Robert *Geranium robertianum*, Spurge *Euphorbia hyberna,* Common dandelion *Taraxacum officinale,* and nettle *Urtica dioica*. Some non-native potentially invasive species have become established here, namely Cotoneaster *Cotoneaster sp.*, Butterfly bush *Buddleja davidii* and Sycamore saplings *Acer pseudoplatanus*.

Figure 5.5: Hedgerow - WL1 habitat along the eastern Site Boundary.

5.6.3.3 Treelines – WL2

Treelines run along the eastern and western boundaries of the Site. The treeline on the western boundary is dominated by Ash *Fraxinus excelsior*, Sycamore, Hawthorn, Elder *Sambucus nigra,* Beech, *Leylandii sp*. and Ivy *Hedra helix*. The Treeline on the eastern boundary is dominated by plated street trees; Lime *Tilia sp*.

Figure 5.6: Treeline habitat - WL2 along western Site Boundary

5.6.3.4 Mosaics of Recolonising Bare Ground (ED3) and Dry Meadows and Grassy Verges (GS2)

Mosaic strips of of recolonising bare ground and dry meadows and grassy verges are found along the site's western boundary where disturbance has occurred, possibly associated with the adjacent construction Site to the west. These areas are dominated by a variety of herbaceous species including Dandelion *Taraxacum officinale*, Creeping Buttercup *Ranunculus repens*, Horsetail *Equisetum sp.*, Common vetch *Vicia sativa*, Cow Parsley *Anthriscus sylvestris*, Scarlet Pimpernel *Anagallis arvensis*, Lords and Ladies *Arum maculatum*, Prickly Sowthistle *Sonchus asper*, Goosegrass *Galium aparine*, Primrose *Primula vulgaris*, Bush vetch *Vicia sepium*, Bramble *Rubus fruticosus*, Common ramping fumitory *Fumaria muralis* , Rapeseed *Brassica napus*, Colts-foot *Tussilago farfara*, Ragwort *Jacobaea vulgaris* and nettle.

Figure 5.7. Mosaics of Recolonising bare ground - ED3 and Dry meadows and grass verges - GS2 along western fence line.

5.6.3.5 Habitat Evaluation

Habitats have been evaluated below in Table 5.8 for their conservation importance, based on the NRA evaluation scheme (NRA, 2009). Those selected as Key Ecological Receptors are those which are evaluated to be of at least local importance (higher value). The impact of the Proposed Development on these receptors are assessed in Section 0 of this Chapter.

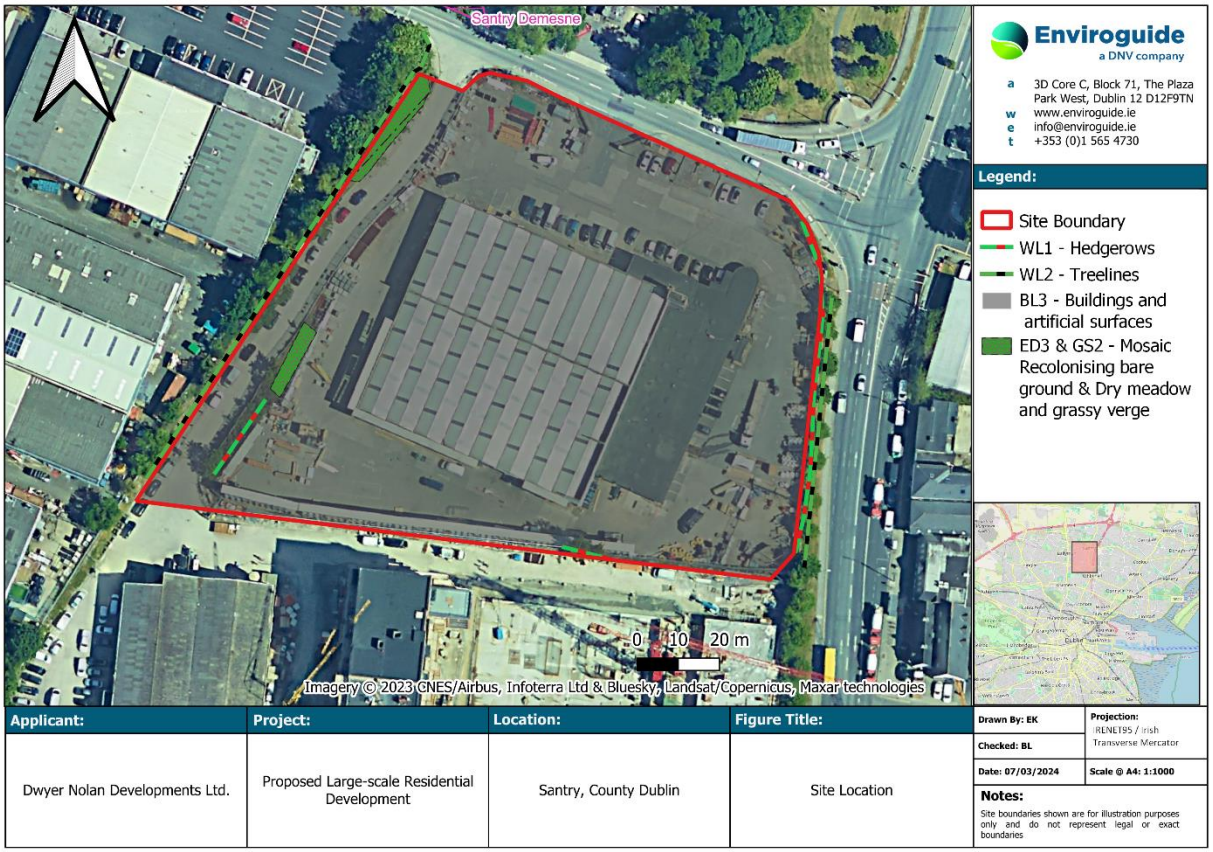


Figure 5.8: Map of habitats at the Site of the Proposed Development

Species	Evaluation	Rationale	Key Ecological Receptor (KER)
Hedgerows (WL1)	Local importance (higher value)	Due to the low biodiversity context of habitats within the Site, these sections of hedgerow provide some semi-natural habitat for local fauna.	**Yes**
Treeline – WL2	Local importance (higher value)	Due to the low biodiversity context of habitats within the Site, these sections of treeline provide some semi-natural habitat for local fauna.	**Yes**
Buildings and artificial surfaces-(BL3)	Negligible	Man-made habitat with little to no vegetation present. The Site is completely covered with impermeable surfaces and artificial structures, therefore, it has negligible ecological value.	**No**
Mosaic of Recolonising Bare Ground-(ED3) and Dry Meadows and Grassy Verges-(GS2)	Negligible	Limited presence of common and widespread disturbed habitat.	**No**

Table 5.8: The evaluating rating assigned to each habitat and the rationale behind the evaluation

5.6.4 Species and Species Groups

The Site of the Proposed Development is located within the Ordnance Survey Ireland National Grid 10km squares O13 and O14, 2km squares O13U and O14Q, and 1km squares O1639 and O1640. Species records dated within the last 20 years were studied for the presence of invasive, rare or protected flora and fauna. These records are presented in Table 5.9. In addition, data from various sources (e.g., Inland Fisheries Ireland) were used to determine the presence of species in the vicinity of the Proposed Development. The following sections outline the results of this assessment.

Species Group	Name	Grid square	Date of last record	Database	Legal Status	Conservation status
Invasive Flora	American Skunk – cabbage *Lysichiton americanus*	O13	29/03/2019	Online Atlas of Vascular Plants 2012-2020	- Medium Impact Invasive - EU Regulation No 1143/2014 - Regulation S.I. 477 (Ireland)	-
	Brazilian Giant-rhubarb *Gunnera manicata*	O13	29/03/2019	Online Atlas of Vascular Plants 2012-2020	- Medium Impact Invasive - Regulation S.I 477 (Ireland)	-
	Butterfly-bush *Buddleja davidii*	O14 O13 O13U	28/06/2019 18/09/2023 23/05/2015	Online Atlas of Vascular Plants 2012-2020	- Medium Impact Invasive Species	-
	Canadian Fleabane *Conyza canadensis*	O14 O13	09/07/2018 26/10/2020	Online Atlas of Vascular Plants 2012-2020	- Medium Impact Invasive Species	-
	Canadian Waterweed *Elodea canadensis*	O13	25/05/2022	Aras an Uachtarain Biodiversity Audit 2019-2020	- High Impact Invasive Species - Regulation S.I. 477 (Ireland)	-
	Cherry Laurel *Prunus laurocerasus*	O14 O13	26/01/2022 26/01/2023	Online Atlas of Vascular Plants 2012-2020	- High Impact Invasive Species	-
	Common Cord-grass *Spartina anglica*	O14	15/07/2014	Online Atlas of Vascular Plants 2012-2020	- High Impact Invasive Species - Regulation S.I. 477 (Ireland)	-
	Common Broomrape *Orobanche minor*	O13	26/06/2021	Online Atlas of Vascular Plants 2012-2020	- Medium Impact Invasive Species	-
	Curly Waterweed *Lagarosiphon major*	O13	31/12/1999	National Invasive Species Database	- High Impact Invasive Species - EU Regulation No. 1143/2014 - Regulation S.I. 477 (Ireland)	-

Species Group	Name	Grid square	Date of last record	Database	Legal Status	Conservation status
	Evergreen Oak *Quercus ilex*	O13	01/06/2020	Online Atlas of Vascular Plants 2012-2020	- Medium Impact Invasive Species	
	Fallopia japonica x sachalinensis F.x bohemica	O13	17/06/2015	National Invasive Species Database	- High Impact Invasive - Regulation S.I. 477 (Ireland)	
	False-acacia Robinia pseudoacacia	O13	20/06/2021	Aras an Uachtarain Biodiversity Audit 2019-2020	- Medium Impact Invasive Species	
	Giant Hogweed *Heracleum mantegazzianum*	O14 O13	05/05/2022 01/08/2023	National Invasive Species Database	- High Impact Invasive Species - Regulation S.I. 477 (Ireland)	-
	Giant Knotweed *Fallopia sachalinensis*	O13	03/08/2017	Online Atlas of Vascular Plants 2012-2020	- High Impact Invasive Species - Regulation S.I. 477 (Ireland)	
	Giant Rhubarb *Gunnera tinctoria*	O13	28/06/2020	Online Atlas of Vascular Plants 2012-2020	- High Impact Invasive Species - Regulation S.I. 477 (Ireland)	
	Himalayan Honeysuckle *Leycesteria formosa*	O14 O13	21/09/2022 04/09/2023	National Invasive Species Database Aras an Uachtarain Biodiversity Audit 2019-2020	- Medium Impact Invasive Species	
	Indian Balsam *Impatiens glandulifera*	O13	22/09/2023	Online Atlas of Vascular Plants 2012-2020	- High Impact Invasive Species - Regulation S.I. 477 (Ireland)	
	Japanese Knotweed *Fallopia japonica*	O14 O13 O13U	18/05/2023 19/07/2023 22/4/2021	Online Atlas of Vascular Plants 2012-2020	- High Impact Invasive Species - Regulation S.I. 477 (Ireland)	-
	Japanese Rose *Rosa rugosa*	O13	29/07/2023	Online Atlas of Vascular Plants 2012-2020	- Medium Impact Invasive Species	

Species Group	Name	Grid square	Date of last record	Database	Legal Status	Conservation status
	Narrow-leaved Ragword *Senecio inaequidens*	O13	07/07/2023	Online Atlas of Vascular Plants 2012-2020	- Medium Impact Invasive Species	
	New Zealand pigmyweed *Crassula helmsii*	O13	31/07/2009	National Invasive Species Database	- High Impact Invasive Species - Regulation S.I. 477 - (Ireland)	
	Nuttall's Waterweed *Elodea nuttallii*	O13	10/05/2023	Online Atlas of Vascular Plants 2012-2020	- High Impact Invasive Species - Regulation S.I. 477 (Ireland)	
	Pampas-grass *Cortaderia selloana*	O13	15/01/2019	Online Atlas of Vascular Plants 2012-2020	- Medium Impact Invasive Species	
	Parrot's-feather *Myriophyllum aquaticum*	O13	31/07/2009	National Invasive Species Database	- High Impact Invasive Species - EU Regulation No. 1143/2014 - Regulation S.I. 477 (Ireland)	
	Ragweed (*Ambrosia artemisiifolia*)	O13	06/09/2022	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	- Medium Impact Invasive Species	
	Rhododendron ponticum	O13	17/06/2004	Species Data from the National Vegetation Database	- High Impact Invasive Species - Regulation S.I. 477 (Ireland)	
	Russian-vine *Fallopia baldschuanica*	O14	21/08/2018	Online Atlas of Vascular Plants 2012-2020	- Medium Impact Invasive Species	-
	Sea-buckthorn *Hippophae rhamnoides*	O13	31/08/2022	Online Atlas of Vascular Plants 2012-2020	- Medium Impact Invasive Species - Regulation S.I. 477 (Ireland)	
	Spanish Bluebell *Hyacinthoides hispanica*	O13	30/03/2021	Online Atlas of Vascular Plants 2012-2020	- Medium Impact Invasive Species - Regulation S.I. 477 (Ireland)	
	Sycamore *Acer pseudoplatanus*	O14 O1640 O13	29/11/2021 21/06/2005 14/05/2023	Online Atlas of Vascular Plants 2012-2020 Aras an Uachtarain Biodiversity Audit 2019-2020	- Medium Impact Invasive Species	-

Species Group	Name	Grid square	Date of last record	Database	Legal Status	Conservation status
		O13U	23/05/2015			
	Three-cornered Garlic *Allium triquetrum*	O14 O13	20/04/2023 13/05/2023	National Invasive Species Database Online Atlas of Vascular Plants 2012-2020	- Medium Impact Invasive Species - Regulation S.I. 477 (Ireland)	-
	Traveller's joy *Clematis vitalba*	O13	31/07/2023	Online Atlas of Vascular Plants 2012-2020	- Medium Impact Invasive Species	
	Tree-of-haven *Ailanthus altissima*	O13	25/10/2009	Heritage Trees of Ireland	- Medium Impact Invasive Species	
	Turkey Oak *Quercus cerris*	O13	09/05/2019	Online Atlas of Vascular Plants 2012-2020	- Medium Impact Invasive Species	
	Wild Parsnip *Pastinaca sativa*	O13	09/07/2022	Online Atlas of Vascular Plants 2012-2020	- Medium Impact Invasive Species	
	Wall Cotoneaster *Cotoneaster horizontalis*	O13	30/11/2021		-	
Bryophytes	Sausage Beard-moss *Didymodon tomaculosus*	O14	16/11/2003	Bryophytes of Ireland		Vulnerable
Terrestrial Mammals (Native)	Eurasian Badger *Meles meles*	O14 O13 O13U	30/05/2015 01/09/2020 04/04/2018	Atlas of Mammals in Ireland 2010-2015 Aras an Uachtarain Biodiversity Audit 2019-2020 Mammals of Ireland 2016-2025	- Wildlife (Amendment) Act 2000 - Berne Convention Appendix III	Least Concern
	Eurasian Pygmy Shrew *Sorex minutus*	O14 O13	06/06/2018 06/01/2023	Atlas of Mammals in Ireland 2016-2025 Aras an Uachtarain Biodiversity Audit 2019-2020	- Wildlife (Amendment) Act 2000 - Berne Convention Appendix III	Least Concern

Species Group	Name	Grid square	Date of last record	Database	Legal Status	Conservation status
	Eurasian Red Squirrel *Sciurus vulgaris*	O14 O13 O13U	10/05/2011 02/08/2017 02/08/2017	Atlas of Mammals in Ireland 2010-2015 Mammals of Ireland 2016-2025	- Wildlife (Amendment) Act, 2000 - Berne Convention Appendix III	Least Concern
	European Otter *Lutra lutra*	O14 O13	02/05/2014 16/07/2018	Atlas of Mammals in Ireland 2010-2015 Mammals of Ireland 2016-2025	- EU Habitats Directive – Annex II & IV - Wildlife (Amendment) Act 2000 - Bern Convention Appendix III	Least Concern
	Irish Hare *Lepus timidus subsp. hibernicus*	O14 O13	27/08/2023 17/09/2015	Mammals of Ireland 2016-2025 Atlas of Mammals in Ireland 2010-2015	- Wildlife (Amendment) Act 2000	Least Concern
	Irish Stoat *Mustela erminea subsp. hibernica*	O14 O13	05/06/2012 26/02/2016	Atlas of Mammals in Ireland 2010-2015 Mammals of Ireland 2016-2025	- Wildlife (Amendment) Act, 2000 - Bern Convention Appendix III	Least Concern
	Pine Marten *Martes martes*	O13 O14	13/12/2021 31/12/2012	Irish Squirrel Survey 2012; Atlas of Mammals in Ireland 2010-2015	- EU Habitats Directive – Annex V - Bern Convention Appendix III - Wildlife (Amendment) Act 2000	Least Concern
	Red Fox *Vulpes vulpes*	O14 O13 O13U	01/01/2018 01/09/2020 25/09/2017	Mammals of Ireland 2016-2025 Aras an Uachtarain Biodiversity Audit 2019-2020		Least Concern
	Eurasian Red Squirrel (Sciurus vulgaris)	O13	28/06/2022	Mammals of Ireland 2016-2025	Protected Species: Wildlife Acts	Least Concern

Species Group	Name	Grid square	Date of last record	Database	Legal Status	Conservation status
	West European Hedgehog *Erinaceus europaeus*	O14 O13 O14Q O1640	30/10/2022 13/09/2022 25/09/2021 23/07/2021	Atlas of Mammals in Ireland 2010-2015; Road Kill Survey Atlas of Mammals in Ireland 2010-2015	- Wildlife (Amendment) Act 2000 - Bern Convention Appendix III	Least Concern
	Wood Mouse *Apodemus sylvaticus*	O14 O13	13/09/2011 31/08/2020	Atlas of Mammals in Ireland 2010-2015 Aras an Uachtarain Biodiversity Audit 2019-2020		Least Concern
Terrestrial Mammals (non-native)	American Mink *Mustela vison*	O13	27/02/2016	Mammals of Ireland 2016-2025	- High Impact Invasive Species - Regulation S.I. 477 (Ireland)	
	Brown Rat *Rattus norvegicus*	O14 O13	15/05/2017 14/04/2023	Mammals of Ireland 2016-2025 Aras an Uachtarain Biodiversity Audit 2019-2020	- High Impact Invasive Species - Regulation S.I. 477 (Ireland)	
	Eastern Grey Squirrel *Sciurus carolinensis*	O14 O14Q 01640 O13 O13U	07/07/2022 07/07/2022 07/07/2022 27/03/2023 07/07/2022	Mammals of Ireland 2016-2025 Aras an Uachtarain Biodiversity Audit 2019-2020	- High Impact Invasive Species - EU Regulation No. 1143/2014 & Regulation S.I. 477 (Ireland)	
	European Rabbit *Oryctolagus cuniculus*	O14 O13	24/06/2018 15/06/2020	Mammals of Ireland 2016-2025 Aras an Uachtarain Biodiversity Audit 2019-2020	- Medium Impact Invasive Species	

Species Group	Name	Grid square	Date of last record	Database	Legal Status	Conservation status
	Fallow Deer *Dama dama*	O13	04/12/2022	Mammals of Ireland 2016-2025	- High Impact Invasive Species - Regulation S.I. 477 (Ireland)	
	Feral Ferret *Mustela furo*	O13	12/08/2018	Mammals of Ireland 2016-2025	- High Impact Invasive Species	
	Greater White-tooth Shrew *Crocidura russula*	O13	19/06/2017	Mammals of Ireland 2016-2025	- Medium Impact Invasive Species	
	House Mouse *Mus musculus*	O13	25/07/2018	Mammals of Ireland 2016-2025	- High Impact Invasive Species	
Bats	Brown Long-eared Bat *Plecotus auritus*	O14 O13	14/09/2002 25/05/2020	National Bat Database of Ireland Aras an Uachtarain Biodiversity Audit 2019-2020	- EU Habitats Directive Annex IV - Wildlife (Amendment) Acts 2000	Least Concern
	Common Pipistrelle *Pipistrellus pipistrellus sensu stricto*	O13	25/05/2020	Aras an Uachtarain Biodiversity Audit 2019-2020	- EU Habitats Directive Annex IV - Wildlife (Amendment) Acts 2000	Least Concern
	Daubenton's Bat *Myotis daubentonii*	O14 O13	12/08/2009 25/05/2020	National Bat Database of Ireland Aras an Uachtarain Biodiversity Audit 2019-2020	- EU Habitats Directive Annex IV - Wildlife (Amendment) Acts 2000	Least Concern
	Lesser Noctule *Nyctalus leisleri*	O14 O14Q 01640 O13	09/08/2012 31/05/2011 01/08/2008 08/06/2020	National Bat Database of Ireland Aras an Uachtarain Biodiversity Audit 2019-2020	- EU Habitats Directive Annex IV - Wildlife (Amendment) Acts 2000	Least Concern
	Myotis Bat species *Myotis*	O13	25/05/2020	Aras an Uachtarain Biodiversity Audit 2019-2020	- EU Habitats Directive Annex IV - Wildlife (Amendment) Acts 2000	Least Concern

Species Group	Name	Grid square	Date of last record	Database	Legal Status	Conservation status
	Nathusius's Pipistrelle *Pipistrellus nathusii*	O13	25/05/2020	Aras an Uachtarain Biodiversity Audit 2019-2020	- EU Habitats Directive Annex IV - Wildlife (Amendment) Acts 2000	Least Concern
	Natterer's Bat *Myotis nattereri*	O14 O13	31/08/2006 25/05/2020	National Bat Database of Ireland Aras an Uachtarain Biodiversity Audit 2019-2020	- EU Habitats Directive Annex IV - Wildlife (Amendment) Acts 2000	Least Concern
	Pipistrelle *Pipistrellus pipistrellus sensu lato*	O14 O14Q O1640 O13	09/08/2012 31/05/2011 01/08/2008 03/08/2013	National Bat Database of Ireland	- EU Habitats Directive Annex IV - Wildlife (Amendment) Acts 2000	Least Concern
	Soprano Pipistrelle *Pipistrellus pygmaeus*	O14 O14Q O1640 O13	09/08/2012 31/05/2011 01/08/2008 25/05/2020	National Bat Database of Ireland Aras an Uachtarain Biodiversity Audit 2019-2020	- EU Habitats Directive Annex IV - Wildlife (Amendment) Acts 2000	Least Concern
	Whiskered Bat *Myotis mystacinus*	O13	13/08/2007	National Bat Database of Ireland	- EU Habitats Directive Annex IV - Wildlife (Amendment) Acts 2000	Least Concern
Amphibian	Common Frog *Rana temporaria*	O14 O13 O14Q	15/03/2023 28/08/2020 23/02/2018	Amphibians and reptiles of Ireland	- EU Habitats Directive Annex V - Berne Convention Appendix III - Wildlife (Amendment) Acts 2000	Least Concern
	Smooth Newt *Lissotriton vulgaris*	O14 O13	28/09/2018 09/05/2020	Amphibians and reptiles of Ireland	- Wildlife (Amendment) Acts 2000	Least Concern

Species Group	Name	Grid square	Date of last record	Database	Legal Status	Conservation status
Fish	European Eel *Anguilla anguilla*	O14 O13	04/07/2008 09/06/2008	River Biologists' Database (EPA)	- Threatened Species: OSPAR Convention	Critically Endangered
Hymenoptera	*Andrena (Melandrena) nigroaenea*	O14	08/04/2020	Bees of Ireland		Vulnerable
	Large Red Tailed Bumble Bee *(Bombus (Melanobombus) lapidarius)*	O14	27/07/2023	Bees of Ireland		Near threatened
	Gooden's Nomad Bee (*Nomada goodeniana*)	O14	07/05/2022	Bees of Ireland		Endangered
	Megachile (Megachile) centuncularis	O14	21/06/2022	Bees of Ireland		Near threatened
Mollusca	Lake Orb Mussel *Musculium lacustre*	O14	01/07/2010	All Ireland Non-Marine Molluscan Database		Vulnerable
Insects	Marsh Fritillary *Euphydryas aurinia*	O13	27/05/2020	Butterflies of Ireland	- EU Habitats Directive Annex II	Vulnerable

Table 5.9: National Biodiversity Data Centre records of rare, invasive and protected species.

5.6.4.1 Rare and Protected Flora

Species records available from the National Biodiversity Data Centre (NBDC) online database for the 2 km grid square (O13U and O14Q) were studied for the presence of rare or protected flora species. A review of the above datasets yielded no records. Furthermore, according to the Flora Protection Order - Bryophytes Map Viewer provided by the DAHG, there are no records for bryophytes listed on the Flora Protection Order within the vicinity of the proposed development. No rare or protected flora were identified within the Site during surveys.

5.6.4.2 Invasive Flora Species

The NBDC have records for thirty-four species of flora considered to be invasive in the 10km grid squares O13 and O14, twenty of these are considered medium impact, whereas fourteen are considered high impact. Eighteen species within the grid squares are listed under Schedule III of Regulation S.I. 477. Only two species of flora considered to be invasive are listed for the 2km (O14Q and O13U), grid squares within which the site of the proposed development is located, Butterfly-bush and Sycamore. Both species are medium impact invasive species.

No high impact invasive plant species were recorded at the Site during the walk over surveys carried out on the 13th of May 2021 or the 14th of February 2024. Three non-native, potentially invasive species were found along the western fence line within the Site boundary, a single Butterfly-bush *Buddleja davidii*, a number of Sycamore *Acer pseudoplatanus* saplings and Cotoneaster *Cotoneaster spp*. None of these species are listed under regulation S.I. 477. [6]

5.6.4.3 Mammals (excl. bats)

Ten native terrestrial mammals were recorded within the 10km grid squares, eight of which are afforded legal protection under the Wildlife (Amendment) Act, 2000, namely Eurasian Badger Meles meles, Eurasian Pygmy Shrew *Sorex minutus*, Eurasian Red Squirrel *Sciurus vulgaris*, European Otter *Lutra lutra*, Irish Hare *Lepus timidus subsp. hibernicus*, Irish Stoat *Mustela erminea subsp. hibernica*, Pine Marten *Martes martes* and West European Hedgehog *Erinaceus europaeus*. A number of these species are also protected under the Habitats Directive and were recorded within one or more of the relevant grid squares. Otter, Irish Hare and Irish Stoat were recorded in grid squares O14 and O13, Pine Marten was recorded in grid squares O14. The Eurasian Badger and Eurasian Red Squirrel were recorded in grid squares O14, O13 and O13U.

The habitats within the Site of the Proposed Development are of little or no value for mammals. The Site is comprised mainly of the hard-standing and man-made habitats associated with the current buildings located at the Site.

According to the Dublin City Otter Survey, carried out as part of an Action of the Dublin City Biodiversity Action Plan 2015-2020 (Macklin et al., 2019), Otters do utilise the Santry river. The majority of Otter signs recorded along the river were located in the upper survey reaches south of the M50. The river reaches north of the M50 were not surveyed by Macklin et al. (2019).

[6] The NDBC have records of two medium impact invasive species within the 2km grid squares (O14Q and O13U) within which the Proposed Development is located. Three potentially invasive species were found by Enviroguide Consulting during the walk over survey on the 13th of May 2021. These species were again observed during the walk over survey on the 14th of February 2024.

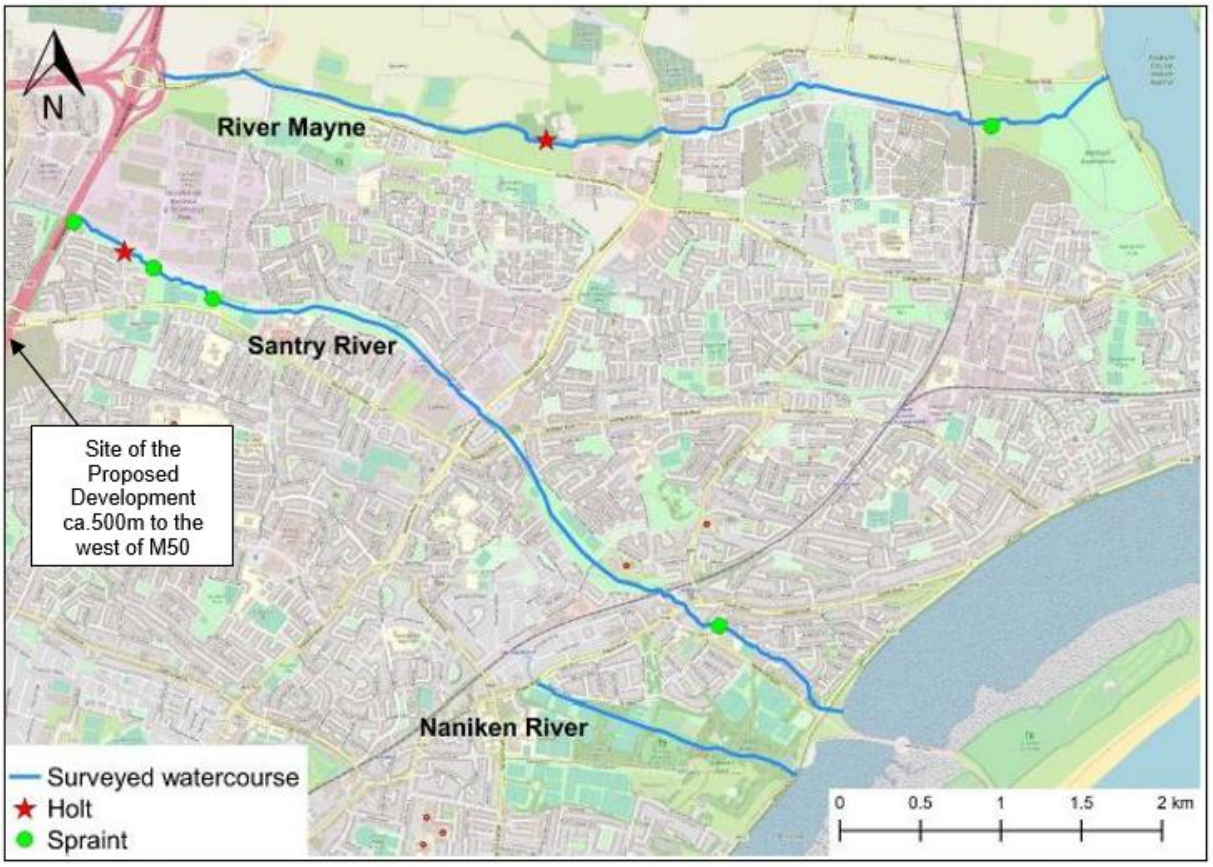


Figure 5.9: Otter sign distribution on the surveyed reaches of the Santry, Mayne and Naniken rivers as surveyed April 2018 – April 2019 by Triturus Environmental Lid. (Extracted from Macklin et al., 2019). No signs of Otter were recorded at the Site nor does it provide suitable habitat for this species.

No evidence of mammal activity was noted during the field surveys carried out on the 13th of May 2021 and the 14th of February 2024. No evidence of Badger activity such as sets or latrines were recorded at the Site and there is no suitable habitat for this species. There is very limited potential habitat for hedgehog and pygmy shrew along the hedgerows bordering the west of the Site and these species are not expected to utilise the Site due to current levels of disturbance. There are no watercourses, open fields or areas of woodland within the Site, there is therefore no potential habitat for hare, pine marten, deer species or stoat within the Site.

Red fox *Vulpes vulpes* may frequent the Site as they are a relatively widespread species in urban environments. However there is no suitable habitat at the Site for den creation due to its almost entirely built nature. This species is not protected in Ireland and is not assessed further in this Chapter.

5.6.4.4 Bats

In view of their sensitive status across Europe, all species of bat have been listed on Annex IV of the EC 'Habitats Directive and some, such as the lesser horseshoe bat, are given further protection and listed on Annex II of this Directive. The obligations of the Habitats Directive have been transposed into Irish law and combined with the Wildlife Acts 1976 to 2018, ensure that individual bats and their breeding sites and resting places are fully protected. This has important implications for those who own or manage sites where bats occur.

All bat species are protected under the Wildlife Acts which make it an offence to wilfully interfere with or destroy the breeding or resting place of these species; however, the Acts permit limited exemptions for certain kinds of development.

Records for Bat species recorded in the 1km, 2km and 10km National Grid Squares were retrieved from the NBDC online database, along with records obtained from the NPWS. Three species were recorded within the 1km grid square (O1640), Lesser Noctule *Nyctalus leisleri*, Pipistrelle *Pipistrellus pipistrellus sensu lato* and Soprano Pipistrelle *Pipistrellus pygmaeus*.

5.6.4.4.1 Bat Survey conclusion

An assessment of the Site's bat potential was conducted on 14th February 2024 by Enviroguide Ecologists. This assessment included a potential bat roost assessment (PBRA) of the structures on Site as well as an assessment of the habitat suitability therein; to update the baseline conditions established by AW in their April 2021 assessment. The results of the bat survey carried out by AW of Ash Ecology on the 28th of April 2021 found:

'an absence of bat activity onsite during the survey despite the ambient weather conditions on the night and found the site itself to be of Lower Importance for bats for the following reasons:

- *No bats were recorded during the bat survey carried out in ambient weather conditions during the appropriate time of year.*
- *The site is well illuminated due to the fact it is a live retail site (likely to deter bats).*
- *The site lacks mature trees and therefore commuting and foraging routes to other more suitable habitats.*
- *All buildings occupying the site lacked roosting suitability for bats.'*

The results of the February 2024 assessment confirm that the Site continues to hold negligible bat roost potential and negligible habitat suitability, therefore no further surveys were required as per the BCT Guidelines (Collins, 2023).The Site continues to comprise a well lit, active commercial premises, almost entirely comprised of hard-standing. The buildings on Site are modern and provide no suitable roosting opportunities.

These assessments aligns with the that of the NBDC's bat suitability index (Lundy et al. 2011) score for the area. The index provides a visual map of the broad scale geographic patterns of occurrence and local roosting habitat requirements for Irish bat species, and shows that the area surrounding the Site of the Proposed Development carries an overall bat suitability score of 18.89 out of 100. The index ranges from 0 to 100 with 0 being least favourable and 100 most favourable for bats. A higher score is given just inside the northern boundary of the Site; 25.89 likely due to the close proximity of Santry Park with its wooded areas. The species with the highest individual suitability scores for the area encompassing the site are Common Pipistrelle *Pipistrellus pipistrellus* and Lesser Noctule *Nyctalus leisleri* with 40 and 33 respectively.

5.6.4.5 Birds

Limited bird species were recorded during the site visits on the 13th of May 2021 and 14th of February, 2024. A total of ten species were identified within the vicinity of the Site, predominantly associated with the boundary vegetation and the occasional flyover. All species recorded during the survey are shown in Table 5.10. One species, Herring Gull observed flying over the Site and loafing on an adjacent rooftop is on the Amber List of the Birds of Conservation Concern in Ireland. All other species observed are Green Listed. The Site is deemed to provide limited suitable habitat for common and widespread urban species i.e., sections of hedgerow and treelines for the passerines observed using the Site and warehouse roof providing some potential nesting habitat for gull species.

Species	BoCCI[7] status	Notes	Breeding Status
Blackbird *Turdus merula*	Green	Observed in Hedgerow (WL1) and Treeline (WL2)	Possible Breeder
Wren *Troglodytes troglodytes*	Green	Observed in Hedgerow (WL1) and Treeline (WL2)	Possible Breeder
Robin *Erithacus rubecula*	Green	Observed in Hedgerow (WL1) and Treeline (WL2)	Possible Breeder
Feral Pigeon *Coumba livia f. domestica*	Green	Flyover and on top of building on site	Possible Breeder
Woodpigeon *Columba palumbus*	Green	Flyover and on top of building on site	Possible Breeder
Dunnock *Prunella modularis*	Green	Observed in Hedgerow (WL1) and Treeline (WL2)	Possible Breeder
Blue tit *Cyanistes caeruleus*	Green	Observed in Hedgerow (WL1) and Treeline (WL2)	Possible Breeder
Magpie *Pica pica*	Green	Observed in Hedgerow (WL1) and Treeline (WL2)	Possible Breeder
Jackdaw *Corvus monedula*	Green	Observed in Hedgerow (WL1) and Treeline (WL2) and fly over.	Possible Breeder
Herring Gull *Larus argentatus*	Amber	A site fly over	Not utilizing the Site but some nesting potential on warehouse roof.

Table 5.10. Bird species recorded in the vicinity of the Site during 2021 & 2024 Site visits.

5.6.4.6 Fish

5.6.4.6.1 Atlantic Salmon (Salmo salar)

There are three salmonid fish species native to Ireland, namely Atlantic *Salmon Salmo salar*, Brown Trout *S. trutta* and Arctic Char *Salvelinus alpinus*. In Ireland, Arctic Char are confined to lentic habitats. They typically occur in upland lakes, corries, as well as lowland small and larger lakes with areas of deep water. Given the lack of suitable habitat for Arctic Char in the vicinity of the Site, they are not considered threatened by it and are therefore not considered further in this chapter. Conversely, Brown Trout are a

[7] Birds of Conservation Concern in Ireland 4: 2020-2026 Gilbert, G. Stanbury, A. and Lewis, L., 2021.

relatively common species, occurring in almost every brook, stream, river and lake in Ireland (Kennedy and Fitzmaurice, 1971 cited in King et al., 2011). In addition, anadromous populations (sea trout) occur in many coastal river systems. Brown trout are protected by the Fisheries Acts 1959 to 2006.

Atlantic Salmon are generally widespread in Ireland where habitat quality is suitable and access to river systems from the sea is possible (no barriers to obstruct migration). Atlantic Salmon are listed under Annex II and V of the Habitats Directive and are protected by the Fisheries Acts 1959 to 2006. Furthermore, Atlantic Salmon are categorised as 'vulnerable' in the Irish Freshwater Fish Red List (King et al., 2011). There are no NBDC records of this species in the 10km national grid squares O13 and O14 in which the Site is located. No suitable habitat for this species is present at the Site, however, they may occur downstream in the Santry River.

5.6.4.6.2 Lamprey (Lampetra spp. & Petromyzon marinus)

Ireland has three native lamprey species, Sea Lamprey *Petromyzon marinus*, River Lamprey *Lampetra fluviatilis* and Brook Lamprey *L. planeri*. The latter species is potamodromous whereas the two former species are anadromous. All three species are listed under Annex II of the Habitats Directive and are protected by the Fisheries Acts 1959 to 2006. Sea Lamprey are categorised as 'near threatened in the Irish Freshwater Fish Red List (King et al., 2011). Lamprey surveys in Ireland are focussed on juvenile lampreys, as *L. fluviatilis* and *L. planeri* are indistinguishable as juveniles, most available data relates to "*Lampetra sp*." and cannot be assigned to one species or the other.

It is highly unlikely that Sea Lamprey will be affected by the Proposed Development. The most important locations for Sea Lamprey in Ireland are the Lower Shannon, the River Suir in Clonmel, the River Nore in Kilkenny, the River Moy in Ballina and the River Corrib in Galway (Igoe et al., 2004). Sea Lamprey were recorded in the River Liffey at Island Bridge in 1906 (Igoe et al., 2004).

Although juvenile lamprey typically inhabit slow flowing, silty habitats within rivers (Kelly & King, 2001), adult lamprey require similar spawning habitats to salmonids (clean gravels) and may occur downstream within the Santry River. There are no records for any species of lamprey within the 10km grid squares associated with the Site of the Proposed Development and no suitable habitat for these species was present at the Site, however, they may occur downstream in the Santry River.

5.6.4.6.3 European eel (Anguilla anguilla)

European Eel are a red listed species and are currently considered to be the most threatened fish species in Ireland, following a red-listed publication (King et al. 2011). European Eel can inhabit a range of waterway types including lakes, small streams and rivers; migrating from where they live in freshwater habitats to breed out at sea, before returning as a young eel to their freshwater homes (King et al. 2011). Eels are protected by the Fisheries Acts 1959 to 2006, conservation of Eel fishing bye-law No. C.S. 303, 2009; EC Regulation (Council Regulation 1100/2007) for the recovery of the eel stock and are listed under CITES Annex II (King et al., 2011). There are no NBDC records of European Eel within the 2km grid squares O14Q and O13U and no suitable habitat for this species is present on the site of the Proposed Development, however, they may occur downstream in the Santry River.

5.6.4.7 Amphibians

The Common Frog *Rana temporaria* and Smooth Newt *Lissotriton vulgaris* were recorded within the 10km grid squares associated with the site of the proposed development. There are records for Common Frog within the 2km grid square O140 also. The Proposed Development Site is an isolated urban site and does not contain any suitable vegetation, drainage ditches, attenuation ponds or slow flowing river habitats and therefore does not provide a suitable habitat for these species.

5.6.4.8 Invertebrates

5.6.4.8.1 White-clawed Crayfish (Austropotamobius pallipes)

In Ireland, the white-clawed crayfish most commonly occurs in small and medium-sized lakes, large rivers, streams and drains, wherever there is sufficient lime (Reynolds, 2007). The overall conservation status of the white-clawed crayfish in Ireland is inadequate, due to the reduction in its range and the continuing pressures that it faces (NPWS,2013).

There are no records for this species within the 10km grid squares O14 and O13 which encompasses the Site of the proposed development and no suitable habitat types are present within the Site. It is noted that this species' range is somewhat restricted to the midlands of Ireland.

5.6.4.8.2 Marsh Fritillary (*Euphydryas aurinia*)

Marsh Fritillary butterfly is listed under Annex II of the EU Habitats Directive and is the only insect protected by law in Ireland. There are records for this species within the 10km grid square O13. Neither Marsh Fritillary, nor its associated food plant; Devil's bit scabious (Succisa pratensis), were recorded during site surveys. Butterfly forms of Marsh Fritillary are active in May-June and Devil's bit scabious flowering in July-September.

The Site is a built-up, isolated urban site and does not contain wet grassland, a habitat often inhabited by this species, and the urban nature of the land surrounding the site i.e., developed land and parkland, would make the presence of Devil's bit scabious very unlikely. As such, it is deemed that the Site does not provided suitable habitat for Marsh Fritillary.

5.6.4.9 Other species and species groups

There are no records of common lizard *Zootoca vivipara* within the 10km grid squares O14 and O13. In addition, this species is associated with coastal and heathland habitats, but also locally in rural gardens, stone walls and roadside verges (King et al., 2011). The built-up urban habitats at the Site of the Proposed Development are not considered suitable for this species.

5.6.5 Designated sites and species evaluation

Fauna that have the potential to utilise the immediate area of the Site, or for which records exist in the wider area, have been evaluated below in Table 5.11 for their conservation importance. Designated sites considered to have the potential to be impacted by the Proposed Development via impact pathways e.g., hydrological links to the Site, are also assessed in this table. This evaluation follows the Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009). The rationale behind these evaluations is also provided. The term 'Key ecological receptor' is used when impacts upon a feature are considered likely.

Designated Sites/Species	Evaluation	Key Ecological Receptor (KER)	Rationale
Designated Sites			
SACs & SPAs	International Importance	No	Potential impacts on European sites are addressed and screened out in the AA Screening accompanying this application.
pNHAs	National Importance	**Yes**	Santry Demesne pNHA is located 20 meters north of the site. The Santry River flows through this pNHA and the woodland within it, which contains a legally protected plant species - Hairy St. John's wort *Hypericum hirsutum* which grows within the woodland and along the riverbanks. Construction Phase dust could cause a nuisance to the vegetation of this pNHA and therefore is assessed further in this Chapter. There is a weak indirect hydrological connection between the Site and North Dublin Bay pNHA via the local surface water drainage systems and Santry River. Although significant impacts are unlikely this KER will be assessed further.
Habitats			
Hedgerows (WL1)	Local importance (higher value)	**Yes**	Due to the low biodiversity context of habitats within the Site, these sections of hedgerow provide some semi-natural habitat for local fauna.
Treeline (WL2)	Local importance (higher value)	**Yes**	Due to the low biodiversity context of habitats within the Site, these sections of treeline provide some semi-natural habitat for local fauna.
Buildings and artificial surfaces (BL3)	Local importance (lower value)	No	Man-made habitat with little to no vegetation present. The Site is almost completely covered with impermeable surfaces and artificial structures. The building provides some potential nesting habitat for gulls, however such habitat is widespread in the urban surrounding environment and therefore it is deemed to have lower ecological value.
Mosaic of Recolonising Bare Ground (ED3) and Dry Meadows and Grassy Verges (GS2)	Local importance (lower value)	No	Limited presence on Site of common and widespread habitat.
Medium Impact Invasive Species (Butterfly-bush, Cotoneaster and Sycamore)	Local importance (higher value)	**Yes**	Although not high impact invasive species, these plants should be removed and disposed off appropriately to avoid spreading off-site.
Mammals			
Eurasian Badger *Meles meles*	Negligible	No	The badger is an adaptable species of lowland grassland and woodland habitats (Marnell et al., 2009). Although the woodland, scrub and hedgerows/treelines in Santry Demesne Park north of the Site are considered suitable for badger, there was no evidence of badger utilizing the Site of the Proposed Development and no suitable habitat lies therein.

Designated Sites/Species	Evaluation	Key Ecological Receptor (KER)	Rationale
West European Hedgehog *Erinaceus europaeus;*	Local importance (lower value)	No	This species is unlikely to use the Site due to lack of habitat, isolated nature in and urban landscape and high levels of disturbance.
Eurasian Pygmy Shrew *Sorex minutus*	Local importance (lower value)	No	This species is unlikely to use the Site due to lack of habitat, isolated nature in and urban landscape and high levels of disturbance. .
Eurasian Red Squirrel *Sciurus vulgaris*	Negligible	No	The habitats at the Site are not suitable for this species and there is no likelihood of this species using the Site.
European Otter *Lutra lutra*	Local importance (higher value)	**Yes**	No watercourse or habitat of value for otter are found within the Site, however a potential weak hydrological link exists between the Site and the Santry River via Construction Phase run-off to local surface water drains.
Pine Marten *Martes martes*	Negligible	No	The favoured habitats of the Pine Marten are woodland and scrub, however, this species also occurs in mature gardens. The species dens in hollow trees, burrows, brash and buildings. The habitats at the Site are unsuitable and there is no likelihood of this species using the Site.
Irish Hare *Lepus timidus* subsp. *hibernicus*	Negligible	No	The favoured habitat of the Irish hare is improved grassland (Marnell et al., 2009). The habitats at the Site and within the surrounding area are considered unsuitable and there is no likelihood of this species using the Site.
Irish Stoat *Mustela erminea* subsp. *hibernica*	Negligible	No	Stoat are found in various habitats from coastal grasslands to woodlands and uplands, however they tend to avoid open habitats (Marnell et al., 2009). The habitats at the Site are considered unsuitable for this species due to the lack of vegetation cover and there is no likelihood of this species using the Site.
Red Fox *Vulpes vulpes*	Local importance (lower value)	No	Although this species is likely to occur in the vicinity of the Site, it is not considered to be of conservation concern and therefore is not assessed further.
Bat Assemblage	Local importance (lower value)	No	The bat surveys and assessments conducted on Site concluded that the Site itself is considered to be of negligible importance for bats. No bats were recorded during the bat activity survey in 2021, the Site lacks mature trees and commuting and foraging routes, and the buildings on Site lack roosting suitability for bats. Site is also deemed unsuitable for bats due to isolated nature in a urban context and existing high light levels on Site.
Birds			
Bird assemblage	Local importance (higher value)	**Yes**	No red-listed species recorded on Site. One Amber listed species was recorded flying over the Site (Herring Gull). The Site does provide suitable nesting habitat on warehouse roof and buildings in the surrounding area. Green listed species were recorded at the Site and may breed in the limited hedgerow habitats on Site.

Designated Sites/Species	Evaluation	Key Ecological Receptor (KER)	Rationale
Amphibians			
Common Frog *Rana temporaria*	Negligible	No	There are no suitable breeding sites (ditches, attenuation pond) within the Site.
Smooth Newt *Lissotriton vulgaris*	Negligible	No	There are no suitable breeding sites (ditches, attenuation pond) within the Site.
Fish			
Brown Trout *Salmo trutta;* European Eel *Anguilla anguilla;* Brook and River Lamprey *Lampetra* spp.	Local importance (higher value)	**Yes**	These species may occur in the Santry River which has a potential hydrological connection with the Site in the form of Construction Phase surface water run-off. There is a slight potential impact to these species during the Construction Phase should they be present; via construction surface water run-off entering drains that ultimately discharge to the Santry River.
Invertebrates			
White-clawed crayfish (*Austropotamobius pallipes*)	Negligible	No	No suitable habitat on Site.
Marsh Fritillary (*Euphydryas aurinia*)	Negligible	No	No suitable habitat on Site.

Table 5.11: Evaluation of designated sites, habitats and fauna recorded within the surrounding area

5.7 Potential Impacts

Taking the baseline ecological data, the extent, the scale and the characteristics of the Proposed Development into account, the following potential impact sources have been identified:

- Hedgerow removal;
- Impacts on Surface water;
- Earthworks – causing the mobilisation of particles (dust);
- Noise and vibration.

These potential impacts are discussed in the following paragraphs. An assessment of the Proposed Development indicates the potential impacts to biodiversity are predominantly associated with Construction Phase works which will be temporary in nature. The Site was found to have low ecological value as informed by the results of both the desktop study and the field surveys. The Operational Phase elements of the project are deemed to have negligible potential for impacts on biodiversity.

Hedgerow removal

The removal of hedgerows could result in the loss of potential breeding bird habitat and the loss of nests if carried out during the nesting season.

Impacts on Surface Water

The Construction Phase elements of the Proposed Development could affect downstream water quality and aquatic species via run-off to local drains, and therefore a CEMP has been prepared (DBFL, 2024b). The Operational Phase elements of the project will be consistent with the urban context of the Site and therefore, there are no long terms sources for impacts to surface water. A suite of SuDS measures have been incorporated into the project design (See Section 0).

Earthworks

The Proposed Development will entail earthworks and demolition works which will generate dust during the Construction Phase. This dust could potentially affect the vegetation within Santry Demesne pNHA if unmitigated. Furthermore, the CEMP contains measures to reduce potential impacts in this regard (see below).

Noise / Vibration

The Construction Phase and movement of heavy vehicles across the Site could cause localised disturbance of breeding birds that may use the perimeter vegetation. Given the low levels of activity identified on Site by birds, and given that there is likely to be an existing degree of habituation to regular traffic on the Site, this impact will be minimal.

5.7.1 Construction Phase

5.7.1.1 Impacts to Designated Sites

Nationally Designated Sites

The Proposed Development does not overlap or adjoin any designated sites for nature conservation. There is a potential hydrological connection between Santry Demesne pNHA and the Site via Construction Phase dust; and between North Dublin Bay pNHA and the Site via the Santry River, as storm drains from the Proposed Development flow into the local storm system and eventually the Santry River.

Santry Demesne pNHA is located approximately 20m north of the proposed development. In the absence of mitigation measures there is potential for dust generated by the Construction Phase to adversely affect vegetation within this pNHA. These impacts are considered to be **short-term, negative, slight** in nature in the absence of mitigation.

North Dublin Bay pNHA is connected to the Proposed Development via a weak hydrological connection i.e., Construction Phase surface water run-off containing silt and/or pollutants from the Site entering the Santry River via the local storm system. The potential for surface water generated at the Site to reach this pNHA and cause significant effects is deemed to be **short-term**, **neutral, imperceptible** due to the downstream distance (over 6 river km) and consequent potential for dilution in the Santry River and Dublin Bay. Any potential surface water containing sediments, silts and/or pollutants would become diluted to non-discernible levels by the time they reach the pNHA.

Internationally Designated Sites

The Proposed Development shares a potential hydrological pathway to internationally designated sites, namely North Bull Island Ramsar site, and a UNESCO Biosphere in Dublin Bay via Construction Phase surface water run-off into the Santry River as described above.

These international sites overlap the European sites and nationally designated sites considered for impacts above. Thus, as impacts to European sites and nationally designated sites via this hydrological pathway have been ruled out, likely significant effects to these internationally designated sites as a result of the Proposed Development can also be ruled out by proxy, as they maintain the same potential impact pathway and are designated for the same reasons. The potential for surface water generated at the Site to reach these sites and cause significant effects is therefore deemed to be **short-term**, **neutral, imperceptible.**

5.7.1.2 Impacts to Habitats and Flora

The habitats listed as KERs within the site of the Proposed Development include:

- Treelines (WL2)
- Hedgerows (WL1)

It is intended to retain the existing tree lines along the western and eastern boundary. These trees will be retained and protected in accordance with BS 5837:2012, with the root protection area (EPA) clearly outlined. As such, no significant impacts will occur to this habitat type during the Construction Phase of the Proposed Development.

Some sections of hedgerows along the Site boundary will likely be cleared as part of the Proposed Development. This will have a **permanent, negative, slight** impact due to the limited nature and value of these habitats on Site. Sections of hedgerow along the western fence-line contained medium impact invasive

species Butterfly-bush and Cotoneaster. These species should be removed appropriately to avoid spread offsite. However, neither species are known to cause significant impacts (they are spread by seed and can grow vigorously and cause nuisances in more natural environments, however are easily managed/removed) therefore spread offsite can be defined as a **short-term, negative, slight** impact if unmitigated.

5.7.1.3 Impacts on Fauna

Mammals excl. bats

There is potential for negative impacts on Otter in the Santry river during the Construction Phase of the Proposed Development due to potential surface water containing silt, sediments or pollutants entering local surface water drains and the downstream Santry River. Although deemed unlikely to occur, this could potentially impact the prey population for Otter utilising the waterbody. This constitutes a **short-term, negative, slight** impact in the absence of suitable mitigation.

Birds

Local birds are likely to adapt to a certain degree of urban ambient noise due to the location of the Site, the Construction Phase of the Proposed Development will likely result in elevated noise levels associated with the demolition and construction works. As a result, there is a potential risk of noise disturbance to birds in the vicinity of the Site, representing a **short-term, negative, slight** impact in the absence of suitable mitigation.

The bird species recorded on Site were all associated with the treelines and hedgerow along the boundary of the Site. Should demolition of the warehouse or hedgerow vegetation be cleared from the Site during the breeding bird season (March 1st to August 31st) there is the potential for nesting birds to be harmed and nests to be destroyed. This would be in contravention of the Wildlife Acts and Amendments (2000) which provides protection to breeding bird species and their nests and young. Therefore, in the absence of any mitigation or precaution, this risk represents a potential **short-term, negative, significant** impact to breeding birds at the Site scale.

Fish

Watercourses are highly sensitive to contamination with excess sediment, fuel and cementitious materials during the Construction Phase of developments. There is a potential hydrological connection between the Site and the Santry River via local storm drains. There is potential for negative impacts on fish in the Santry river during the Construction Phase of the Proposed Development due to potential surface water containing silt, sediments or pollutants entering local surface water drains. This constitutes a **short-term, negative, slight** impact in the absence of suitable mitigation.

5.7.2 Operational Phase

5.7.2.1 Impacts to Designated Sites

Negative impacts as a result of the Operational Phase of the Proposed Development to downstream designated sites are not anticipated due to the surface water management measures and SuDS incorporated into the project design. Surface water run-off from the Proposed Development will be treated via on-site SuDS measures which will reduce the flow rate of surface water run-off and largely eliminate the risk of pollution of waterbodies arising from surface water run-off during the Operational Phase of the Proposed Development. Impacts are therefore defines as **permanent**, **neutral, imperceptible**.

The Proposed Development shares a potential indirect hydrological pathway to designated sites, namely North Dublin Bay pNHA, South Dublin Bay pNHA, Dolphins, Dublin Docks pNHA, North Bull Island Ramsar site, Sandymount Strand/Tolka Estuary Ramsar site, and the UNESCO Biosphere in Dublin Bay via outflow from Ringsend wastewater treatment plant. The potential for likely significant affects to European sites located in Dublin Bay, which overlap with these designated sites, was screened out in the AA Screening which accompanies this application under separate cover. This assessment can therefore be applied to these above named designated sites by proxy. Ringsend WwTP is further discussed in section 0 of this Chapter. Impacts are therefore defines as **permanent**, **neutral, imperceptible.**

5.7.2.2 Impacts to Habitats and Flora

It is not envisaged that there will be any significant impacts to habitats at the Site of the Proposed Development associated with the Operational Phase.

5.7.2.3 Impacts to Fauna

Mammals excl. bats

There are no impacts to KER mammals i.e., Otters, associated with the Operational Phase of the Proposed Development. As negative impacts on waterbodies are not anticipated, negative impacts on this species as a result of water quality issues in the Santry River are not expected.

Birds

No significant adverse effects on bird species are anticipated to arise as a result of the Operational Phase of the Proposed Development. However, it will have a **permanent, positive, significant** impact on birds utilising the Site through the increased presence of vegetation. It is proposed to use native species to create new hedgerows, treelines, meadows and gardens. This will potentially provide new foraging, nesting/roosting and commuting habitat at the Site and have an overall Positive impact on local biodiversity including birds. The provision of roof space will also provide potential habitat for nesting gulls into the future.

Fish

As negative impacts as a result of the Operational Phase on waterbodies are not anticipated, negative impacts on fish as a result of water quality issues in the Santry River are not expected.

5.8 Avoidance, Mitigation, Compensation and Enhancement Measures

5.8.1 Embedded Mitigation

5.8.1.1 General Measures for All Fauna

Reduction of noise impacts

Short-term increases in disturbance levels as a direct result of human activity and through increased generation of noise during the Construction Phase can have a range of impacts depending upon the sensitivity of the ecological receptor, the nature and duration of the disturbance and its timing.

Noise generated during the Construction Phase of the proposed development could cause temporary disturbance to a number of faunal species in the vicinity of the Site. To mitigate this disturbance, the following

measures will be implemented:

- Selection of plant with low inherent potential for generating noise.
- Siting of plant as far away from sensitive receptors as permitted by site constraints.
- Avoidance of unnecessary revving of engines and switch off plant items when not required.
- Keep plant machinery and vehicles adequately maintained and serviced.
- Proper balancing of plant items with rotating parts.
- Keep internal routes well maintained and avoid steep gradients.
- Minimise drop heights for materials or ensure a resilient material underlies.
- Use of alternative reversing alarm systems on plant machinery.
- Where noise originates from resonating body panels and cover plates, additional stiffening ribs or materials should be safely applied where appropriate.
- Limiting the hours during which site activities likely to create high levels of noise are permitted.
- Appointing a site representative responsible for matters relating to noise.
- Monitoring typical levels of noise during critical periods and at sensitive locations.

These measures will ensure that any noise disturbance to nesting birds or any other fauna species in the vicinity of the Site will be reduced to a minimum.

5.8.2 Construction Phase Mitigation

5.8.2.1 Protection of Santry Demesne pNHA: Dust Control

The following general dust control measures will be followed for the duration of the Construction Phase of the Proposed Development, and will ensure no significant dust related impacts occur to nearby sensitive receptors such as Santry Demesne pNHA.

- Screens (permeable or semi-permeable) will be erected to minimise dust leaving the Site during the works and affecting the surrounding environment.
- Haulage vehicles transporting gravel and other similar materials to site will be covered by a tarpaulin or similar.
- Access and exit of vehicles will be restricted to certain access/exit points.
- Vehicle speed restrictions of 20km/hr will be in place.
- Bowsers will be available during periods of dry weather throughout the construction period.
- 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 thereby reducing the amount of dust.
- Stockpiles will be stored in sheltered areas of the site, covered, and watered regularly or as needed if exposed during dry weather.
- Gravel should be used at site exit points to remove caked-on dirt from tyre tracks.
- Equipment should be washed at the end of each workday.
- Hard surfaced roads will be wet swept to remove any deposited materials.
- Unsurfaced roads will be restricted to essential traffic only.
- If practical, wheel-washing facilities should be located at all exits from the construction sites.
- Dust production as a result of site activity will be minimised by regular cleaning of the site ac-cess roads using vacuum road sweepers and washers. Access roads should be cleaned at least 0.5km on either

side of the approach roads to the access points.

- Public roads outside the site shall be regularly inspected for cleanliness, as a minimum daily, and cleaned as necessary. A road sweeper will be made available to ensure that public roads are kept free of debris.
- The frequency of cleaning will be determined by the site agent and is weather and activity de-pendent.
- The height of stockpiles will be kept to a minimum and slopes should be gentle to avoid wind-blown soil dust.
- The following will be dampened during dry weather:
- Unpaved areas subject to traffic and wind.
- Stockpiles.
- Areas where there will be loading and unloading of dust-generating materials.

5.8.2.2 Habitats and Flora

It is considered that there will be some loss of Hedgerows (WL1). To compensate for the loss of natural habitats at the Site, tree and hedgerow planting consisting of native, pollinator friendly tree/shrub species will be carried out within and around the perimeter of the Site. It is proposed to plant new trees along the western and southern boundaries and throughout the proposed green spaces. The final landscape design includes gardens and open areas with native species planted throughout. This will enhance the habitat provisions on the Site. Typical tree planting will include Alder *Alnus glutinosa*, Birch *Betula nigra*, Hazel *Corylus avellana* and semi mature Oak *Quercus robur.* Please refer to DLFA report and landscape plans for further details.

The planting of native flora will improve local biodiversity and increase insect abundance. This will provide additional foraging/roosting habitat for bats and birds at the Site and improve the biodiversity value of the Site in comparison to its current state.

Tree planting and retention

The loss of the hedgerow vegetation from the site to facilitate the Proposed Development is to be mitigated against with the planting of new trees, shrubs and hedge planting within the completed landscaped development. Tree planting will consist of native tree species such as Alder *Alnus glutinosa*, Birch *Betula nigra*, Hazel *Corylus avellana* and semi mature Oak *Quercus robur*. The current treeline along the western and eastern boundary will also be protected and supplemented (See Figure 5.10) as its is largely outside of the redline boundary; although it must be noted that some of these trees are Ash trees suffering from Ash die-back disease, and may be removed in the future. It is concluded that the Proposed Development will thus have an overall positive impact on the habitat make-up at the Site, and therefore no additional mitigation is necessary.

Figure 5.10: Schematic of the Proposed landscaping at the Site of the Proposed Development (Dermot Foley Landscape Architects, 2024).

5.8.2.3 Birds

Any demolition works or clearance of vegetation will be carried **out outside the main breeding season**, **i.e., outside of period: 1st March to 31st August,** in compliance with the Wildlife Act 2000. Should any demolition/ vegetation removal be required during this period, this areas to be affected will be checked for birds and nests by a suitable qualified Ecologist, and if any are noted during this evaluation prior to removal, the nest will be protected until the young have fledged as confirmed by the Ecologist, after which time the inactive nest can be destroyed.

5.8.2.4 Biosecurity

The following will be adhered to, to avoid the introduction of invasive species to the Proposed Development site.

- Any material required on the site will be sourced from a stock that has been screened for the presence of any invasive species by a suitably qualified ecologist and where it is confirmed that none are present.
- All machinery will be thoroughly cleaned and disinfected prior to arrival on site to prevent the spread of invasive species.

5.8.2.5 Non-native Species

Although not considered to be '*high impact'* invasive species or listed under regulation S.I. 477, the non-native species recorded at the Site, Butterfly-bush, Sycamore saplings and Cotoneaster should be controlled/removed as per the appropriate best-practice guidelines. Removal and disposal should be carried out in accordance with appropriate guidelines such as TII (formerly NRA) Guidelines on The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads (2010), with consideration given to the prevention of spread of these plants.

5.8.2.6 Aquatic species and Waterbodies

A potential hydrological connection exists between the Site of the Proposed Development, the Santry River and Dublin Bay via Construction Phase surface water discharge. The below measures for the general protection of water quality will act to reduce the likelihood of any potential impact on aquatic species and water quality within the waterbodies connected to the Proposed Development, specifically the Santry River, during the Construction Phase.

General Protection of Water Quality

The following standard operational measures will protect surface waters during the Construction Phase of the Proposed Development:

- No direct discharges will be made to waterbodies or drains where there is potential for cement or residues in discharges.
- The washing out of concrete trucks on Site will not be permitted, all concrete truck washout must take place back in the ready-mix depot.
- The pH of any and all discharges made from and during the Construction Phase of the Proposed Development shall be in the range of 6-9 units and not alter the pH of any receiving waters by more than +/- 0.5 pH units.
- Run-off from the working Site or any areas of exposed soil will be managed and controlled for the duration of the construction works until the permanently attenuated surface water drainage system is complete. A temporary positive drainage system shall be installed prior to the commencement of works.
- The level of suspended solids in any discharges to fisheries waters as a consequence of construction works shall not exceed 25mg/l, nor result in the deposition of silts on gravels or any element of the aquatic flora or fauna.
- A regular review of weather forecasts of heavy rainfall will be conducted, and a contingency plan will be prepared for before and after such events to minimise any potential nuisances. As the risk of the break-out of silt laden run-off is higher during these weather conditions, no work will be carried out during such periods where possible.
- Any imported materials will, as much as possible, be placed on site in their proposed location and double handling will be avoided. Where this is not possible designated temporary material storage areas will be used.
- All containment and treatment facilities will be regularly inspected and maintained.
- If cast-in-place concrete is required, all work must be carried out in the dry and effectively isolated from any water courses or drainage ditches.

- Refuelling of plant during the Construction Phase will only be carried out at designated refuelling station locations on site. Each station will be fully equipped for spill response and a specially trained and dedicated Environmental and Emergency Spill Response team will be appointed before the commencement of works on site.
- Only emergency breakdown maintenance will be carried out on site. Drip trays and spill kits will be available on site to ensure that any spills from vehicles are contained and removed off site.
- All personnel working on site will be trained in pollution incident control response. Emergency silt control & spillage response procedures contained within the CMP will ensure that appropriate information will be available on site outlining the spillage response procedures and a contingency plan to contain silt during an incident.
- Any other diesel, fuel or hydraulic oils stored on site will be stored in bunded storage tanks- the bunded area will have a volume of at least 110% of the volume of the stored materials as per best practice guidelines (Enterprise Ireland, BPGCS005).
- Portaloos and/or containerised toilets and welfare units will be used to provide facilities for site personnel. All associated waste will be removed from site by a licenced waste disposal contractor.
- The Site Management Team will maintain a record of all receipts for the removal of toilet or interceptor waste off site to ensure its disposal in a traceable manner.

All wastewater generated on-site during the Construction Phase will be stored and disposed of appropriately by discharge to foul sewer or by tankering off site.

Under no circumstances will any untreated wastewater generated onsite (from equipment washing, road sweeping etc.) be released into nearby drains or watercourses.

5.8.3 Operational Phase Mitigation

5.8.3.1 Habitats and Flora

Soft landscaping will be managed in such a way as to promote pollinators (e.g., pollinator friendly mowing regime, planting of native wildflower meadows and native tree species), please see DFLA Landscape Plan and Landscape Rationale Report (DFLA, 2024) along with the Biodiversity Management Plan (BMP) prepared by Enviroguide (Enviroguide, 2024b) for the Site.

5.8.3.2 Fauna

No Operational Phase mitigation is required for fauna species.

5.8.4 Biodiversity Enhancement Measures

5.8.4.1 Enhancement 1: Swift Bricks

As agreed with Davey Smith Architects and the Client, it is proposed to include 40 No. Swift bricks as part of the Proposed Development. The Swift bricks will be installed side by side, in four sets of 10 on the western elevation of Blocks A & B and the eastern elevation of blocks C & D; as Swifts are a social nesting species (See Figure 5.11). These nest bricks will be installed at least 5 metres above the ground, in safe areas where they will not be disturbed. As the bricks tend not to overheat, they can be placed on any aspect, N, S, E, W. Care will be taken to ensure no obstacles or plate glass windows are located below the bricks.

Guidelines for the bird box scheme should also follow guidelines published by Swift Conservation Ireland, and those published by Birdwatch Ireland entitle "Saving Swifts" (2009/2010). The incorporation of Swift Bricks will help recover the declining swift population, which are now Red Listed in Ireland (Gilbert et al., 2021).

Swifts are a "clean" bird species which remove their own wastes from their nests periodically. As such, Swift bricks do not require any cleaning by the management company.

It is advised to install a **Swift calling system** to attract Swifts and encourage them to take up residence at a new site. A Swift calling system is a small speaker set-up that plays Swift calls during the summer. It should be located close to the brick entrances and has been seen to greatly increase the chances of Swifts using the Swift boxes/bricks. Solar powered options are possible.

An Ecologist will be instructed to set up the Swift calling system once the construction of the Proposed Development is complete. This can be with the help of active local Swift groups as required (e.g., Dublin Swift Conservation Group), who can help and advise as to the best set-up etc.

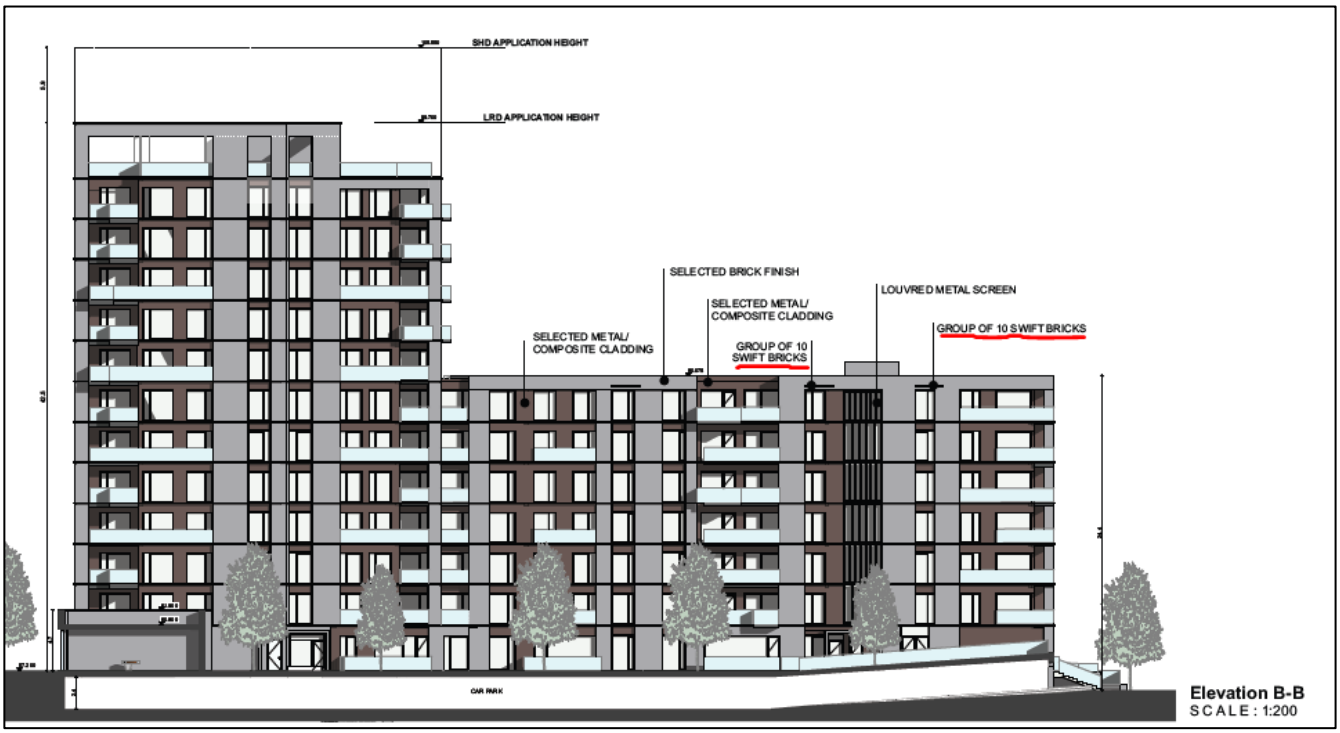


Figure 5.11: Example locations of Swift bricks on western elevation of Blocks A & B (Source: Davey Smith Architects, Layout ID: D1809.P20)

5.8.4.2 Enhancement 2: Bird Boxes

A minimum of 3 no. bird boxes are proposed to be installed within suitable areas at the Site as outlined in further detail below. Bird boxes should be installed prior to the breeding bird season to ensure their presence at the Site from February onwards, when birds begin seeking out new nest locations. Installation will be overseen by an Ecologist; monitoring of bird boxes post-installation is discussed in the Biodiversity Management Plan (BMP) accompanying this application under separate cover (Enviroguide, 2024b).

A range of different bird boxes are available that meet the specific need of the species of birds. The variety of options suitable for installation at the Site and information on the positioning of each type of box are outlined briefly below. A minimum of three boxes should be installed, with preference given to boxes suitable for amber- and red-listed species such as House Sparrow and Starling. Such boxes are described as follows:

- **Sparrow Nest Box:** For example, the Sparrow Nest Box System, which can be found at the following link: https://www.nhbs.com/sparrow-nest-box-system or the Sparrow Terrace, which can be found at the following link: https://www.nhbs.com/sparrow-terrace-nest-box.
- **Starling Nest Box:** This box type can be found at the following link: https://www.nhbs.com/woodpeckerstarling-nest-box

Sparrow nest boxes should be placed 2-4m off the ground with a clear flight path to the entrance. Starling nest boxes 3-4 metres above ground level where there is easy flight access and where it cannot be reached by cats or other potential predators.

Other appropriate bird box types are as follows:

- **'Hole type' bird boxes (28 mm hole):** For example, the Eco Small Bird Box, which can be found at the following link: https://www.nhbs.com/eco-small-bird-box.
- **Open fronted bird boxes for blackbirds:** For example, the Blackbird FSC Nest Box, which can be found at the following link: https://www.nhbs.com/blackbird-fsc-nest-box.
- **Open fronted bird boxes for wrens and robins:** For example, the Eco Robin (Open-Fronted) Nest Box, which can be found at the following link: https://www.nhbs.com/eco-robin-open-fronted-nest-box.

Hole type bird boxes should be positioned 2-4m off the ground, with good-visibility, a clear flight line, and away from the prevailing wind direction. The open-fronted boxes for robins, wrens and blackbirds should be installed lower than 2m but amongst dense vegetation, or newly planted vegetation that will grow to become dense upon establishment, and somewhere cats and other predators won't easily see or access them. Boxes will not be drilled or nailed to trees to avoid damage, but instead be attached via a wire strap wrapped around the tree. Boxes will be located in areas away from direct exposure to public lighting to increase chances of uptake.

5.8.4.3 Enhancement 3: Bat Sensitive Lighting Measures

Although the Site currently holds no suitability for bats, post construction the Site will provide more suitable vegetated habitats and insect prey resources. As such, by way of enhancing the Site's suitability for bats, the public lighting has been designed to minimise light spill onto habitat features such as treelines and planting where possible. This is achieved by ensuring that the design of lighting adheres to the guidelines presented in the Bat Conservation Trust & Institute of Lighting Engineers 'Bats and Lighting in the UK - Bats and Built Environment Series', (ILP, 2018) the Bat Conservation Trust 'Artificial Lighting and Wildlife Interim Guidance' and the Bat Conservation Trust 'Statement on the impact and design of artificial light on bats'.

Based on the above guidance documents, the lighting scheme will incorporate the following measures:

- Internal luminaries will be recessed where possible, if installed in proximity to windows to reduce glare and light spill from the Proposed Dwellings.
- The avoidance of direct lighting of existing trees scrub, woodland, or proposed areas of habitat creation / landscape planting.
- Unnecessary light spill will be controlled through a combination of directional lighting and hooded / shielded luminaires or strategic planting to provide screening vegetation.
- Where appropriate, luminaires on the Site boundary will be fitted with light baffles to prevent light spill onto adjacent habitats.
- Lighting levels have been carefully selected to achieve the recommended illuminance levels for

health and safety requirements whilst minimising light spill.

- Vegetated areas around the perimeter will not be directly lit. Lighting in these areas will not in-crease beyond existing lux levels or 1 lux, whichever is the lesser.
- Vertical light spill at light sources will be below 3m to avoid potential bat flight paths.
- No floodlighting will be used – this causes a large amount of light spillage into the sky. The spread of light will be kept below the horizontal. The upward light ratio (ULR) for the luminaries proposed is 0%.
- Hoods, louvres, shields or cowls will be fitted on the lights where necessary to reduce light spillage.
- All luminaries proposed have high performance optics designed to get the light onto the target area and minimise light spill.
- Lights will be of low intensity. It is better to use several low intensity lights than one strong light spilling light across the entire area.
- The source of light will be Light Emitting Diodes (LEDs) as this is a narrow beam that is highly directional and a highly energy efficient light source. There is no UV element to the light produced by the LEDs proposed.
- All proposed luminaires have LEDs which feature a peak wavelength of over 550nm, this avoids the component of light most disturbing to bats.
- Any external lighting will be fitted with a motion sensor where possible and have a timer of up to 60 seconds. This will ensure that lighting will be active only when required, and lights will not be left switched on overnight.
- All lighting will be facing downward on building facades.

5.8.4.4 Enhancement 4: Biodiversity Management Plan (BMP)

A BMP has been prepared for the Proposed Development by Enviroguide (Enviroguide, 2024b), and accompanies this application under separate cover. This document details the landscape management operations for the Proposed Development, including cutting/trimming regimes and maintenance, and how they can be conducted in a manner that maximises the biodiversity value of the habitats proposed to be created at the Site as well as installation and maintenance of recommended bird boxes.

5.9 Cumulative Impacts

Cumulative Impacts can be defined as "*impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project".* Effects which are caused by the interaction of effects, or by associated or off-site projects, are classed as indirect effects. Cumulative effects are often indirect, arising from the accumulation of different effects that are individually minor. Such effects are not caused or controlled by the project developer.

A review of other off-site developments and proposed developments was completed as part of this assessment. The following projects and plans were reviewed and considered for possible cumulative effects with the proposed development.

5.9.1.1 Relevant Plans and Policies

The following plans and policies were reviewed and considered for possible in-combination effects with the Proposed Development.

- Dublin County Development Plan 2022-2028.
- Dublin City Biodiversity Action Plan 2021-2025.

No specific projects or plans within the Dublin County Development Plan (CDP) 2022-2028 were identified that could act in-combination with the Proposed Development and cause adverse effects on the KERs identified in this Chapter. Additionally, the CDP has directly addressed the protection, enhancement and incorporation of biodiversity through specific Policies and Objectives. The Dublin City Biodiversity Action Plan 2021-2025 is set out to protect and improve biodiversity in the Dublin area, and as such will not result in negative in-combination effects with the Proposed Development.

Therefore, on examination of the above it is considered that there are no means for the Proposed Development to act in-combination with any plans or projects that would cause any likely significant effects to nearby ecological sensitivities.

5.9.1.2 Existing planning permissions

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. The larger granted developments identified within 500m of the Site are identified below in Table 5.12 and the potential for possible in-combination effects with the Proposed Development are assessed.

Planning Reference	Planning Authority	Status	Location
Ref 2713/17, Ref 2737/19, Ref 4549/22	Dublin City Council	Grant Permission (28/03/2018, 22/08/2019, 9/1/2023 respectively).	Santry Avenue and Swords Road, Santry, Dublin 9. (Adjacent to the Proposed Development)
Development Description Three applications are associated with the above development. Each application is described below. Ref 2713/17: The proposed development (c.25,083 sq.m m total gfa above basement car park, and excluding plant, bin stores and bike stores), generally comprises: the partial demolition (c.7,781 sq.m m gfa) of an existing 8-bay warehouse (c.9,539 sq.m m gfa), and the construction of: 1 no. 5-storey mixed use building fronting Swords Road (Block A: c.5,932 sq.m m gfa in total), including 3 no. retail/commercial units (c.502 sq.m m) at ground level and 48 no. residential units in levels above; 1 no. 5-storey residential building (Block B: c.5,233 sq.m m gfa, 47 no. residential units); 1 no. 5-storey mixed use building (Block C:c.5,383 sq.m m gfa in total), including 2 no. office units (c.373 sq.m m gfa) and 1 no. crèche (c.331 sq.m m gfa) at ground floor, and 42 no. residential units from ground to 4th floor levels; the refurbishment of the partially retained and reclad double height warehouse (2-bays, 1,758 sq.m m gfa) with new 4-storey extension, to accommodate commercial office use (Block D: c.6,733 sq.m m gfa in total); and a new 4-storey commercial office building (Block E: c.1,802 sq.m m gfa in total); The proposed development accommodates 137 no. residential units in total (25 no. 3-bed, 88 no. 2-bed and 24 no. 1-bed); And all ancillary and associated site development works, including: new vehicular and pedestrian access via Swords Road at the north east corner of the site, and environmental improvements along the Swords Road frontage; upgrading of existing vehicular and pedestrian access via Santry Avenue; new basement car park (c.3,988 sq.m m) accessed via ramp under Block A accommodating 122 no. car parking spaces (to include 6 no. disabled access), 100 no. bicycle parking spaces, plant, etc.; 151 no. surface car parking spaces (to include 7 no. disabled access); 100 no. surface bicycle spaces; bin storage at ground level in Blocks B and C; surface water attenuation tank; and, hard and soft landscaping, lighting and boundary treatment works; all on a site of c. 1.9Ha. Ref 2737/19: Permission for development, consisting of modifications to a permitted mixed use development under Ref. 2713/17, located at Santry Avenue and Swords Road, Santry, Dublin 9. Permission is sought to increase the height of Blocks A, B and C from permitted 5 storeys to proposed 7 storeys and for a change in unit type and increase in number of apartments i.e. 70 no. apartments, which will result in a change from 137 no. permitted apartments to 207 no. 1, 2 & 3 bed apartments in the aforementioned buildings, including provision of balconies and roof terraces			

(i.e. 240sq.m. each) to Blocks A, B & C. The ground floor of Block C will accommodate a unit (i.e. 210sq.m.) for community use in compliance with condition no. 3 attached to planning permission Ref. 2713/17. The proposed development also seeks to provide additional office floor space to both Blocks D & E, providing an increase of 2,931sq.m. of office accommodation to the overall previously permitted development. Block D will increase in height from permitted 2 & 4 storeys to proposed 3 & 5 storeys, while Block E will increase in height from permitted 4 storeys to proposed 5 storeys. Permission is also sought for an extension to the permitted basement car park, (i.e. 1,273sq.m.), to accommodate 52 no. additional car parking spaces, additional bicycle parking and a new emergency escape route to the surface. The proposed development also provides for conversion of 3 no. surface car parking spaces to 3 no. "GoCar" spaces to the north of Block B, and all associated site development works, on a site area of 1.55ha. The effect of the proposed development will be a modification to an extant permission under Ref. 2713/17. Ref 4549/22: The proposed development will consist of modifications to the development permitted on site under DCC Reg. Ref.: 2713/17 and 2737/19. The proposal will include construction of an urban block comprising 3 no. 7 storey blocks (Blocks D, E, and F). – Block D, and the ground floors of Blocks E and F will provide c. 13,921 sqm office space (an increase of 2,454.7sqm). – Residential apartments are proposed on the upper floors of Blocks E and F providing 48 no. apartments (16 no. 1 beds, 24 no. 2 beds, and 8 no. 3 beds) to provide a new total of 253 no. residential units (in increase from 205 units). All residential units will have north/south/east/west facing private open spaces. The development will also include communal open space at podium level, 95 no. car parking spaces and 269 no. cycle parking spaces at surface and undercroft level (an increase of 15 no. car parking space and 164 no. cycle parking spaces), and all other site services and works to enable the development including bins, substations/plant areas, boundary treatments and landscaping. **Potential for In-combination Effects** The three applications are considered together as neither of the subsequent applications presents changes that have significance to ecology from the initial application. Both developments involve the development of existing developed land almost entirely comprised of commercial buildings and hardstanding. As such, neither the Proposed Development nor the above development will result in any significant impacts to existing habitats of value. The Proposed Development will also have no significant impact on any KER or local biodiversity and as such, it can be considered that it will not contribute to any in-combination effects with this development.

F20A/0004	Fingal County Council	Grant Permission (20/04/2021)	Lilmar Industrial Estate, Oak Avenue, Santry, Dublin 9.
Development Description Planning permission was sought for the demolition of existing industrial units (2417 sq.m). Construction of 2 no. apartment blocks (3-5 storeys in height), comprising 35 no. units (13 no. 1-bed, 18 no. 2-bed and 4 no. 3-bed), all with balconies/terraces facing north-south-east/west. Development to be accessed from Oak Avenue (existing) to the south with additional new pedestrian access to the east. Provision of car parking (surface) and cycle parking, open spaces and all associated site development works, landscaping, boundary treatments and other servicing works. **Potential for In-combination Effects** The Proposed Development will have no significant impact on any KER or local biodiversity and as such, it can be considered that it will not contribute to any in-combination effects with this development.			

Table 5.12: Assessment of potential in-combination effects of the Proposed Development and other developments pending or granted permission in the last five years (2019-2024).

5.9.1.3 Operation of Ringsend WWTP

This section addresses in more detail the general issue of potential in-combination effects with Ringsend WwTP arising from the Operational Phase of the Proposed Development and other Developments, including future developments.

In summary, the impact of the Proposed Development and any future development has already been appropriately considered and assessed as part of the application process for the existing planning

permissions pertaining to Ringsend WwTP.

The 2012 Ringsend WwTP application for planning permission (Ref. PL.29N.YA0010) was for a PE of 2.4 million and was predicated on the findings of the 2005 GDSDS. The GDSDS set out the drainage requirements for the Greater Dublin Area (GDA) up to 2031. The GDSDS relied on the Regional Planning Guidelines (RPGs) and the National Spatial Strategy (NSS) in order to estimate the future projected population increases for the GDA. The studies indicated a predicted growth in population from 1.2 million in 2002 to just over 2 million in 2031 for the GDA region.

In June 2018 Irish Water applied for and subsequently received planning permission in 2019 for upgrade works to the Ringsend WwTP facility. The first phase of upgrade works to Ringsend WwTP was completed in December 2021, which increased the capacity of the plant by 400,000 P.E. These works, together with the future works permitted will ultimately increase the capacity of the facility from 1.6 million P.E. to 2.4 million P.E. by 2025 (Irish Water website: https://www.water.ie/projects/local-projects/ringsend/)

Therefore, both the initially permitted 2012 upgrade and the permitted 2019 revised upgrade (Ref. ABP-301798-18) for Ringsend WWTP take account of population growth up to 2.4 million PE. Both applications were subject to EIA and therefore an EIAR, and accompanied by an AA screening report and NIS.

Under the heading of "*Potential impact – Discharge of treated effluent, impacts on water quality, effects on qualifying interests*", the NIS (Irish Water, 2018b) for the Ringsend WwTP 2019 revised upgrade provides as follows:

> "*In the operational phase, the proposed upgrade of the Ringsend WwTP Component will result in an increase in the plant capacity and also an improvement in the final effluent quality. This will result in a reduction in the licensed parameters discharged into the receiving water, with significantly reduced quantities in respect of ammonia and phosphorous."*[8]

This NIS goes on to state as follows:

> "*Overall, no significant adverse effects on are foreseen and indeed, a slight positive effect is possible. Effects of discharge during the operational phase of the project from the upgrade project will therefore have imperceptible impact on habitats listed within these European sites."*[9]

In respect of this issue, the NIS concludes as follows:

> "*Thus, there is no potential for in-combination impacts of any other plan and project with the Ringsend WwTP Component of the proposed Upgrade Project."*[10]

The EIAR for the ongoing upgrade at Ringsend WwTP (Irish Water, 2018a) also details the lack of any significant impacts to European sites observed as a result of the current stormwater overflow discharge levels at the WwTP. During storm events, once the capacities of the holding tanks are surpassed, the WwTP releases overflow via an outfall at Pigeon House Rd into the lower Liffey estuary.

The EIAR carried out in relation to said upgrade concluded that in the 'do nothing' scenario, i.e., wherein the upgrade is not carried out; the current existing levels of nutrient input to Dublin Bay as a result of stormwater overflow from the WwTP, are not deemed to pose significant threats to the integrity of European sites located within or adjacent to Dublin Bay, or any of their Conservation Objectives regardless of said upgrade.

The EIAR report acknowledges that under the do-nothing scenario "*the areas in the Tolka Estuary and North Bull Island channel will continue to be affected by the cumulative nutrient loads from the river Liffey and Tolka and the effluent from the Ringsend WwTP*", which could result in a decline in biodiversity and the deterioration of the biological status of Dublin Bay (Irish Water, 2018a). Nevertheless, these negative impacts of nutrient over-enrichment are considered "unlikely". This is because historical data suggests that

[8] Section 4.5.1 at page 32
[9] Section 4.5.1 at page 33
[10] Section 4.5.1 at page 34

pollution in Dublin Bay has had little or no effect on the composition and richness of the benthic macroinvertebrate fauna. The EIAR notes that "*although a localised decline could occur, it is not envisaged to be to a scale that could pose a threat to the shellfish, fish, bird or marine mammal populations that occur in the area."* Furthermore, the EIAR notes that significant impacts on waterbird populations foraging on invertebrates in Dublin Bay due to nutrient over-enrichment are "unlikely" to occur. What is important to note is that the do-nothing scenario predicts that nutrient and suspended solid loads from the WwTP will "*continue at the same levels and the impact of these loadings should maintain the same level of effects on marine biodiversity"* and that *"if the status quo is maintained there will be little or no change in the majority of the intertidal faunal assemblages found in Dublin Bay which would likely continue to be relatively diverse and rich across the bay.*"

Therefore, it can be concluded that likely significant effects on marine biodiversity and the European sites within Dublin Bay from the current operation of Ringsend WwTP are unlikely. Importantly, this conclusion is not dependent upon any future works to be undertaken at Ringsend. Thus, in the absence of any upgrading works, significant in-combination effects to European sites in this regard are not deemed likely to arise, and therefore likely significant effects involving foul waters produced by the Proposed Development also do not have the potential to occur.

5.10 Residual Impacts

Residual impacts are defined as '*effects that are predicted to remain after all assessments and mitigation measures*'. They are the remaining 'environmental costs' of a project and are the final or intended effects of a development after mitigation measures have been applied to avoid or reduce adverse impacts. Potential residual impacts from the proposed development were considered as part of this environmental assessment. Table 5.13 below provides a summary of the impact assessment for the identified Key Ecological Resources (KERs) and details the nature of the impacts identified, mitigation proposed and the classification of any residual impacts.

All mitigation measures detailed in this Chapter will be implemented in full and will remain effective throughout the lifetime of the facility. Therefore, no significant negative residual impacts on the local ecology or on any designated nature conservation sites will result from the Proposed Development.

Key Ecological Resource	Level of Significance	Potential Impact	Impact Without Mitigation				Proposed Mitigation/ Compensation/ Enhancement measures; Mitigating Factors	Residual Impact
			Quality	Magnitude / Extent	Duration	Significance		
Designated Sites								
pNHAs & Designated Sites	National importance	Potential for dust-related impacts to vegetation within Santry Demesne pNHA during Construction Phase. Potential for surface water run-off containing silt and/or pollutants from the site to negatively impact Dublin Bay designated sites during the Construction Phase.	Negative Neutral	n/a	Short-term	Slight Imperceptible	Dust control measures included within the CEMP (DBFL, 2024b) Protection of surface waters during the Construction Phase of the Proposed Development as per the CEMP (DBFL, 2024b).	**Short-term Neutral Imperceptible**
Habitats								
Hedgerows (WL1)	Local importance (Higher value)	Loss of some sections of this habitat as a result of the Proposed Works.	Negative	n/a	Permanent	Slight	Typical hedge planting for the proposed development will consist of Beech *Fagus sylvatica* and Common hawthorn *Crataegus monogyna* through the Site will offset the loss of small sections of this habitat type, enhancing the habitat provisions at the site.	**Positive Long-term Significant**
Treeline (WL2)	Local importance (Higher value)	No significant impacts predicted as it is proposed to keep the treeline along the	n/a	n/a	n/a	n/a	It is proposed to plant new trees along the western and southern boundaries and throughout the proposed	**Positive Long-term Significant**

		western and eastern boundary of the site.					green spaces. The final landscape design includes gardens and open areas with native species planted throughout. This will enhance the habitat provisions on the site. Typical tree planting will include Alder *Alnus glutinosa*, Birch *Betula nigra*, Hazel *Corylus avellana* and semi mature Oak *Quercus robur.* Please refer to DLFA report and landscape plans for further details.	
Mammals								
Otter	Local importance (higher value)	Pollution of the Santry river during the Construction Phase of the proposed development	Negative	n/a	Short-term	Slight	Protection of surface waters during the Construction Phase of the Proposed Development as per the CEMP (DBFL, 2024b).	**Short-term Neutral Imperceptible**
Birds								

Bird assemblage	Local importance (Higher value)	Loss of nests during Construction Phase if demolition/ clearance carried out during nesting season. Noise Disturbance as a result of the Construction Phase of the proposed development. Habitat enhancement at the site as a result of the planting of native treelines and hedgerows (increased roosting/nesting/foraging habitat) and inclusion of Swift bricks in the design the buildings.	Negative Negative Positive	n/a	Permanent Short-term Long-term	Significant Slight Significant	Clearance of vegetation to be carried out outside of the breeding bird season **(Outside period March – August)** Range of best practise construction noise control measures to be put in place for the duration of the Construction Phase. No mitigation required.	**Short-term Neutral Imperceptible** **Short-term Negative Not significant** **Long-term Positive Significant**
Fish								
Brown trout, European Eel, Brook and River lamprey	Local importance (higher value)	Pollution of the Santry river during the Construction Phase of the proposed development	Negative	n/a	Short-term	Slight	Protection of surface waters during the Construction Phase of the Proposed Development as per the CEMP (DBFL, 2024b).	**Short-term Neutral Imperceptible**

Table 5.13: Summary of potential impacts on KER(s), mitigation measures/mitigating factors and residual impacts.

5.11 Monitoring

No specific monitoring is required in terms of biodiversity. No significant effects or impacts to KERs are envisaged as a result of the Proposed Development.

5.12 "Worst Case" Scenario

With regard to the *'worst-case'* scenario, it is considered relevant only to potential for hydrological or water quality impacts such as nutrient release, siltation and/or contaminated run-off from the development works footprint. Potential hydrological or water quality impacts apply to the Santry River and Dublin Bay. In the unlikely event that the proposed mitigation measures in relation to water management markedly fail then it is possible that there could be impacts to water quality in the Santry River and Dublin Bay, and subsequently the species that reside within these waterbodies. However, even in this scenario significant impacts are not deemed likely to occur.

5.13 Difficulties Encountered

No difficulties were encountered while preparing this Chapter.

5.14 Conclusions

It is considered that, provided the mitigation measures proposed within this Chapter together with all best practice development standards as outlined in the CEMP are carried out in full, there will be no significant negative impact to any KER habitat, species group or biodiversity as a result of the Proposed Development.

The targeted ecological surveys allowed for the identification of the relevant KERs at the Site, and through careful evaluation of the potential impacts it is considered that a proportionate and effective solution to mitigate the negative impacts for each has been achieved.

Additionally, the landscaping plan for the Proposed Development will inherently offset any loss of the existing poor quality habitat that will result from the Proposed Development, and will provide a net increase in biodiversity value at the Site; through the provision of an increased variety of native and non-native vegetation planting at the Site, along with specific enhancement measures such as the Swift bricks included along the elevations of some of the blocks.

5.15 References

Bang, P. and Dahlstrom, P. (2001). *Animal Tracks and Signs*, Oxford University Press, Oxford.

Bat Conservation Ireland. (2014). Bats in Buildings, Guidance Notes for: Planners, engineers, architects, and developers.

Blamey, M., Fitter, R. and Fitter, A. (2003). Wild Flowers of Britain and Ireland. London: A & C Black.

Boer, E. (2014). Risk Assessment: Cotoneaster horizontalis. Leiden, Netherlands: Naturalis Biodiversity Centre. 19pp.

CIEEM. (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management, Winchester, UK.

Department of Agricultural, Environment and Rural Affairs. (no date). Advice on badgers. [ONLINE]. Available at: https://www.daera-ni.gov.uk/articles/advice-badgers [Accessed February 2024].

Department of the Environment, Heritage and Local Government. (2010). Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities. DEHLG, Dublin. (Rev. Feb 2010).

Enviroguide (2024a). Appropriate Assessment Screening for a Large-scale Residential Development (LRD) at Junction of Santry Avenue and Swords Road, Santry, Dublin 9. March 2024.

Enviroguide (2024b). Biodiversity Management Plan for a Large-scale Residential Development (LRD) at Junction of Santry Avenue and Swords Road, Santry, Dublin 9. March 2024.

Environmental Protection Agency. (2022). Guidelines on the information to be contained in Environmental Impact Assessment Reports. Published by the Environmental Protection Agency, Ireland.

Environmental Protection Agency. (2024). Environmental Protection Agency Online Mapping [ONLINE] Available at: http://www.epa.ie/ [Accessed February 2024].

European Commission. (2000). Managing Natura 2000 Sites: The Provisions of Article 6 of the 'Habitats' Directive 92/43/EEC. European Communities, Luxembourg.

European Communities. (2002). Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC. European Communities, Luxembourg.

Fossitt, J. (2000). A *Guide to Habitats in Ireland*. The Heritage Council, Kilkenny.

Gauthreaux, S. A., and Belser, C. G. (2006). Effects of artificial night lighting on migrating birds. Pages 67–93 in C. Rich and T. Longcore, editors. Ecological consequences of artificial night lighting. Island Press, Washington, D.C., USA.

Geological Survey Ireland. (2024). Geological Survey of Ireland website [ONLINE] Available at: http://www.gsi.ie/ [Accessed February 2024].

Gilbert, G., Stanbury, A., & Lewis, L. (2021). Birds of Conservation Concern In Ireland 4: 2020-2026.

Igoe, F., Quigley, D.T.G., Marnell, F., Meskell, E., O' Connor, W. & Byrne, C. (2004). The Sea Lamprey (Petromyzon marinus L.), River Lamprey (Lampetra flubviatilis L.) and Brook Lamprey (Lampetra planeri) (BLOCH) in Ireland: General Biology, Ecology, Distribution and Status with Recommendations for Conservation. Biology and Environment: Proceedings of the Royal Irish Academy, 104B(3), 43-56.

Kelly, F.L., and King, J.J. (2001). A review of the ecology and distribution of three lamprey species, Lampetra fluviatilis (L.), Lampetra planeri (Bloch) and Petromyzon marinus (L.): A context for conservation and biodiversity considerations in Ireland. Biology and Environment: Proceedings of the Royal Irish Academy 101B (3), 165-185.

King, J.L., Marnell, F., Kingston, N., Rosell, R., Boylan, P., Caffrey, J.M., FitzPatrick, Ú., Gargan, P.G., Kelly, F.L., O'Grady, M.F., Poole, R., Roche, W.K. & Cassidy, D. (2011). Ireland Red List No. 5: Amphibians, Reptiles & Freshwater Fish. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

Macklin, R., Brazier, B. & Sleeman, P. (2019). Dublin City otter survey. Report prepared by Triturus Environmental Ltd. for Dublin City Council as an action of the Dublin City Biodiversity Action Plan 2015-2020.

NBDC. (2024). National Biodiversity Data Centre online mapping [ONLINE]. Available at: http://maps.biodiversity.ie/Map.aspx. [Accessed February 2024].

NPWS. (2010). Circular NPW 1/10 & PSSP 2/10. Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities. Department of Environment, Heritage and Local Government.

NPWS, (2024). National Parks and Wildlife Service website [ONLINE] Available at: http://www.npws.ie/en/ [Accessed February 2024].

NRA. (2009a). Environmental Assessment and Construction Guidelines. National Roads Authority (now Transport Infrastructure Ireland), Dublin.

NRA. (2009b). Guidelines for Assessment of Ecological Impacts of National Road Schemes. National Roads Authority (now Transport Infrastructure Ireland), Dublin.

NRA. (2010). Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads (now Transport Infrastructure Ireland), Dublin.

Preston, C. D., Pearman, D. A., and T.D. Dines (2002). New Atlas of the British and Irish Flora. Oxford University Press.

Smith, G.F., O'Donoghue, P., O'Hora, K. and Delaney, E. (2011). Best practice guidance for habitat survey and mapping. The Heritage Council, Kilkenny.

Appendix 5.1– Legislation and Policy

Dublin County Development Plan 2022-2028

Policies and objectives of the Dublin City Development Plan 2022 – 2028 that are of relevance to this EIAR Biodiversity Chapter are outlined below:

- **Policy GI9:** To conserve, manage, protect and restore the favourable conservation condition of all qualifying interest/special conservation interests of all European sites designated, or proposed to be designated, under the EU Birds and Habitats Directives, as Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) (European / Natura 2000 sites).
- **Policy GI10:** To adequately protect flora and fauna (under the EU Habitats and Birds Directives), the Wildlife Acts 1976 (as amended), the Fisheries Acts 1959 (as amended) and the Flora (Protection) Order 2022 S.I No. 235 of 2022, wherever they occur within Dublin City, or have been identified as supporting the favourable conservation condition of any European sites.
- **Policy GI12:** To protect sites for nature conservation as designated under the Ramsar Treaty for wetland sites, National Special Amenity Areas, National Nature Reserves, Important Bird Areas and Flora Protection Order Sites.
- **Policy GI13:** To ensure the protection, conservation and enhancement of all areas of ecological importance for protected species, and especially those listed in the EU Birds and Habitats Directives, including those identified as supporting the favourable conservation condition of any European sites, in accordance with development standards set out in this plan.

Dublin City Biodiversity Action Plan 2021-2025

Dublin City Biodiversity Action Plan 2021 – 2025 is set out to protect and improve biodiversity through specific objectives:

- **Objective 1:** Ensure effective implementation of the Dublin City Biodiversity Action Plan.
- **Objective 2:** Protect designated sites for nature conservation in accordance with the Conservation Management objectives for Natura 2000 sites and proposed Natural Heritage Areas in Dublin City.
- **Objective 3:** Identify and protect sites that have conservation value for biodiversity using evidence-based research.
- **Objective 4:** Monitor and conserve legally-protected species within Dublin City, particularly those listed in the annexes of the EU Birds and Habitats Directive using evidence-based research.
- **Objective 5:** Prepare and plan for the impacts of climate change on biodiversity.
- **Objective 6:** Implement measures for species with that have a local biodiversity value or impact local biodiversity.
- **Objective 7:** Prepare and disseminate information on guidance for development and site management for biodiversity conservation.
- **Objective 8:** Devise and implement habitat restoration initiatives across Dublin City.
- **Objective 9:** To use nature-based solutions to restore biodiversity and ecosystem services.
- **Objective 10:** Strengthen measures to control Invasive Alien Species (IAS), improve biosecurity and ecological status of catchments.
- **Objective 11:** Ensure that measures for biodiversity and nature-based solutions are incorporated

into new building projects, retrofit and maintenance works.

- **Objective 12:** Promote net biodiversity gain and ensure there is no net loss of biodiversity through strategies, planning, mitigation measures, appropriate offsetting and/or investment in Blue-Green infrastructure.
- **Objective 13:** Pilot initiatives for the creation of habitats using artificial habitat methods.
- **Objective 14:** Minimise and reduce soil degradation in the Dublin City Council administrative area.
- **Objective 15:** Ensure that measures for biodiversity and nature-based solutions are incorporated into new building projects, retrofit and maintenance works.
- **Objective 16:** Empower citizens to connect with, and take positive action for biodiversity at a local and city-wide level.
- **Objective 17:** Strengthen collaboration for the conservation of biodiversity at a regional, national, and global level.

6.0. Land, Soil & Geology

6.1 Introduction

This Chapter of the EIAR comprises of an assessment of the likely impact of the proposed development on the soils and the geological environment as well as identifying proposed mitigation measures required to minimise any impacts.

This chapter was prepared by both Laura McLoughlin BEng (Hons) CEng and Ryan Parkes BEng (Hons) MIEI of DBFL Consulting Engineers. Laura is an Associate with DBFL Consulting Engineers with over 15 years' experience as a civil engineer with particular expertise in infrastructure and road design.

Ryan Parkes is a Civil Engineer with DBFL Consulting Engineers and has over four years' experience within the industry. Ryan graduated from Technological University Dublin with a Bachelors in Civil Engineering. He has gained considerable knowledge and experience in drainage and road design within DBFL with the majority of his experience to date being focused upon the civil design of Large-scale Residential Developments (LRDs).

Dwyer Nolan Developments Ltd. wishes to apply for permission for a Large-Scale Residential Development (LRD) on this site, c. 1.5 hectares, located at the junction of Santry Avenue and Swords Road, Santry, Dublin 9. The development site is bounded to the north by Santry Avenue, to the east by Swords Road, to the west by Santry Avenue Industrial Estate, and to the south by the permitted Santry Place development (granted under Dublin City Council Ref.s. 2713/17 (as extended under Ref. 2713/17/X1), 2737/19 & 4549/22).

The proposed development provides for 321 no. apartments, comprised of 104 no. 1 bed, 198 no. 2 bed, & 19 no. 3 bed dwellings, in 4 no. seven to thirteen storey buildings, over basement level, with 3 no. retail units, a medical suite / GP Practice unit and community/arts & culture space, all located at ground floor level, as well as a one storey residential amenity unit, facing onto Santry Avenue, located between Blocks A & D.

The developed site is currently Chadwick's Building Suppliers.

6.2 Study Methodology

Assessment of the likely impact of the proposed development on soils and the geological environment includes the following activities:

- Review of information available on the Geological Survey of Ireland (GSI) online mapping service
- Review of information available on the Environmental Protection Agency (EPA) online mapping service.

6.3 The Existing Receiving Environment

6.3.1 Soils

Review of information available on the GSI's online mapping service ("Quaternary Sediments") indicates that the site is underlain by a sediment type described as "TLs – Till derived from Limestones". Refer to Figure 6.1 overleaf.

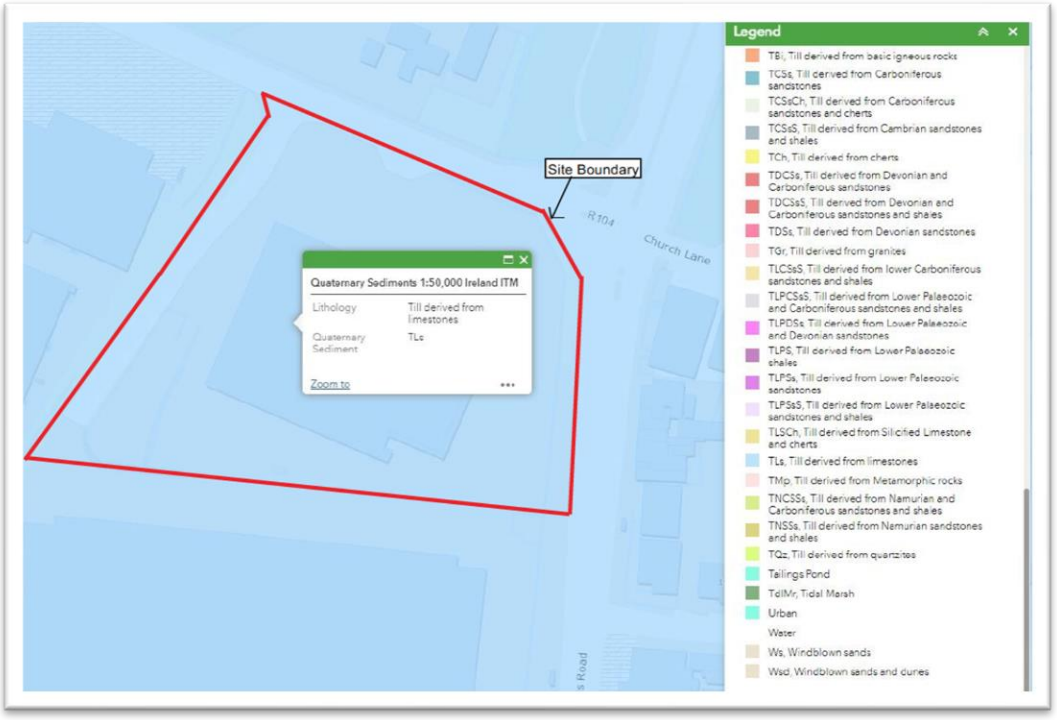


Figure 6.3 Extract from Quaternary Sediments Map (source GSI Online Mapping Service)

6.3.2 Geology & Hydrogeology

A review of GSI's online mapping service ("Bedrock Geology") describes geology in the vicinity of the site as "Dark Limestone and Shale". Refer to Figure 6.2 below.

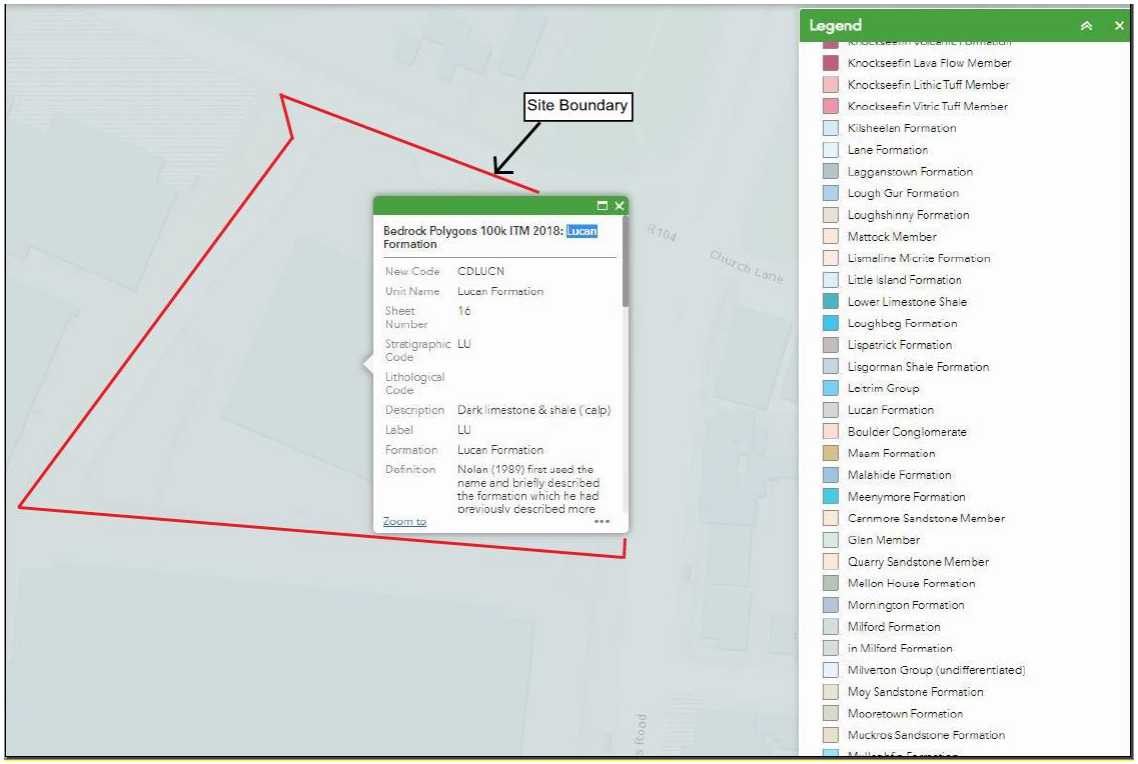


Figure 6.4 Extract from Bedrock Map (source GSI Online Mapping Service)

GSI have classified the site's groundwater vulnerability as "Low".

GSI also classified underlying bedrock aquifers as "locally important".

Refer to Chapter 7 (Water) of this EIAR for further commentary regarding Hydrogeology. In addition refer to AWN Hydrogeological Impact Assessment under a separate heading for further information.

6.3.3 Radon

A review of the EPA's online mapping service ("Radon Map") shows that 3.79% of the homes in this 10km grid square are estimated to be above the reference level of 200 becquerel per cubic metre (Bq/m3). Refer to figure 7.3 below.

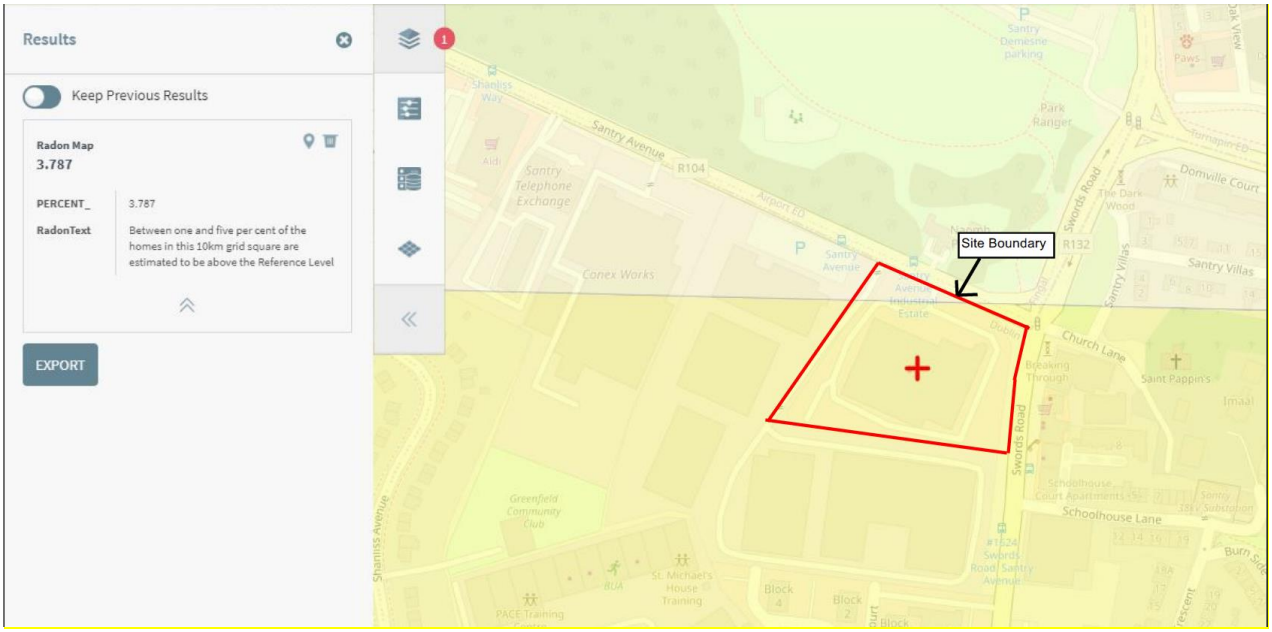


Figure 6.3 Extract from EPA Mapping Service (Radon Mapping)

6.3.4 Soil Contamination

There are no known areas of soil contamination on the site of the proposed development. According to the EPA online mapping (https://gis.epa.ie/EPAMaps), there are no licenced waste facilities on or within the immediate environs of the site of the proposed development.

There are no historic mines at or in the immediate vicinity of the site of the proposed development that could potentially have contaminated tailings.

6.4 Characteristics of the Proposed Development

The proposed development provides for 321 no. apartments, comprised of 104 no. 1 bed, 198 no. 2 bed, & 19 no. 3 bed dwellings, in 4 no. seven to thirteen storey buildings, over basement level, with 3 no. retail units, a medical suite / GP Practice unit and community/arts & culture space, all located at ground floor level, as well as a one storey residential amenity unit, facing onto Santry Avenue, located between Blocks A & D.

The development will consist of the following:

The proposed development provides for 321 no. apartments, comprised of 104 no. 1 bed, 198 no. 2 bed, & 19 no. 3 bed dwellings, in 4 no. seven to thirteen storey buildings, over basement level, with 3 no. retail units, a medical suite / GP Practice unit and community/arts & culture space (total c.1,460sq.m), all located at ground floor level, as well as a one storey residential amenity unit, facing onto Santry Avenue, located between Blocks A & D.

The proposed development consists of the following:

1. **Demolition of the existing building on site i.e. the existing Chadwicks Builders Merchants (c. 4,196.8m^2).**

2. **Construction of 321 no. 1, 2, & 3 bed apartments, retail units, medical suite / GP Practice, community/arts & culture space, and a one storey residential amenity unit in 4 no. buildings that are subdivided into Blocks A-G as follows:**

- **Block A is a 7-13 storey block consisting of 51 no. apartments comprised of 22 no. 1 bed, 23 no. 2 beds & 6 no. 3 bed dwellings, with 2 no. retail units located on the ground floor (c. 132sq.m & c.172sq.m respectively). Adjoining same is Block B, which is a 7 storey block consisting of 38 no. apartments comprised of 6 no. 1 bed, 26 no. 2 bed, & 6 no. 3 bed dwellings, with 1 no. retail unit (c.164sq.m) and 1 no. medical suite / GP Practice unit located on the ground floor (c. 130sq.m). Refuse storage areas are also provided for at ground floor level.**

- **Block C is a 7 storey block consisting of 53 no. apartments comprised of 14 no. 1 bed & 39 no. 2 bed dwellings. Adjoining same is Block D which is an 8 storey block consisting of 44 no. apartments comprised of 22 no. 1 bed, 15 no. 2 bed, & 7 no. 3 bed dwellings. Ground floor, community/arts & culture space (c. 583sq.m) is proposed in Blocks C & D, with refuse storage area also provided for at ground floor level.**

- **Block E is an 8 storey block consisting of 49 no. apartments comprised of 7 no. 1 bed & 42 no. 2 bed dwellings. A refuse storage area, substation, & switchroom are also provided for at ground floor level. Adjoining same is Block F which is a 7 storey block consisting of 52 no. apartments comprised of 13 no. 1 bed & 39 no. 2 bed dwellings. Ground floor, community/arts & culture space (c.877sq.m) is proposed in Blocks E & F. A refuse storage area, bicycle storage area, substation, & switchroom are also provided for at ground floor level of Blocks E & F.**

- **Block G is a 7 storey block consisting of 34 no. apartments comprised of 20 no. 1 bed & 14 no. 2 bed dwellings. A refuse storage area & bicycle storage area are also provided for at ground floor level.**

3. **Construction of a 1 storey residential amenity unit (c. 166.1sq.m) located between Blocks A & D.**

4. **Construction of basement level car park (c.5,470.8sq.m), accommodating 161 no. car parking spaces, 10 no. motorbike parking spaces & 672 no. bicycle parking spaces. Internal access to the basement level is provided from the cores of Blocks A, B, C, D, E, & F. External vehicular access to the basement level is from the south, between Blocks B & C. 33 no. car parking spaces & 58 no. bicycle parking spaces are also provided for within the site at surface level.**

5. **Public open space of c. 1,791sq.m is provided for between Blocks C-D & E-F. Communal open space is also proposed, located between (i) Blocks E-F & G, (ii) Blocks A-B & C-D, and (iii) in the form of roof gardens located on Blocks A, C, & F and the proposed residential amenity use unit, totalling c.2,986sq.m. The development includes for hard and soft landscaping & boundary treatments. Private open spaces are provided as terraces at ground floor level of each block and balconies at all upper levels.**

6. **Vehicular access to the development will be via 2 no. existing / permitted access points: (i) on Santry Avenue in the north-west of the site (ii) off Swords Road in the south-east of the site, as permitted under the adjoining Santry Place development (Ref. 2713/17).**

The development includes for all associated site development works above and below ground, bin & bicycle storage, plant (M&E), sub-stations, public lighting, servicing, signage, surface water attenuation facilities etc The proposed development will typically require alteration of ground levels to ensure it is at an adequate level for the proposed surface water drainage, foul water drainage and to mitigate flood risk.

Excavation of subsoil layers will be required in order to allow road construction, foundation excavation, drainage and utility installation and provision of underground attenuation of surface water. Underlying subsoil layers are also expected to be suitable for reuse as non-structural fill (e.g. build-up of open spaces).

Importation of fill will be required beneath apartment blocks and roadways (structural fill). Importation of fill may also be required in some areas, to raise the ground levels to assure a gravity drainage solution. Further information regarding importation of fill is included in Section 6.5.1.3 of this Chapter.

6.5 Potential Impact of the Proposed Development

6.5.1 Construction Phase

6.5.1.1 Demolition of Existing Structures

During demolition of existing structures hazardous material on site is to be identified and removed following the correct procedures.

6.5.1.2 Excavation of Subsoil Layers

Excavation of existing subsoil layers will be required in order to allow for basement excavation, drainage and utility installation and provision of underground attenuation of surface water.

Underlying subsoil layers are expected to be generally suitable for reuse as non-structural fill.

6.5.1.3 Imported Fill

In the context of materials imported to site, these will be natural stones sourced from locally available quarries in accordance with the appropriate statutory guidelines, greenfield/inert soil imported under a Waste Permit issued by the local authority; or materials that have been approved as by-products by the EPA in accordance with the EPA's criteria for determining a material is a by-product, per the provisions of article 27(1) of the European Communities (Waste Directive) Regulations, 2011.

Imported materials will be granular in nature and used in the construction of road pavement foundations, drainage and utility bedding and surrounds. Imported fill may be required to raise the development to the required level for drainage.

Materials will be brought to site and placed in their final position in the shortest possible time. Any imported material will be kept separate from the indigenous arisings from the site. All excavation to accommodate imported material will be precisely co-ordinated to ensure no surplus material is brought to site beyond the engineering requirement.

6.5.1.4 Construction Traffic

Due to the site being brownfield, earthworks plant (e.g. dump trucks) and vehicles delivering construction materials to site (e.g. road aggregates, concrete deliveries etc.) have potential to cause rutting and deterioration of the soil layers, resulting in erosion and generation of sediment laden runoff. This issue can be particularly noticeable at site access points (resulting in deposition of mud and soil on the surrounding road network). Dust generation can also occur during extended dry weather periods as a result of construction traffic.

Mitigation Measures will be discussed in the following sections.

6.5.1.5 Accidental Spills and Leaks

During the construction phase there is a risk of accidental pollution from the sources noted below. Accidental spills and leaks may result in contamination of the soils underlying the site.

- Storage of oils and fuels on site
- Oils and fuels leaking from construction machinery
- Spillage during refuelling and maintenance of construction machinery
- Use of cement and concrete during construction works

Groundwater vulnerability is mapped as 'low' by the GSI at the proposed site. This vulnerability will likely be temporarily increased due to the removal of soils, subsoils and made ground cover during construction. Therefore, accidental spillages may have potential to impact on the 'locally important' aquifer.

Mitigation Measures will be discussed in the following sections.

6.5.1.6 Geological Environment

Any excavations associated with development of the site are expected to be moderate. The drainage infrastructure will require excavations of approximately 2.0m on average with 3.0m in the deepest sections. A Basements is proposed for under blocks Blocks A, B, C, D, E & F and expected to be in the region of approximately 3m. It is possible that underlying geology may be disturbed in areas of deep excavation, this will be verified by site investigation works following the receipt of planning permission.

Please refer to AWN report: *"Hydrogeological Impact Assessment"* under a separate heading for further details.

6.5.2 Operational Phase

Once the construction stage is complete and the development is in-situ and operational, the geology beneath the proposed site will remain unchanged. Subsoil will either be covered by surface hardstanding, building footprint or landscaped areas.

There will be no direct discharges to soil or groundwater during the operational phase of the proposed development. Foul effluent and surface water will be discharged to the Irish Water sewer and Dublin City Council surface water drainage network following the required treatment measures.

There will be no significant storage or use of hazardous materials during the operational phase that could adversely impact subsoil, groundwater or surface water in the vicinity of the site. Accidental losses of oil, petrol or diesel on roadways or in car parks could cause contamination if these elements entered the underlying soil and groundwater. However, the presence of surface hardstanding throughout these areas would render this unlikely. In addition, all surface water will be routed through a suitably sized petrol interceptor before entering the public surface water network.

In the absence of mitigation measures, should accidental losses of oil, diesel, or petrol to ground occur, they would be considered direct, negative impacts of temporary duration, given that they would be confined to one-off releases. This would be considered a medium impact to a medium sensitivity environment, and the significance of the impact would be moderate.

6.6 Potential Cumulative Impacts

Due to the lack of significant residual impacts from the development that would affect the wider geological environment, there will be no significant cumulative impacts to land, soil and geology resulting from this project, and other local existing developments, projects and plans. All impacts on soils and geology relating to the proposed project will be localised and within the development footprint.

6.6.1 Residual Impacts

With appropriate mitigation measures implemented during the construction phase, the potential impact on land, soils and geology during construction is considered to have a short term, imperceptible significance.

There are no likely significant impacts on the land, soil or geological environment associated with the proposed operational development of the site. As such, the impact is considered to have a long term, imperceptible significance with a neutral impact on quality.

6.6.2 Risks to Human Health

The following risk to human health from soils and the geological environment can occur during construction:

- Dust generation occurring during extended dry weather periods as a result of construction traffic.

With the implementation of mitigation measures, the likelihood of such events occurring would be local and not significant.

6.6.3 Unplanned Events

The following accidents & disasters involving soils during construction could potentially give rise to a serious incident putting people at risk:

- Collapse of trench during excavation works.
- Accidental spills and leaks may result in contamination of the soils underlying the site.

With the implementation of mitigation measures, the likelihood of such events occurring would be local and not significant.

On completion of the construction phase, there will be no further unplanned events anticipated on soils and the geological environment.

6.7 Do Nothing Impact

Should the development not proceed the site would remain in its current state with the only likely impact on the underlying soil and/or aquifer being due to potential contamination from accidental spills and leaks from the operation of Chadwick's building suppliers.

6.8 Remedial and Mitigation Measures

6.8.1 Construction Phase

6.8.1.1 Demolition of Existing Structures

During demolition of existing structures any hazardous material identified on site will be removed by specialist contractors.

6.8.1.2 Excavation of Subsoil Layers

Excavation of existing subsoil layers has been minimised as far as reasonably practicable. Cut type earthworks operations will not be required to achieve designed site levels, however some cut type earthworks will be required to construct the basements and attenuation system. Cut material is considered likely to be suitable to be reused as non-structural fill elsewhere on site.

Disturbed subsoil layers will be stabilized as soon as practicable (e.g. backfill of service trenches, construction of road capping layers, construction of building foundations and completion of landscaping). The duration that subsoil layers are exposed is to be minimised in order to mitigate against weather effects.

Stockpiles of excavated subsoil material will be protected for the duration of the works.

Measures will be implemented to capture and treat sediment laden surface water runoff (e.g. sediment retention ponds, surface water inlet protection).

6.8.1.3 Imported Fill

As noted in section 6.5.1.3 above, importation of fill to site will be required.

The source of aggregate, fill material and topsoil imported to site will be carefully selected and vetted in order to ensure that it is of a reputable origin and that it is “clean” (i.e. will not contaminate the environment). Project contract and procurement procedures will be developed to ensure that aggregate, fill material and topsoil are acquired from reputable sources with suitable environmental management systems as well as regulatory and legal compliance.

No large or long-term stockpiles of fill material will be held on the site. At any time, the extent of fill material held on site will be limited to that needed in the immediate vicinity of the active work area.

Smaller stockpiles of fill, where required, will be suitably protected to ensure no sediment laden runoff enters existing surface water drains. Such stockpiles are to be located in order to avoid double handling.

6.8.1.4 Construction Traffic

A construction traffic management plan will be developed and implemented in order to minimise the disturbance caused by large vehicles. This management plan shall include and detail:

- Predetermined haul routes for earthworks plant and vehicles delivering construction materials to site.
- Vehicle wheel wash facilities in the vicinity of any site entrances and road sweeping to maintain the road network in the immediate vicinity of the site.
- Dust suppression measures (e.g. dampening down)

6.8.1.5 Accidental Spills and Leaks

Due to the presence of a locally important aquifer beneath the site, it will be necessary to employ mitigation measures at the construction site in order to prevent spillages to ground of fuels, and to prevent consequent soil or groundwater quality impacts. These measures are outlined in the Construction & Environmental Management Plan (CEMP) and are listed here as follows:

- Over Ground Oil / Diesel Storage – Only approved storage system for oil / diesel within the site will be permitted.
- The bunded area will accommodate the relevant oil / diesel storage capacity in case of accidental spillage. Any accidental spillages will be dealt with immediately on site however minor by containment /removal from site;
- All hazardous substances on-site shall be controlled within enclosed storage compounds that shall be fenced-off and locked when not in use to prevent theft and vandalism;
- Fixed plant shall be self-bunded; mobile plant must be in good working order, kept clean, fitted with drip trays where appropriate and subject to regular inspection; water runoff from designated refuelling areas shall be channelled to an oil-water separator, or an alternative treatment system, prior to discharge; and,
- Spill kits and oil absorbent material shall be carried with mobile plant and located at vulnerable locations around the site to reduce risk of spillages entering the sub-surface or groundwater environment; booms shall be held on-site for works near drains or dewatering points.

6.8.1.6 Geological Environment

No mitigation measures are proposed in relation to the geological environment.

6.8.1.7 Reinstatement

- All temporary construction compounds are to be removed upon completion of the construction phase. Such areas are to be reinstated in accordance with the landscape architects plan and engineer's drawings.
- All construction waste and/or scrapped building materials are to be removed from site on completion of the construction phase.
- Oil, fuel etc. storage areas are to be decommissioned on completion of the construction phase. Any remaining liquids are to be removed from site and disposed of at an appropriate licenced facility.
- All sediment control measures (e.g. sediment retention ponds) are to be decommissioned on completion of the construction phase. Such areas are to be reinstated in accordance with the landscape architects plan and engineer's drawings.

6.8.2 Operational Phase

The operational phase of the development is unlikely to have any significant adverse impacts on the local geological/hydrogeological environment due to the environmental considerations incorporated into the design. These measures will seek to avoid or minimise potential effects, in the main, through the implementation of best practice construction methods and adherence to all relevant legislation.

6.9 Predicted Impact of the Proposed Development

6.9.1 Construction Phase

Implementation of the measures outlined in Section 6.8.1 will ensure that the potential impacts of the proposed development on soils and the geological environment do not occur during the construction phase and that any residual impacts will be short term/imperceptible.

6.9.2 Operational Phase

There are no predicted impacts arising from the operational phase. Accordingly, the predicted impact will be long-term-imperceptible-neutral.

6.10 Monitoring

Proposed monitoring during the construction phase in relation to the soil and geological environment are as follows:

- Adherence to the CEMP.
- Construction monitoring of the works (e.g. inspection of existing ground conditions on completion of cut to road formation level in advance of placing capping material, stability of excavations etc.).

- Inspection of fuel / oil storage areas.
- Monitoring cleanliness of adjacent road network, implementation of dust suppression and provision of vehicle wheel wash facilities.
- Monitoring of contractor's stockpile management (e.g. protection of excavated material to be reused as fill, protection of soils for removal from site from contamination).
- Monitoring sediment control measures (sediment retention ponds, surface water inlet protection etc.)

No ongoing monitoring is proposed on completion of the construction phase.

6.11 Reinstatement

All temporary construction compounds and site entrances are to be removed upon completion of the construction phase. Such areas are to be reinstated in accordance with the landscape architects plan and engineer's drawings.

All construction waste and/or scrapped building materials are to be removed from site on completion of the construction phase.

Oil, fuel etc. storage areas are to be decommissioned on completion of the construction phase. Any remaining liquids are to be removed from site and disposed of at an appropriate licenced facility.

All sediment control measures (e.g. sediment retention ponds) are to be decommissioned on completion of the construction phase. Such areas are to be reinstated in accordance with the landscape architects plan and engineer's drawings.

During decommissioning of the proposed development, there is a risk of localised accidental pollution incidences from the following sources:

- Spillage or leakage of temporary oils and fuels stored on site;
- Spillage or leakage of oils and fuels from machinery or site vehicles; and
- Spillage of oil or fuel from refuelling machinery on site.

Accidental spillages may result in localised contamination of soils and groundwater underlying the proposed development site, should contaminants migrate through the subsoils and impact underlying groundwater i.e. unmitigated. Groundwater vulnerability at the proposed development site is classified as low. Therefore, this is considered the 'Worst Case' scenario.

6.12 Interactions

Land, soils and geology can interact with several other environmental aspects during both the construction and operational phases of the development. These interactions are discussed below.

Transportation

Interactions with Traffic and Transport arise during the construction phase when soil and subsoils and demolition waste are being transported to & from the site and raw materials for construction are being imported to the site. A construction traffic management plan will be implemented in order to minimise the disturbance caused by traffic.

Water

Interactions with Water and Hydrology arise during the construction phase and the operational phase. Surface water from the site will be discharged to existing surface water sewers during the operational phase. However, surface water run-off may have the potential to infiltrate into underlying soils. During the construction phase a site-specific CEMP will manage site water and will mitigate the risk of surface contaminants infiltrating into the underlying geology and hydrogeology. Surface water drainage from the operational site will be designed in accordance with Greater Dublin Strategic Drainage Study (GDSDS) and SuDs methods will be used to manage drainage. Surface water discharge rates will be controlled by a Hydrobrake type vortex flow control device in conjunction with an attenuation system.

Resource & Waste Management

Interactions with Waste Management arise during the construction phase when soil, subsoils and demolition waste are being transported from the site. These waste materials will require appropriate transport and disposal. A Waste Classification Report for soils and subsoils shall be prepared in order to define appropriate waste disposal outlets.

Noise & Vibration

Development of the site will result in a level of noise and vibration related effects on the surrounding environment during the construction phase. The interaction between Soils, Land & Geology and Noise and Vibration is considered to be moderate and temporary in nature. A construction traffic management plan will be implemented in order to minimise the disturbance caused by traffic.

Air Quality

There is a potential for soil excavation activity to impact on air quality in terms of dust generated. Dust generation can also occur during extended dry weather periods as a result of construction traffic. However, the implementation of suitable mitigation measures as outlined in the CEMP for the site will ensure a neutral impact.

Biodiversity / Species & Habitat

There is little existing topsoil and vegetation to be removed from the site. As the site is a brownfield site in an industrial area there will be minimal effect on biodiversity in the area. The increased green area proposed as part of the new development will increase space for wildlife habitat.

6.13 Difficulties Encountered in Compiling

No difficulties were encountered while compiling this chapter.

6.14 References

Greater Dublin Strategic Drainage Study (2005) – Fingal County Council, Dublin City Council, Dún Laoghaire-Rathdown County Council, South Dublin County Council, Wicklow County Council, Kildare County Council, Meath County Council

The Greater Dublin Region Code of Practice for Drainage Works (2012) – Fingal County Council, Dublin City Council, Dún Laoghaire-Rathdown County Council, South Dublin County Council, Wicklow County Council, Kildare County Council, Meath County Council

Code of Practice for Water Infrastructure (2020) – Irish Water

Code of Practice for Wastewater Infrastructure (2020) – Irish Water

Environmental Protection Agency (EPA) Online Mapping Service

Geological Survey of Ireland (GSI) online mapping service

Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements. Institute of Geologists of Ireland (2013)

Guidelines on the information to be contained in environmental impact assessment reports. Environmental Protection Agency (Draft 2017).

7.0. Water

7.1 Introduction

This chapter of the EIAR comprises of an assessment of the likely impact of the proposed development on the surrounding hydrogeological environments (including flood risk, surface water drainage, foul drainage and water supply), as well as identifying proposed mitigation measures to minimize any impacts.

This chapter was prepared by both Laura McLoughlin BEng (Hons) CEng and Ryan Parkes BEng (Hons) MIEI of DBFL Consulting Engineers. Laura is an Associate with DBFL Consulting Engineers with over 15 years' experience as a civil engineer with particular expertise in infrastructure and road design.

Ryan Parkes is a Civil Engineer with DBFL Consulting Engineers and has over four years' experience within the industry. Ryan graduated from Technological University Dublin with a Bachelors in Civil Engineering. He has gained considerable knowledge and experience in drainage and road design within DBFL with the majority of his experience to date being focused upon the civil design of Large-scale Residential Developments (LRDs).

A detailed Hydrological Impact Assessment can be found under a separate heading, produced by AWN Consulting.

This chapter of the EIAR comprises of an assessment of the likely impact of the proposed development on the surrounding hydrogeological environments (including flood risk, surface water drainage, foul drainage and water supply), as well as identifying proposed mitigation measures to minimize any impacts.

A detailed Hydrological Impact Assessment can be found under a separate heading, produced by AWN Consulting.

Dwyer Nolan Developments Ltd. wishes to apply for permission for a Large-Scale Residential Development (LRD) on this site, c. 1.5 hectares, located at the junction of Santry Avenue and Swords Road, Santry, Dublin 9. The development site is bounded to the north by Santry Avenue, to the east by Swords Road, to the west by Santry Avenue Industrial Estate, and to the south by the permitted Santry Place development (granted under Dublin City Council Ref.s. 2713/17 (as extended under Ref. 2713/17/X1), 2737/19 & 4549/22).

The proposed development provides for 321 no. apartments, comprised of 104 no. 1 bed, 198 no. 2 bed, & 19 no. 3 bed dwellings, in 4 no. seven to thirteen storey buildings, over basement level, with 3 no. retail units, a medical suite / GP Practice unit and community/arts & culture space, all located at ground floor level, as well as a one storey residential amenity unit, facing onto Santry Avenue, located between Blocks A & D.

The brownfield site is currently Chadwick's Building Suppliers.

Figure 7.1 – Site Location – Swords Road, Santry, Dublin 9.

7.2 Study Methodology

7.2.1 Source of Information

Assessment of the likely impact of the proposed development on the surrounding hydrogeological environments and flood risk included the following activities:

- Review of existing topographic survey information.
- Review of utility records obtained from Irish Water (IW).
- Review of information available on the Environmental Protection Agency (EPA) online mapping service.
- Review of Office of Public Works (OPW) National Flood Hazard Mapping and Catchment Flood Risk Assessment and Management Studies (CFRAM Studies).
- Review of information available on the Geological Survey Ireland (GSI) online mapping service.
- Dublin City Council Development Plan (2022 - 2028)
- Consultation with Irish Water
- Submission of a Pre-Connection Enquiry Application to Irish Water
- Obtaining a Statement of Design Acceptance from Irish Water

As part of assessing the likely impact of the proposed development, surface water runoff, foul drainage and water usage calculations were carried out in accordance with the following guidelines:

- Greater Dublin Strategic Drainage Study (GDSDS)

- Method outlined in Irish Water's Pre-Connection Enquiry Application (water demand and foul drainage discharge)

7.3 Existing Receiving Environment

7.3.1 Hydrology

The primary hydrological feature in the vicinity of the site is the Santry River (approx. 700m south of the site). Excavations of the basement of the neighbouring development to depths of 4m encountered no ground water.

The site slopes from south-west to north-east towards Santry Avenue at a gradient of approximately 1 in 150.

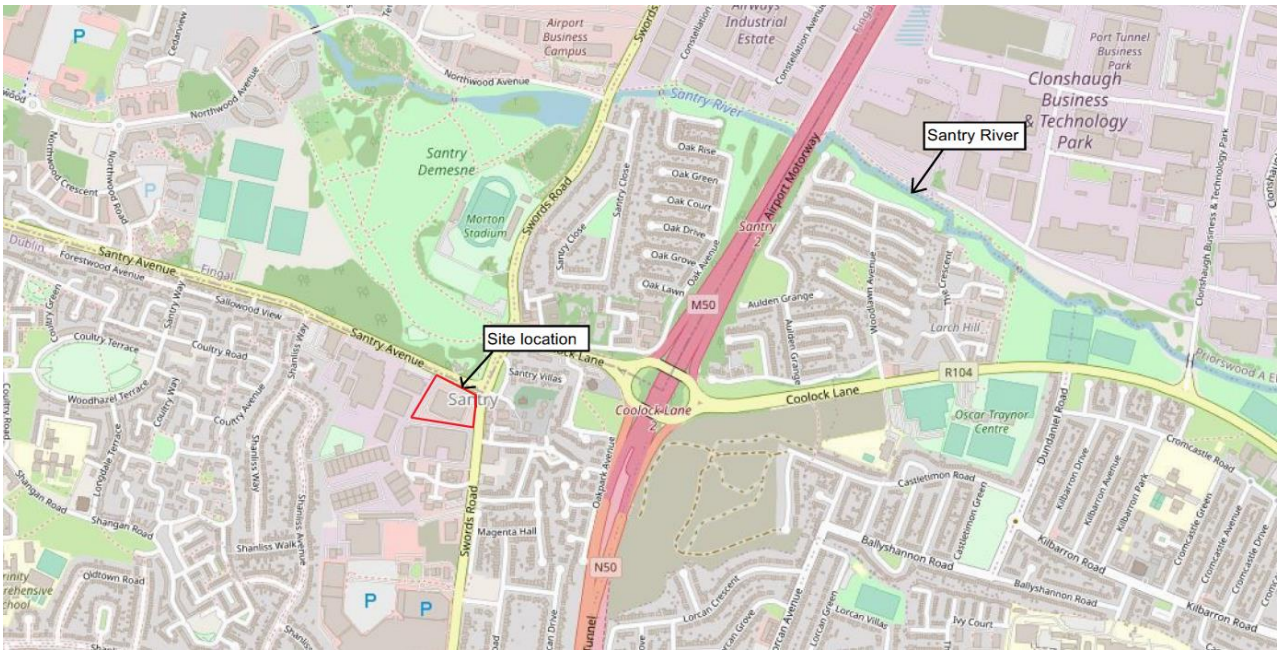


Figure 7.2 – Extract from EPA Online Mapping Service

7.3.2 Hydrogeology & Geology

The Geological Survey Ireland (GSI) Online Data Services classifies the aquifer at the subject site as "Locally Important Aquifer – Bedrock which is Generally Moderately Productive in Local Zones". There is also a gravel aquifer overlaying the bedrock, which is classified as "Locally important gravel aquifer".

GSI classifies the site's groundwater vulnerability as low across the site.

Refer to Chapter 6 (Land, Soil & Geology) of this EIAR for further commentary regarding underlying geology.

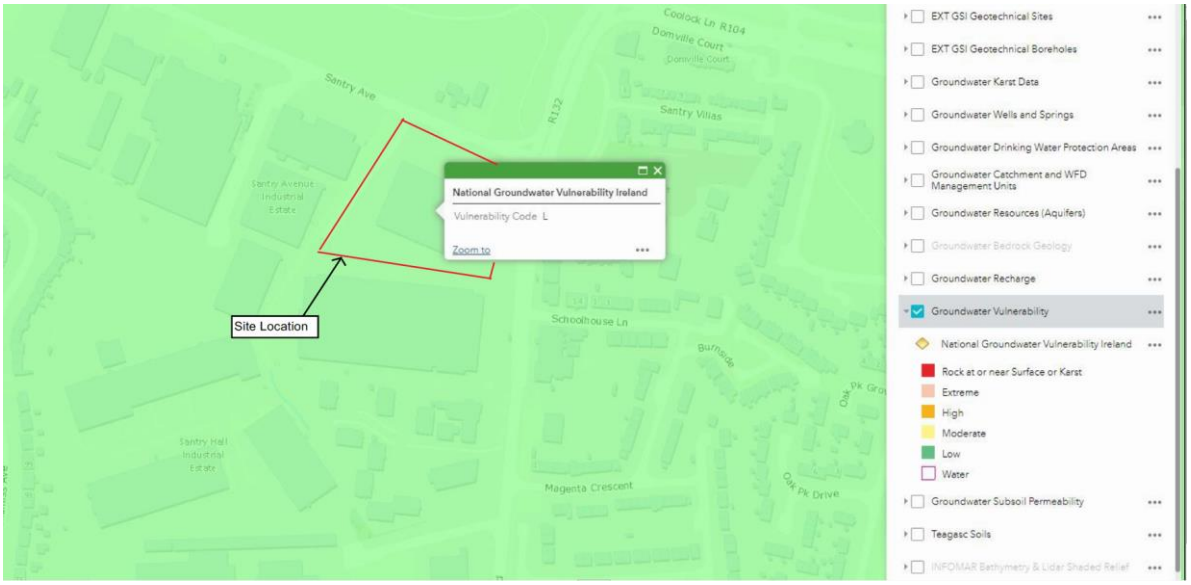


Figure 7.3 - Extract from GSI Online Mapping Service (Groundwater Vulnerability)

7.3.3 Surface Water Quality

The site is a developed site and surface water currently discharges to the public network. There is no surface water quality data available for the proposed development site.

7.3.4 Flood Risk

DBFL Consulting Engineers have undertaken a flood risk assessment by reviewing information from the Office of Public Works (OPW) National Flood Hazard Mapping (www.floodinfo.ie), the Eastern CFRAM Study. This assessment has been carried out in accordance with the procedure for a "Stage 1 Flood Risk Identification" as outlined in the OPW's Guidelines for Planning Authorities – The Planning System and Flood Risk Management (November 2009).

A review of the data available on the subject site showed no sign of fluvial flood risk. Following the flood risk assessment stages it was determined that the site is within Flood Zone C as defined by the Guidelines, and therefore the residential development proposed is appropriate for the Site's flood zone category. The site is considered to have a low probability of flooding based on our review of OPW's Flood Hazard Mapping, the Eastern CFRAM Study.

In addition, the proposed drainage is designed to provide protection against a possible pluvial flooding event up to the 100 year return period plus an allowance for climate change. Should extreme pluvial flooding occur that is in excess of the development's drainage capacity, overland flood routes have been designed to direct flood water away from the buildings in order to protect the development and residential units with lower floor levels.

Refer to DBFL's Site Specific Flood Risk Assessment (Report: 230146-X-Z-X-XXX-RP-DBFL-CE-0002) under a separate heading for further details.

OPW Flood Hazard Mapping

A flood event was recorded on the 24/04/1958 approximately 300m to the south of the site on Swords Road. A Report produced by D.C.C. titled "Wad River catchment Study - Full Catchment Report Rev E " concludes the flooding was pluvial, originating from the mostly culverted River Wad. The proposed site is within the catchment of the River Wad. It is noted that a number of defence assets have since been put in place downstream of the site. We believe these works to be the 1967 diversion via a culvert along Ballymun Road to the River Tolka.

Eastern CFRAM Study

As part of the EU Floods Directive, the OPW is undertaking a Catchment Flood Risk Assessment and Management (CFRAM) Study.

The maps are produced based on a series of nodes, which detail the modelled water level at that point. The closest modelled node to the site is located approximately 700m north of the site (Node: 09SANT00678). See figure 7.4 for ECFRAMS mapping.

The location of this node is shown on CFRAM Drawing E09SAY_EXFCD_F1_03

- Node: 09SANT00678, 10% AEP + 47.91m
- Node: 09SANT00678, 1% AEP + 48.02m
- Node: 09SANT00678, 0.1% AEP + 48.09m
- Lowest Existing Ground Level + 55.00m (approx.)

It can be seen that the existing ground level within the site is approximately 7m above the modelled flood water levels.

The CFRAM study provided further assessment of areas identified in the Preliminary Flood Risk Assessment, undertaken in 2011, for further investigation and confirmed that the subject site is in Flood Zone C and is not affected by fluvial flooding.

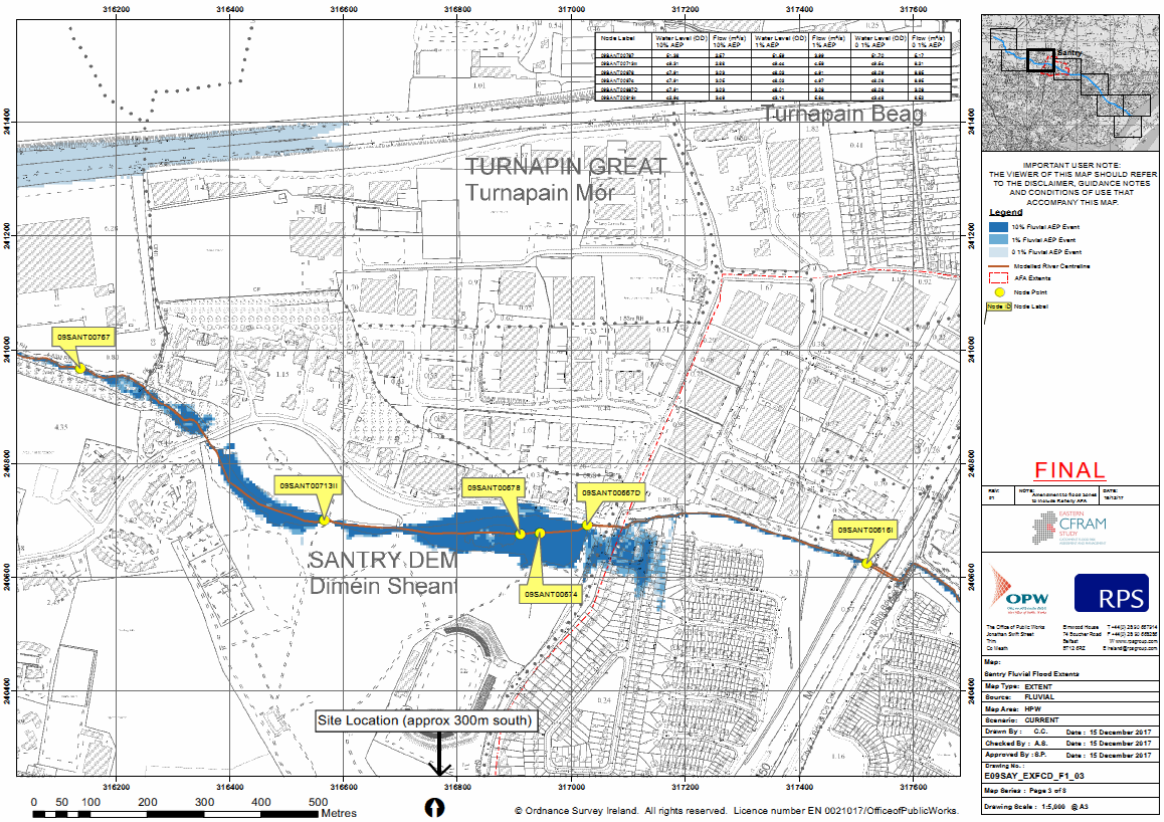


Figure 7.4 - Extract from ECFRAMS Mapping

Dublin City Council Development Plan (2022 - 2028) Strategic Flood Risk Assessment

The site is outside the extents of Dublin City Council Development Plan (2022 - 2028) Strategic Flood Risk Assessment.

Please refer to DBFL Site Specification Flood Risk Assessment report 230146-X-Z-X-XXX-DBFL-CE-0002 for further details regarding flood risk for this development.

7.3.5 Surface Water Drainage

The existing surface water infrastructure within the site boundary is currently unknown. Irish water records show no public surface water infrastructure within the site boundary (See appendix 7-A for Irish Water mapping).

A manhole has been constructed on the new 225mm diameter outfall sewer of previously approved proposed mixed-use development (Planning Ref: 2713/17 & 2737/19) to the south of this development to discharge the permitted flow from the proposed development.

7.3.6 Foul Drainage

There is an existing 300mm diameter public foul sewer located on the Swords Road (R104) to the east of the site. A manhole has been constructed on the new 225mm diameter outfall sewer of previously approved proposed mixed-use development (Planning Ref: 2713/17 & 2737/19) to the south of this development to take permitted flow from the proposed development.

The existing foul water infrastructure within the site boundary is currently unknown. Irish water records show no public foul infrastructure within the site boundary. (See appendix 7-A for Irish Water mapping)

A Pre-Connection Enquiry was submitted to Irish Water CDS20003546 and subsequent confirmation of feasibility letter states that connection is feasible subject to upgrades. The Applicant will communicate with Irish Water to agree the required works following receipt of Planning Approval. A more recent pre-connection enquiry has been submitted to Irish Water under the CDS23007437 and will be sent through once received.

The foul water drainage design has been submitted to Irish Water in order to obtain a Statement of Design Acceptance, we are awaiting a response.

7.3.7 Water Supply

There is currently no public water supply infrastructure noted on Irish Water records within the subject site. There is an existing 300mm diameter cast iron public watermain located on the Swords Road adjacent to the proposed site entrance. (See appendix 7-A for Irish Water mapping)

The existing water infrastructure within the site boundary is currently unknown.

A Pre-Connection Enquiry was submitted to Irish Water CDS20003546 and subsequent confirmation of feasibility letter states that connection is feasible subject to upgrades. The Applicant will communicate with Irish Water to agree the required works following receipt of Planning Approval. A more recent pre-connection enquiry has been submitted to Irish Water under the CDS23007437 and will be sent through once received.

The watermain design has been submitted to Irish Water in order to obtain a Statement of Design Acceptance, we are awaiting a response.

7.4 Characteristics of the Proposed Development

7.4.1 Hydrology & Geology

The primary hydrological feature in the vicinity of the site is the Santry River (approx. 700m north of the site).

No groundwater was encountered during excavations of the basement in neighbouring development (depths up to 4m). However, a soakaway test conducted in the neighbouring site in May 2019 showed the soil has poor infiltration characterises. Therefore all suds features within the site are proposed to be tanked.

On the assumption of infiltration not being feasible, surface water flows from the proposed development are to be attenuated to greenfield runoff rates in conjunction with implementation of SUDS strategies such as permeable paving, green/blue roofs, catchpit manholes, pluvial cube attenuation system and installation of a Class 1 By-Pass Fuel/Oil Separator prior to discharging to the public surface water network. Refer to DBFL's Engineering Services Report (230146-X-Z-X-XXX-DBFL-CE-0001) for full details of the proposed drainage & SUDS methodologies employed in the proposed surface water design.

Based on the available information it is not currently envisaged that the proposed development works will have any direct impact on the existing underlying hydrogeology & geology.

A detailed Hydrological Impact Assessment can be found under a separate heading, produced by AWN Consulting.

7.4.2 Flood Risk

The Site-Specific Flood Risk Assessment for proposed development was undertaken in accordance with the requirements of "The Planning System and Flood Risk Management, Guidelines for Planning Authorities" and its Technical Appendices.

Following the Flood Risk Assessment, it was determined that the site is located in Flood Zone C as defined by the Guidelines. It concluded that the;

- Proposed residential development is appropriate for the site's flood zone category.
- The sequential approach outlined in the Guidelines has been adhered to and that the 'Avoid' principal has been achieved.

The proposed development is considered to have the required level of flood protection up to and including the 1% AEP flood event. Overland flow paths have been identified for pluvial flooding exceeding the capacity of the surface water drainage network. Refer to DBFL's Site Specific Flood Risk Assessment (230146-X-Z-X-XXX-DBFL-CE-0002) for full details.

7.4.3 Surface Water Drainage

The surface water drainage from this development is proposed to discharge, following attenuation and hydrobrake flow control device via a new 225mm diameter surface water sewer to a manhole constructed as part of the previously approved mixed-use development (Planning Ref: 2713/17 & 2737/19) to the south of this development.

The petrol interceptor, placed under the aforementioned planning reference, has been designed to accommodate the combined permitted discharge rate from both of this development and the development located to the south (Planning Ref: 2713/17 & 2737/19).

Surface water runoff from the site's road network and parking bays will be directed to a proposed surface water pipe network via the porous aggregates beneath permeably paved road surfacing (providing an additional element of attenuation/treatment). Road gullies will be installed at low points on the permeable paving road surface in addition.

Extensive green and blue roofs will be provided at roof level and intensive green roofs provided on the podium slab. Surface water runoff from the roofs of blocks A, B,C,D, E and F will be collected by slung drainage and directed to the attenuation system. Surface water runoff from block G will be directed into the proposed surface water pipe network and then travel to the attenuation structure.

Surface water will pass through silt trap (catchpit) manholes prior to entering the attenuation system. The discharge rate from the proposed surface water drainage network will be controlled by a vortex flow control device (Hydrobrake or equivalent) and run-off contained in the associated underground attenuation tanks (Pluvial Cube or equivalent). Surface water discharge exiting the flow control device will pass through a by-pass fuel/oil separator sized to accommodate the combined permitted discharge rate from both this development and the development located to the south (Planning Ref: 2713/17& 2737/19).

Surface water calculations are based on permissible site discharge rate of 5.6 l/s in accordance with the Greater Dublin Strategic Drainage Strategy (GDSDS). This results in a total attenuation volume required of approx. 416m³.

The surface water drainage network, attenuation storage and site levels are designed to accommodate a 100-year storm event (provision for 20% climate change included). Floor levels of the residential units are set above the 100-year flood levels by a minimum of 0.4m. For storm events in excess of a 100 year event the development has been designed to provide overland flood routes towards green areas and away from structures.

The Proposed surface water drainage network has been designed in accordance with the Greater Dublin Strategic Drainage Study (GDSDS), the Department of the Environment's Recommendations for Site Development Works for Housing Areas, the Department of the Environment's Building Regulations "Technical Guidance Document Part H Drainage and Waste Water Disposal" and BS EN 752: 2008 Drain and Sewer Systems Outside Buildings.

See Engineering Services Report (230146-X-Z-X-XXX-DBFL-CE-0001) for full details of the proposed surface water drainage design.

7.4.4 Foul Drainage

The foul sewerage from this development is proposed to discharge via a new 225mm diameter sewer to a manhole constructed as part of the previously approved mixed-use development (Planning Ref: 2713/17 & 2737/19) to the south of this development. This will negate the requirement for any construction outside of the site boundary and minimise any disruption to the public.

The proposed foul drainage network will comprise of a series of main sewers 150mm/225mm diameter in size. Foul sewage from apartment blocks A, B, C, D, E and F will be drained on separate systems via pipes slung from the underside of basement roof slabs and adjacent to the basement walls. Service pipes from individual apartments will project through ground floor slabs and connect into the slung drainage system which in turn will connect by gravity to the proposed external drainage system.

Any surface water from the basement car park generated by incidental run-off only will drain through an underground system of collector pipes, gullies and ACO drains which in turn will drain through a petrol interceptor prior to discharging into a pumping station located beneath the basement slab. This run-off will then be pumped to ground level and enter the gravity foul drainage system for the site.

The foul drainage network for the proposed development has been designed in accordance with the following guidance:

- Irish Water Code of Practice for Wastewater Infrastructure & Standard Details for Wastewater Infrastructure;
- Department of the Environment's Recommendations for Site Development Works for Housing Areas;
- Department of the Environment's Building Regulations "Technical Guidance Document Part H Drainage and Waste Water Disposal";
- BS EN 752: 2008 Drain and Sewer Systems Outside Buildings;
- IS EN 12056: Part 2 (2000) Gravity Drainage Systems Inside Buildings

A peak flow rate of 17.1 l/s has been calculated using the EN752 method, which equates to a daily foul discharge volume of 917m³.

A BOD (Biochemical Oxygen Demand) loading (based on 60g per person per day) of 57.78kg has been calculated for the proposed development as outlined in the EPA Wastewater Treatment Manual.

See Engineering Services Report (230146-X-Z-X-XXX-DBFL-CE-0001) for full details of the proposed foul water drainage design.

7.4.5 Water Supply

It is proposed to form a connection to the existing 300mm diameter cast iron public watermain located on the Swords Road adjacent to the proposed site entrance to the south east of the site.

All connections, valves, hydrants, meters etc. have been designed and are to be installed in accordance with Irish Water's Code of Practice / Standard Details and the Department of the Environment's Building Regulations "Technical Guidance Document Part B Fire Safety".

The estimated peak demand from the development will be 10.01l/s with the average daily demand being 864.9 m3/day.

Commercial properties will be individually metered.

See Engineering Services Report (230146-X-Z-X-XXX-DBFL-CE-0001) for full details of the proposed water design.

7.5 Potential Impacts of the Proposed Development

7.5.1 Construction Phase

Potential impacts that may arise during the construction phase are noted below:

- Surface water runoff during the construction phase may contain increased silt levels (e.g. runoff across areas stripped of hardstanding) or become polluted by construction activities.
- Discharge of rainwater pumped from excavations may also contain increased silt levels (potential impact on existing hydrology e.g. discharge to existing open drain).
- Accidental spills and leaks associated with storage of oils and fuels, leaks from construction machinery and spillage during refuelling and maintenance contaminating the surrounding surface water and hydrogeological environments.
- Concrete runoff, particularly discharge of wash water from concrete trucks (potential impact on existing hydrology e.g. infiltration to ground).
- Discharge of vehicle wheel wash water (potential impact on existing hydrology e.g. discharge to existing surface water drainage infrastructure).
- Improper discharge of foul drainage from contractor's compound (impact on existing hydrology e.g. cross-contamination of existing surface water drainage.).
- Cross contamination of potable water supply to construction compound.

7.5.2 Operational Phase

Potential operational phase impacts are noted below:

- Accidental hydrocarbon leaks and subsequent discharge into piped surface water drainage network (e.g. along roads).
- Increased impermeable surface area will reduce local ground water recharge and potentially increase surface water runoff (if not attenuated to greenfield runoff rate).
- Increased discharge to foul drainage network (Daily Foul Discharge Volume = approx. 955m³)
- Increased potable water consumption (Average Daily Domestic Demand = approx. 144.6m³)

Implementation of the mitigation measures described under section 7.8.2 will prevent and minimize the potential impacts of this interaction.

7.6 Potential Cumulative impacts

7.6.1 Surface (Storm) Water Infrastructure

The cumulative impacts of the proposed development are such that the requirement to attenuate the subject site to pre-development run-off rates will ensure that during extreme storm events the surface water from the development is limited to the greenfield run off rate in accordance with the GDSDS and Dublin City Council requirements. The use of sustainable urban drainage features will aid in improving overall storm water quality prior to ultimate discharge.

Please refer to DBFL report 230146-X-Z-X-XXX-DBFL-CE-0001 for further details.

7.6.2 Potable Water Infrastructure

The potential impacts for the local public potable water are that the proposed development will reduce the capacity in the public watermain.

A pre-connection enquiry has been submitted to Irish Water and confirmation of feasibility received under the CDS23007437.

Please refer to DBFL report 230146-X-Z-X-XXX-DBFL-CE-0001 for further details.

7.7 Do Nothing Impact

There are no predicted impacts should the proposed development not proceed.

7.8 Remedial and Mitigation Measures

7.8.1 Construction Phase

The following measures are proposed during the construction phase to mitigate against risks to the surrounding hydrological environment.

- A site-specific Construction Management Plan will be developed and implemented during the construction phase. Site inductions will include reference to the procedures and best practice as outlined in the Construction Management Plan.
- Rainwater pumped from excavations is to be directed to on-site settlement ponds.
- Surface water runoff from areas stripped of hardstanding and surface water collected in excavations will be directed to on-site settlement ponds where measures will be implemented to capture and treat sediment laden runoff prior to discharge of surface water at a controlled rate.
- Weather conditions and seasonal weather variations will also be taken account of when planning stripping the site and excavations, with an objective of minimizing soil erosion.
- In order to mitigate against spillages contaminating the surrounding surface water and hydrogeological environments, all oils, fuels, paints and other chemicals shall be stored in a secure bunded hardstand area. Refuelling and servicing of construction machinery will take place in a designated hardstand area which is also remote from any surface water inlets (where not possible to carry out such activities off site).
- Concrete batching will take place off site and wash out of concrete trucks will take place off site (at authorized concrete batching plant in full compliance with relevant planning and environmental consents).
- Discharge from any vehicle wheel wash areas is to be directed to on-site settlement ponds.
- Any groundwater pumped from excavations is to be directed to on-site settlement ponds.
- It is proposed to implement a programme for monitoring water quality at the outfall as part of the construction of this development, in agreement with the Planning Authority.
- The construction compound will include adequate staff welfare facilities including foul drainage and potable water supply. Foul drainage discharge from the construction compound will be tankered off site to a licensed facility until a connection to the public foul drainage network has been established.
- The construction compound's potable water supply shall be protected from contamination by any construction activities or materials.

7.8.2 Operational Phase

The design of proposed site levels (roads, plaza, finished floor levels etc.) has been carried out in such a way as to replicate existing surface contours, break lines etc. as closely as reasonably practicable and avoid concentrating additional surface water flow in any particular location. However, some localised areas have been raised in order to enable gravity foul drainage and provide sufficient depth of cover. In these areas the levels have been designed to provide overland flow paths have been designed to ensure that during exceedance events, runoff is directed away from buildings to soft landscaped areas.

Following the Site Specific Flood Risk Assessment, it has been determined that the entire site / zoned developable area is located in Flood Zone C as defined by the Guidelines (i.e. proposed development is considered to have the required level of flood protection up to and including the 1% AEP flood event.)

Surface water runoff from the site will be attenuated to the greenfield runoff rate as outlined in the Greater Dublin Strategic Drainage Study (GDSDS). Surface water discharge rates will be controlled by a Hydrobrake type vortex flow control device in conjunction with attenuation storage.

The following methodologies are being implemented as part of a SuDS surface water treatment train approach:

- Permeable paving along carriageways and parking areas.
- Green roofs - extensive.
- Blue roofs
- Catchpit manholes.
- Installation of hydrobrake limiting surface water discharge from the site to combined greenfield runoff rates.
- Surface water discharge to pass via a Class 1 bypass fuel / oil separator (sized in accordance with permitted discharge from the site).

A contract will be entered into with a suitably qualified contractor for maintenance of the attenuation system, hydrobrake and by-pass fuel / oil separator noted above.

No specific mitigation measures are proposed in relation to foul drainage however, all new foul drainage lines will be designed, installed and tested in accordance with Irish Water Code of Practice.

No specific mitigation measures are proposed in relation to water supply. However, all new watermain will be designed, installed and tested in accordance with the Irish Water Code of Practice.

The potential impact of climate change has been allowed for as follows;

- Pluvial flood risk - attenuation storage design allows for a 20% increase in rainfall intensities, as recommended by the GDSDS.
- Pluvial flood risk - drainage system design allows for a 20% increase in flows, as recommended by the GDSDS.

7.9 Predicted Impact of the Proposed Development

This section describes the predicted impact of the proposed development following the implementation of the remedial and mitigation measures, as set out above.

7.9.1 Construction Phase

Implementation of the measures outlined above will ensure that the potential impacts of the proposed development on water and the hydrogeological environment do not occur during the construction phase and that any residual impacts will be negligible.

7.9.2 Operational Phase

Surface water drainage design has been carried out in accordance with the GDSDS, and SuDS methodologies implemented as part of a treatment train approach. Foul drainage and watermain has been designed and will be constructed in accordance with Irish Water Code of Practice. As a result, the predicted residual impacts on the water and hydrogeological environment arising from the operational phase will be negligible.

7.10 Monitoring

Proposed monitoring during the construction and operational phase in relation to the water and hydrogeological environment are as follows:

- Adherence to Construction Management Plan.
- Inspection of fuel / oil storage areas.
- Monitoring cleanliness of adjacent road network, implementation of dust suppression and vehicle wheel wash facilities.
- Monitoring sediment control measures (sediment retention ponds, surface water inlet protection etc.).
- Monitoring of discharge from sediment retention ponds (e.g. pH, sediment content).

- During the operational phase an inspection and maintenance contract is to be implemented in relation to the proposed Class 1 fuel / oil separators, hydrobrakes, SuDS and attenuation facilities.

7.11 Reinstatement

The external connections into the potable water will be carried out by Irish Waters regional contactor and reinstated to Dublin City Council requirements.

7.12 Interactions

DBFL Consulting Engineers lodged a Pre-Connection Enquiry and a Request for Design Acceptance to Irish Water, (copies of their response are appended to the Engineering Services Report 230146-X-Z-X-XXX-DBFL-CE-0001).

7.13 Difficulties Encountered in Compiling

No difficulties were encountered while compiling this chapter.

8.0. Air Quality

8.1 Introduction

AWN Consulting Ltd. has been commissioned to carry out an assessment of the likely air quality impacts associated with the proposed mixed use development on lands at the junction of Santry Avenue and Swords Road, Santry, Dublin 9. A full description of the development is available in Chapter 3 of this EIAR.

This chapter was completed by Aisling Cashell, an Environmental Consultant in the air quality section of AWN Consulting Ltd. She holds a BA and an MAI in Civil, Structural and Environmental Engineering from Trinity College Dublin. She is a member of Engineers Ireland. She specialises in the areas of air quality, climate and sustainability.

This chapter was reviewed by Ciara Nolan, a Senior 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 Institute of Environmental Science (MIEnvSc). She specialises in the fields of air monitoring, air quality & climate assessments for EIA and air dispersion modelling.

8.2 Methodology

The principal guidance and best practice documents used to inform the assessment of potential impacts on air quality are summarised below. The assessment has made reference to national guidelines where available, in addition to international standards and guidelines relating to the assessment of air quality impacts:

- Guidance on the Assessment of Dust from Demolition and Construction V2.2 (Institute of Air Quality Management (IAQM) (hereafter referred to as the IAQM Guidelines) (IAQM, 2024);
- A Guide To The Assessment Of Air Quality Impacts On Designated Nature Conservation Sites (Version 1.1) (IAQM, 2020);
- Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment (European Commission, 2013);
- PE-ENV-01106: Air Quality Assessment of Specified Infrastructure Projects (Transport Infrastructure Ireland (TII), 2022a); and
- TII Road Emissions Model (REM): Model Development Report – GE-ENV-01107 (TII, 2022b).

In addition to specific air quality 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);
- Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (EPA, 2015);

- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Environment, Community and Local Government, August 2018); and
- Environmental Impact Assessment of Projects – Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017).

8.2.1 Criteria for Rating of Impacts

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 include the Air Quality Standards Regulations 2022, which incorporate EU Directive 2008/50/EC, which has set limit values for a number of pollutants. The limit values for NO_2, PM_{10} and $PM_{2.5}$, are applicable in relation to this project (see Table 8.1).

Pollutant	Regulation Note 1	Limit Type	Value
Dust Deposition	TA Luft (German VDI, 2002)	Annual average limit for nuisance dust	350 mg/m^2/day
NO_x	2008/50/EC	Annual limit value for the protection of vegetation	30 µg/m^3 NO + NO_2
Nitrogen Dioxide (NO_2)	2008/50/EC	Hourly limit for protection of human health - not to be exceeded more than 18 times/year	200 µg/m^3
		Annual limit for protection of human health	40 µg/m^3
Particulate Matter (as PM_{10})	2008/50/EC	24-hour limit for protection of human health - not to be exceeded more than 35 times/year	50 µg/m^3
		Annual limit for protection of human health	40 µg/m^3
Particulate Matter (as $PM_{2.5}$) – Stage 1	2008/50/EC	Annual limit for protection of human health	25 µg/m^3
Particulate Matter (as $PM_{2.5}$) – Stage 2 Note 2	2008/50/EC	Annual limit for protection of human health	20 µg/m^3

Note 1 EU 2008/50/EC – Clean Air For Europe (CAFÉ) Directive replaces the previous Air Framework Directive (1996/30/EC) and daughter directives 1999/30/EC and 2000/69/EC

Note 2 Stage 2 indicative limit value for $PM_{2.5}$ to be applied from 1 January 2020 after review by the European Commission

Table 8.1: Ambient Air Quality Standards & TA Luft

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 World Health Organisation (WHO) Air Quality Guidelines

Interim Target 3 (IT3) by 2026 (shown in Table 8.2), the IT4 targets by 2030 and the final targets by 2040 (shown in Table 8.2). The strategy notes that a significant number of Environmental Protection Agency (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/m^3. The strategy also acknowledges that "meeting the WHO targets will be challenging and will require legislative and societal change, especially with regard to both $PM_{2.5}$ and NO_2". Ireland will revise its air quality legislation in line with the proposed EU revisions to the EU 2008/50/EC – Clean Air For Europe (CAFE) Directive, which will set interim 2030 air quality standards and align the EU more closely with the WHO targets.

At present, the applicable air quality assessment criteria for the proposed development are the Ambient Air Quality Standards set under Directive 2008/50/EC and shown in Table 8.1.

Pollutant	Regulation	Limit Type	IT3 (2026)	IT4 (2030)	Final Target (2040)
NO_2	WHO Air Quality Guidelines	24-hour limit for protection of human health	50µg/m^3 NO_2	50µg/m^3 NO_2	25µg/m^3 NO_2
		Annual limit for protection of human health	30µg/m^3 NO_2	20µg/m^3 NO_2	10µg/m^3 NO_2
PM (as PM_{10})		24-hour limit for protection of human health	75µg/m^3 PM_{10}	50µg/m^3 PM_{10}	45µg/m^3 PM_{10}
		Annual limit for protection of human health	30µg/m^3 PM_{10}	20µg/m^3 PM_{10}	15µg/m^3 PM_{10}
PM (as $PM_{2.5}$)		24-hour limit for protection of human health	37.5µg/m^3 $PM_{2.5}$	25µg/m^3 $PM_{2.5}$	15µg/m^3 $PM_{2.5}$
		Annual limit for protection of human health	15µg/m^3 $PM_{2.5}$	10µg/m^3 $PM_{2.5}$	5µg/m^3 $PM_{2.5}$

Table 08.2: WHO Air Quality Guidelines

Dust Deposition Guidelines

The concern from a health perspective is focussed on particles of dust which are less than 10 microns (PM_{10}) and less than 2.5 microns ($PM_{2.5}$) and the EU ambient air quality standards outlined in Table 8.1 have set ambient air quality limit values for PM_{10} and $PM_{2.5}$.

With regards to larger dust particles that can give rise to nuisance dust, there are no statutory guidelines regarding the maximum dust deposition levels that may be generated during the construction phase of a development in Ireland. Furthermore, no specific criteria have been stipulated for nuisance dust in respect of this development.

With regard to dust deposition, the German TA-Luft standard for dust deposition (non-hazardous dust) (German VDI, 2002) sets a maximum permissible emission level for dust deposition of 350 mg/m^2/day averaged over a one year period at any receptors outside the site boundary. Recommendations from the Department of the Environment, Heritage & Local Government (DEHLG, 2004) apply the Bergerhoff limit of 350 mgm^2/day to the site boundary of quarries. This limit value can also be implemented with regard to dust impacts from construction of the proposed development.

Air Quality and Traffic Impact Significance Criteria

The TII document Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106 (TII, 2022a) details a methodology for determining air quality impact significance criteria for road schemes which can be applied to any project that causes a change in traffic. The degree of impact is determined based on the percentage change in pollutant concentrations relative to the Ambient Air Quality Limit Value (AQLV). The TII significance criteria are outlined in Table 4.9 of Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106 (TII, 2022a) and reproduced in Table 8.3. These criteria have been adopted for the proposed development to predict the effects of NO_2, PM_{10} and $PM_{2.5}$ emissions as a result of the proposed development.

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 (2022a) Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106

Table 8.3: Air Quality Significance Criteria

8.2.2 Construction Phase Methodology

Construction Traffic Assessment

Construction phase traffic has the potential to impact air quality. The TII guidance Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106 (TII, 2022a), states that road links meeting one or more of the following criteria can be defined as being 'affected' by a proposed development and should be included in the local air quality assessment. While the guidance is specific to infrastructure projects, the approach can be applied to any development that causes a change in traffic.

- Annual average daily traffic (AADT) changes by 1,000 or more;
- Heavy duty vehicle (HDV) AADT changes by 200 or more;
- Daily average speed change by 10 kph or more;
- Peak hour speed change by 20 kph or more;
- A change in road alignment by 5m or greater.

The construction stage traffic does not meet the above scoping criteria and therefore, has been scoped out from any further assessment as there is no potential for significant impacts to air quality.

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 demolition, earthworks, construction and haulage activities based on the scale and nature of the works and the sensitivity of the area to dust impacts. The IAQM methodology has been applied to the construction phase of this development to predict the likely risk of dust impacts in the absence of mitigation measures and to determine the level of site-specific mitigation required. Transport Infrastructure Ireland (TII) recommends the use of the IAQM guidance (2024) in the TII guidance document Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106 (TII, 2022a).

The major dust generating activities are divided into four types within the IAQM guidance (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 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.

8.2.3 Operational Phase Methodology

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 8.2.2 were used to determine if any road links are affected by the proposed development and require inclusion in a detailed air dispersion modelling assessment. The proposed development will not result in the operational phase traffic increasing by more than 1,000 AADT. In addition, there are no proposed changes to the traffic speeds or road alignment. Therefore, no road links impacted by the proposed development satisfy the screening criteria (see Section 8.2.2). A quantitative assessment of the impact of traffic emissions on ambient air quality is not necessary as there is no potential for significant impacts to local air quality.

8.3 Baseline Environment

8.3.1 Meteorological Data

A key factor in assessing temporal and spatial variations in air quality is the prevailing meteorological conditions. Depending on wind speed and direction, individual receptors may experience very significant variations in pollutant levels under the same source strength (i.e. traffic levels) (WHO, 2006). Wind is of key importance in dispersing air pollutants and for ground level sources, such as traffic emissions, pollutant concentrations are generally inversely related to wind speed. Thus, concentrations of pollutants derived from traffic sources will generally be greatest under very calm conditions and low wind speeds when the movement of air is restricted. In relation to PM_{10}, the situation is more complex due to the range of sources of this pollutant. Smaller particles (less than $PM_{2.5}$) from traffic sources will be dispersed more rapidly at higher wind speeds. However, fugitive emissions of coarse particles ($PM_{2.5}$ - PM_{10}) will actually increase at higher wind speeds. Thus, measured levels of PM_{10} will be a non-linear function of wind speed.

The nearest representative weather station collating detailed weather records is Dublin Airport meteorological station, which is located approximately 3 km north of the site. Dublin Airport meteorological data has been examined to identify the prevailing wind direction and average wind speeds over a five-year period (see Figure 8.1). For data collated during five representative years (2018 – 2022), the predominant wind direction is westerly to south-westerly, with a mean wind speed of 5.4 m/s over the 30-year period 1991–- 2020 (Met Éireann, 2024).

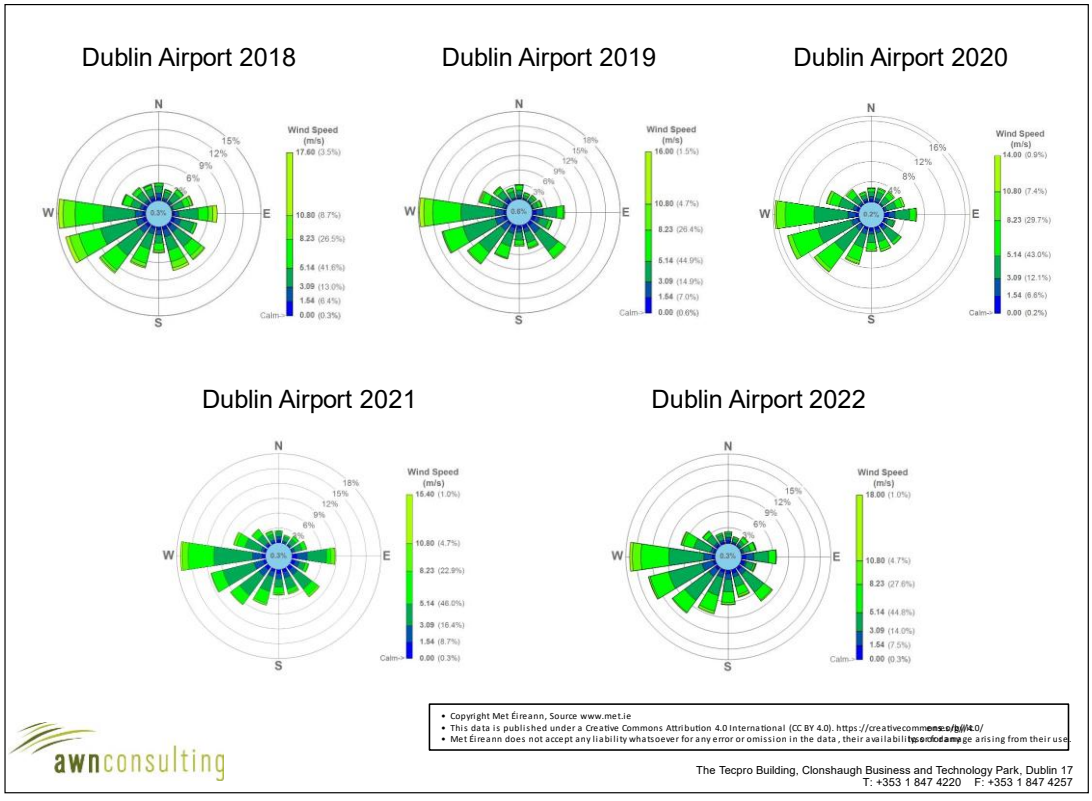


Figure 8.1: Dublin Airport Windroses 2018 – 2022

8.3.2 Baseline Air Quality

Air quality monitoring programs have been undertaken in recent years by the EPA and Local Authorities. The most recent annual report on air quality in Ireland is "*Air Quality In Ireland 2022*" (EPA, 2023). The EPA website details the range and scope of monitoring undertaken throughout Ireland and provides both monitoring data and the results of previous air quality assessments (EPA, 2023).

As part of the implementation of the Air Quality Standards Regulations 2002 (S.I. No. 271 of 2002), four air quality zones have been defined in Ireland for air quality management and assessment purposes (EPA, 2023). 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 is within Zone A (EPA, 2023). The long-term EPA 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.).

NO_2

With regard to NO_2, continuous monitoring data from the EPA (EPA, 2023) at representative suburban Zone A locations in Ballyfermot, Dun Laoghaire, Swords and Rathmines show that current levels of NO_2 are below both the annual and 1-hour limit values. Sufficient data is available for all stations to observe the long-term trend since 2018 (EPA, 2023) (see Table 8.4), with results ranging from 11 – 22 µg/m^3 and few exceedances of the one-hour limit value. The station in Swords is approximately 6 km north of the proposed development site and monitored background concentrations would be representative of the site location. Concentrations of NO_2 at the Swords site over the period 2018 – 2022 ranged from 11 - 16 µg/m^3. Based on the above information, an estimate of the background NO_2 concentration in the region of the proposed development is 16 µg/m^3.

Station	Averaging Period Notes 1, 2	Year				
		2018	2019	2020	2021	2022
Rathmines	Annual Mean NO_2 (µg/m^3)	20	22	13	14	14
	Max 1-hr NO_2 (µg/m^3)	138	183	170	143	97
Dún Laoghaire	Annual Mean NO_2 (µg/m^3)	19	15	13	16	16
	Max 1-hr NO_2 (µg/m^3)	135	104	92	93	89
Swords	Annual Mean NO_2 (µg/m^3)	16	15	11	11	12
	Max 1-hr NO_2 (µg/m^3)	112	108	84	79	103
Ballyfermot	Annual Mean NO_2 (µg/m^3)	17	20	12	13	13
	Max 1-hr NO_2 (µg/m^3)	217	124	108	90	113

Note 1 Annual average limit value - 40 µg/m^3 (EU Council Directive 2008/50/EC & S.I. No. 739 of 2022).
Note 2 1-hour limit value - 200 µg/m^3 as a 99.8th%ile, i.e. not to be exceeded >18 times per year (EU Council Directive 2008/50/EC & S.I. No. 739 of 2022).

Table 8.4: Trends in Zone A – Nitrogen Dioxide (NO_2)

PM_{10}

Continuous PM_{10} monitoring carried out at the representative Zone A locations of Rathmines, Phoenix Park

and Dún Laoghaire showed 2018 – 2022 annual mean concentrations ranging from 10 – 15 µg/m^3 (Table 8.5), with at most 9 exceedances (in Rathmines) of the 24-hour limit value of 50 µg/m^3 (35 exceedances are permitted per year). The most representative location is Phoenix Park which had an average annual mean concentration of 13.6 µg/m^3 over the five year period. Based on the EPA data (Table 8.5) a conservative estimate of the current background PM_{10} concentration in the region of the proposed development is 14 µg/m^3.

Station	Averaging Period Notes 1, 2	Year				
		2018	2019	2020	2021	2022
Rathmines	Annual Mean PM_{10} (µg/m^3)	15	15	11	12	15
	24-hr Mean > 50 µg/m^3 (days)	2	9	2	0	4
Phoenix Park	Annual Mean PM_{10} (µg/m^3)	11	11	10	10	11
	24-hr Mean > 50 µg/m^3 (days)	0	2	0	0	0
Dún Laoghaire	Annual Mean PM_{10} (µg/m^3)	13	12	12	11	12
	24-hr Mean > 50 µg/m^3 (days)	0	2	0	0	1

Note 1 Annual average limit value - 40 µg/m^3 (EU Council Directive 2008/50/EC & S.I. No. 739 of 2022).
Note 2 24-hour limit value - 50 µg/m^3 as a 90.4th%ile, i.e. not to be exceeded >35 times per year (EU Council Directive 1999/30/EC & S.I. No. 739 of 2022).

Table 8.5: Trends in Zone A – PM_{10}

$PM_{2.5}$

Continuous $PM_{2.5}$ monitoring carried out at the representative Zone A locations of Rathmines, Ballyfermot, Phoenix Park and Dún Laoghaire. Annual mean $PM_{2.5}$ concentrations range from 6 – 10 over the period 2018 – 2019 (Table 8.6). Based on this information, a background $PM_{2.5}$ concentration in the region of the proposed development of 8 µg/m^3 was estimated.

Station	Averaging Period Notes 1, 2	Year				
		2018	2019	2020	2021	2022
Rathmines	Annual Mean $PM_{2.5}$ (µg/m^3)	9.0	8.0	8.0	9.3	7.5
Ballyfermot	Annual Mean $PM_{2.5}$ (µg/m^3)	7.0	10.0	8.0	7.8	7.5
Phoenix Park	Annual Mean $PM_{2.5}$ (µg/m^3)	6.0	8.0	7.0	6.4	6.3
Dún Laoghaire	Annual Mean $PM_{2.5}$ (µg/m^3)	-	10.0	8.0	7.5	7.8

Note 1 Annual average limit value - 40 µg/m^3 (EU Council Directive 2008/50/EC & S.I. No. 739 of 2022).
Note 2 24-hour limit value - 50 µg/m^3 as a 90.4th%ile, i.e. not to be exceeded >35 times per year (EU Council Directive 1999/30/EC & S.I. No. 739 of 2022).

Table 8.6: Trends in Zone A – $PM_{2.5}$

Summary

Based on the above information the air quality in the area is predominantly good, with concentrations of the key pollutants generally well below the relevant limit values. However, the EPA have indicated that road

transport emissions are contributing to increased levels of NO_2. There is the potential for breaches in the annual NO_2 limit value in future years at locations within urban centres and roadside locations. In addition, burning of solid fuels for home heating is contributing to increased levels of particulate matter (PM_{10} and $PM_{2.5}$). The EPA predict that exceedances in the particulate matter limit values are likely in future years if burning of solid fuels for residential heating continues (EPA, 2023).

8.3.3 Sensitivity of the Receiving Environment

In line with the UK Institute of Air Quality Management (IAQM) guidance document '*Guidance on the Assessment of Dust from Demolition and Construction'* (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.

In terms of receptor sensitivity to dust soiling, there are approximately 25 high sensitivity residential properties within 100m of the main works area of the proposed development site. Based on the IAQM criteria outlined in Table 8.7, the worst case sensitivity of the area to dust soiling is considered to be **low**.

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

Table 8.7: Sensitivity of the Area to Dust Soiling Effects on People and Property

In addition to sensitivity to dust soiling, the IAQM guidelines also outline the assessment criteria for determining the sensitivity of the area to human health impacts. The criteria take into consideration the current annual mean PM_{10} concentration, receptor sensitivity based on type (residential receptors are classified as high sensitivity) and the number of receptors affected within various distance bands from the construction works. A conservative estimate of the current annual mean PM_{10} concentration in the vicinity of the proposed development is 14 µg/m^3 and there are approximately 25 high sensitivity receptors located within 100m of the proposed development site (see Figure 8.2). Based on the IAQM criteria outlined in Table 8.8, the worst case sensitivity of the area to human health is considered to be **low**.

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

Table 8.8: Sensitivity of the Area to Dust Soiling Effects on Human Health

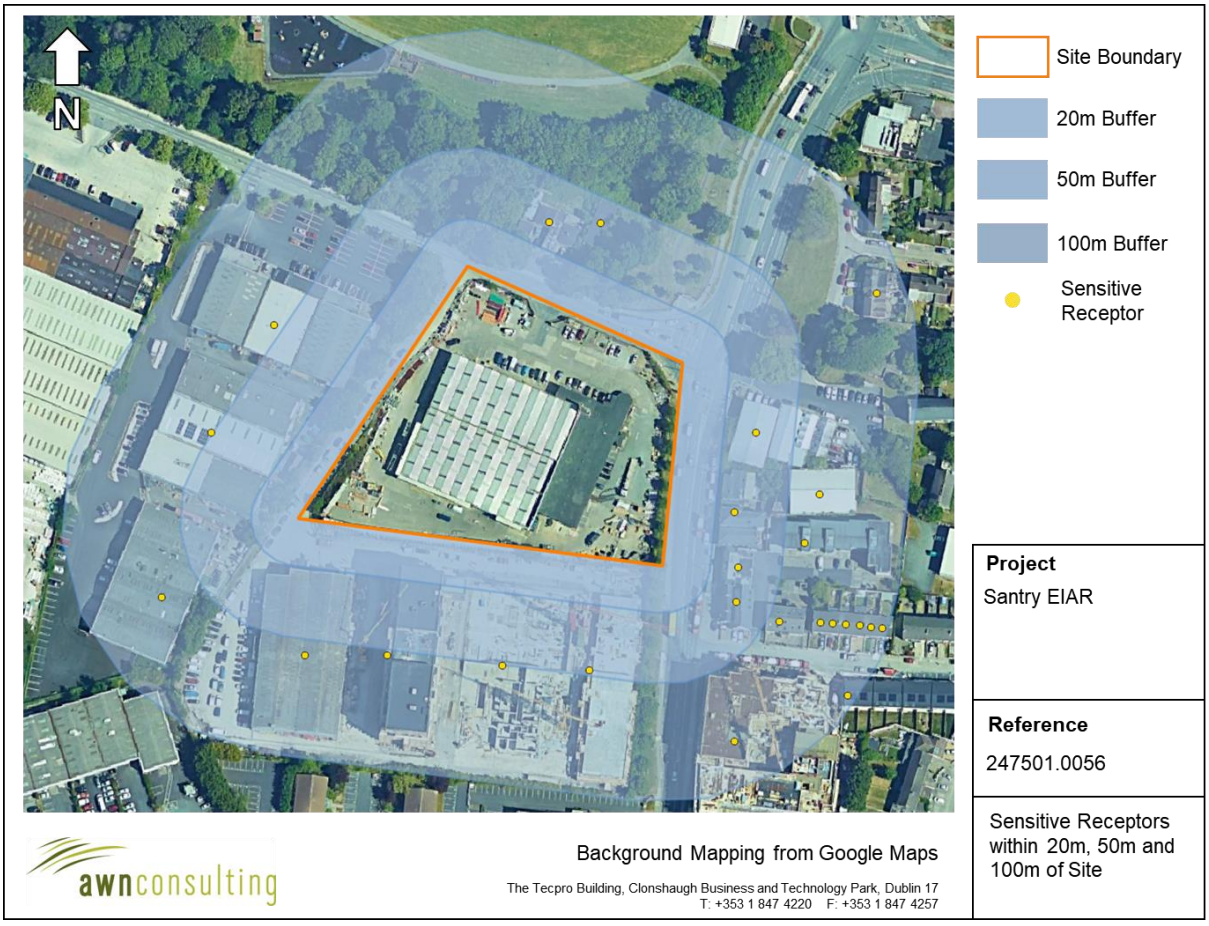


Figure 8.2: Sensitive Receptors within 20m, 50m and 100m of the Site Boundary

The IAQM guidelines (2024) 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 photosynthesizing ability of the plant, as well as other effects. The guidance states that dust impacts to

vegetation can occur up to 50m from the site and 50m from site access roads, up to 250m from 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.

The closest designated site, Santry Demesne pNHA (site code 000178), is within 50m of the site (see Figure 8.3). IAQM (2024) define medium sensitivity ecological receptors as "locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown or locations with a national designation where the features may be affected by dust deposition". The Santry Demense pNHA can be defined as a medium sensitivity receptor due as it is not nationally designated and there is the potential for the presence of dust sensitive plant species. Based on the IAQM criteria outlined in Table 8.9, the worst-case sensitivity of the area for ecology is considered **medium**.

Number of Receptors	**Distance from Source (m)**	
	<20	**<50**
High	High	Medium
Medium	**Medium**	Low
Low	Low	Low

Table 8.9: Sensitivity of the Area to Dust Related Ecological Impacts

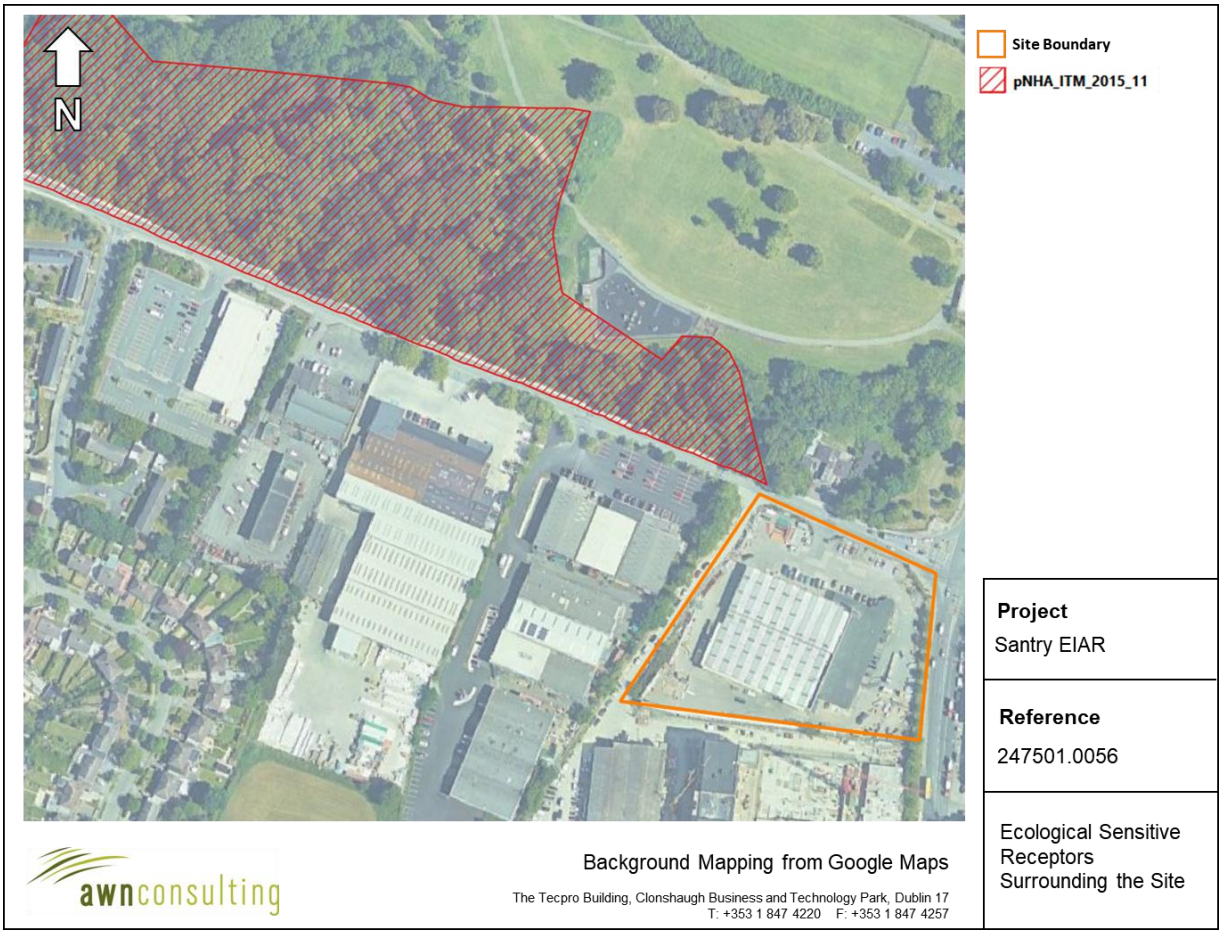


Figure 8.3: Ecological Sensitive Receptors Surrounding the Site Boundary

8.4 Potential Impact of the Proposed Development during Construction Phase

8.4.1 Construction Dust Assessment

The greatest potential effect 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 250m of a construction site, the majority of the deposition occurs within the first 50m. The extent of any dust generation depends on the nature of the dust (soils, peat, sands, gravels, silts etc.) and the nature of the construction activity. In addition, the potential for dust dispersion and deposition depends on local meteorological factors such as rainfall, wind speed and wind direction. A review of Dublin Airport meteorological data indicates that the prevailing wind direction is westerly to south-westerly and wind speeds are generally moderate in nature (see Figure 8.2). In addition, dust generation is considered negligible on days where rainfall is greater than 0.2 mm. A review of historical 30 year average data for Dublin Airport meteorological station indicates that, on average, 200 days per year have rainfall over 0.2 mm (Met Éireann, 2024). Therefore, it can be determined that over 54% 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 8.3.3). The major dust generating activities are divided into four types within the IAQM guidance to reflect their different potential impacts. These are:

- Demolition;
- Earthworks;
- Construction; and
- Trackout (transport of dust and dirt from the construction site onto the public road network).

Demolition

There are demolition works associated with the proposed development, comprising of the demolition of existing Chadwick's building providers, warehouse, trade shop and offices. Dust emission magnitude from demolition can be classified as small, medium, or large based on the definitions from the IAQM guidance as transcribed below:

- **Large** Total building volume >75,000 m^3 potentially dusty construction material (e.g. concrete), on-site crushing and screening, demolition activities >12 m above ground level;
- **Medium** Total building volume 12,000 m^3 – 75,000 m^3 potentially dusty construction material, demolition activities 6-12 m above ground level; and
- **Small** Total building volume <12,000 m^3 construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <6 m above ground, demolition during wetter months.

The dust emission magnitude for the proposed demolition activities can be classified as medium as the total building volume is likely to be between 12,000 m^3 and 75,000 m^3. The sensitivity of the area, as determined in Section 8.3.3, is combined with the dust emission magnitude for each dust generating activity to define the risk of dust impacts in the absence of mitigation. As outlined in Table 8.10 and in Table 8.11, this results in an overall low risk of dust soiling impacts and dust-related human health impacts and a medium risk of dust-related ecological impacts.

Sensitivity of Area	Dust Emission Magnitude – Earthworks		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Source: (IAQM, Guidance on the Assessment of Dust from Demolition & Construction, 2024)

Table 8.10: Criteria for Rating Risk of Dust Impacts: Demolition

Receptor	Receptor Sensitivity	Dust Emission Magnitude – Earthworks	Risk of Dust-Related Impacts
Dust Soiling	Low	Medium	Low Risk
Human Health	Low		Low Risk
Ecology	Medium		Medium Risk

Table 8.11: Risk of Dust Impacts: Demolition

Earthworks

Earthworks primarily involve excavating material, loading and unloading of materials, tipping and stockpiling activities. Activities such as levelling the site and landscaping works are also considered under this category. The dust emission magnitude from earthworks can be classified as small, medium or large based on the definitions from the IAQM guidance as transcribed below:

- **Large** Total site area > 110,000 m^2, potentially dusty soil type (e.g., clay which will be prone to suspension when dry due to small particle size), > 10 heavy earth moving vehicles active at any one time, formation of bunds >6 m in height;
- **Medium** Total site area 18,000 m^2 – 110,000 m^2, 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;
- **Small** 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.

The total site area is between 18,000 and 110,000 m^2. Therefore, the proposed earthworks can be classified as medium. The sensitivity of the area, as determined in Section 8.8.3, is combined with the dust emission magnitude for each dust generating activity to define the risk of dust impacts in the absence of mitigation. As outlined in Table 8.12 and Table 8.13, combining the large dust emission magnitude with a low sensitivity to dust soiling, a low sensitivity to human health impacts and a medium sensitivity to ecological impacts results in a low risk of dust soiling impacts, a low risk of dust-related human health impacts and a medium risk of ecological impacts. This is as a result of the proposed earthworks activities in the absence of mitigation

Sensitivity of Area	Dust Emission Magnitude – Earthworks		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Source: (IAQM, Guidance on the Assessment of Dust from Demolition & Construction, 2024)

Table 8.12: Criteria for Rating Risk of Dust Impacts: Earthworks

Receptor	Receptor Sensitivity	Dust Emission Magnitude – Earthworks	Risk of Dust-Related Impacts
Dust Soiling	Low	Large	Low Risk
Human Health	Low		Low Risk
Ecology	Medium		Medium Risk

Table 8.13: Risk of Dust Impacts: Earthworks

Construction

Dust emission magnitude from construction can be classified as small, medium or large based on the definitions from the IAQM guidance as transcribed below:

- **Large** Total building volume > 75,000 m^3, on-site concrete batching, sandblasting;
- **Medium** Total building volume 12,000 m^3 – 75,000 m^3, potentially dusty construction material (e.g., concrete), on-site concrete batching;
- **Small** Total building volume < 12,000 m^3, construction material with low potential for dust release (e.g., metal cladding or timber).

The dust emission magnitude for the proposed construction activities can be classified as large as the total building volume is likely to be greater than 75,000 m^3. As outlined in Table 8.14 and Table 8.15, combining the small dust emission magnitude with a low sensitivity to dust soiling, a low sensitivity to human health impacts and a medium sensitivity to ecological impacts results in an overall low risk of dust soiling impacts, a low risk of dust-related human health impacts and a medium risk of ecological impacts. This is as a result of the proposed construction activities in the absence of mitigation.

Sensitivity of Area	Dust Emission Magnitude – Construction		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Source: (IAQM, Guidance on the Assessment of Dust from Demolition & Construction, 2024)

Table 8.14: Criteria for Rating Risk of Dust Impacts: Construction

Receptor	Receptor Sensitivity	Dust Emission Magnitude – Construction	Risk of Dust-Related Impacts
Dust Soiling	Low	Large	Low Risk
Human Health	Low		Low Risk
Ecology	Medium		Medium Risk

Table 8.15: Risk of Dust Impacts: Construction

Trackout

Factors which determine the dust emission magnitude are vehicle size, vehicle speed, number of vehicles, road surface material and duration of movement. Dust emission magnitude from trackout can be classified as small, medium or large based on the definitions from the IAQM guidance as transcribed below:

- Large > 50 HDV (> 3.5 t) outward movements in any one day, potentially dusty surface material (e.g., high clay content), unpaved road length > 100 m;
- Medium 20 - 50 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;
- Small < 20 HDV (> 3.5 t) outward movements in any one day, surface material with low potential for dust release, unpaved road length < 50 m.

The dust emission magnitude for the proposed trackout can be conservatively classified as small as, at worst-case periods, there will likely be less than 20 outward HDV movements per day. As outlined in Table 8.16 and Table 8.17, combining the large dust emission magnitude with a low sensitivity to dust soiling, a low sensitivity to human health impacts and a medium sensitivity to ecological impacts results in an overall negligible risk of dust soiling impacts, a negligible risk of dust-related human health impacts and a low risk of ecological impacts. This is as a result of the proposed trackout activities in the absence of mitigation.

Sensitivity of Area	Dust Emission Magnitude – Trackout		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Source: (IAQM, Guidance on the Assessment of Dust from Demolition & Construction, 2024)

Table 8.16: Criteria for Rating Risk of Dust Impacts: Trackout

Receptor	Receptor Sensitivity	Dust Emission Magnitude – Trackout	Risk of Dust-Related Impacts
Dust Soiling	Low	Small	Negligible
Human Health	Low		Negligible
Ecology	Medium		Low Risk

Table 8.17: Risk of Dust Impacts: Trackout

Summary of Dust Emission Risk

The risk of dust effects as a result of the proposed development are summarised in Table 8.18 for each activity. The magnitude of risk determined is used to prescribe the level of site-specific mitigation required for each activity to prevent significant impacts occurring.

Overall, to ensure that no dust nuisance occurs during the demolition, earthworks, construction and trackout activities, best practice dust mitigation measures appropriate for sites with a medium risk of dust impacts must be implemented. In the absence of mitigation dust impacts are predicted to be direct, short-term, localised, negative and slight.

Potential Impact	Dust Emission Risk			
	Demolition	**Earthworks**	**Construction**	**Trackout**
Dust Emission Magnitude	Medium	Medium	Large	Small
Dust Soiling Risk	Low Risk	Low Risk	Low Risk	Negligible Risk
Human Health Risk	Low Risk	Low Risk	Low Risk	Negligible Risk
Ecology Risk	Medium Risk	Medium Risk	Medium Risk	Low Risk

Table 8.18: Summary of Dust Impact Risk used to Define Site-Specific Mitigation

8.4.2 Construction Phase Traffic Assessment

There is also the potential for traffic emissions to impact air quality in the short-term over the construction phase. Particularly due to the increase in HGVs accessing the site. The construction stage traffic has been reviewed and a detailed air quality assessment has been scoped out as none of the road links affected by the proposed development satisfy the TII assessment criteria in Section 8.8.2.

It can therefore be determined that the construction stage traffic will have an imperceptible, neutral and short-term impact on air quality.

8.5 Potential Impact of the Proposed Development during Operational Phase

There is the potential for vehicles accessing the site to result in emissions of NO_2, PM_{10} and $PM_{2.5}$. However, the proposed development will not increase traffic by 1,000 AADT or 200 HDV AADT. In addition, there are no proposed changes to the traffic speeds or road alignment. Therefore, no road links impacted by the proposed development satisfy the TII screening criteria (see Section 8.2.3) and a detailed air quality assessment was scoped out for the operational stage of the development. Operational stage impacts to air quality are predicted to be direct, long-term, negative and imperceptible.

8.6 Potential Cumulative Impacts

8.6.1 Construction Phase

According to the IAQM guidance (2024) should the construction phase of the proposed development coincide with the construction phase of any other developments within 250m then there is the potential for cumulative construction dust related impacts to nearby sensitive receptors. A review of relevant, large scale, recent (within the previous 5 years) planning applications within 250m of the site was conducted in order to identify sites with the potential for cumulative impacts. There were 5 no. sites identified which may have coinciding construction phases with that of the proposed development, these include:

- Circle Voluntary Housing Association (VHA) (FCC: F23A/0712);
- Dublin Christian Life Church (DCC: 3960/20);
- Dwyer Nolan Developments Ltd. (DCC: 4549/22);
- Dwyer Nolan Developments Ltd. (DCC: 2737/19); and
- Sanbra Fyffe Limited (DCC: 3720/21).

The proposed development has been assessed as having a medium risk of dust soiling impacts during the construction phase. A number of mitigation measures have been proposed in order to ensure significant dust impacts do not occur. Provided these measures are in place for the duration of the construction phase significant cumulative construction dust impacts are not predicted. Cumulative impacts to air quality will be short-term, localised, negative and imperceptible.

8.6.2 Operational Phase

The impact to air quality during the operational phase of the proposed development will be direct, long-term, negative and imperceptible. Therefore, there is no potential for significant cumulative impacts with other development and the impact is predicted to be direct, long-term, negative and imperceptible.

8.7 Mitigation Measures

8.7.1 Construction Phase

The proposed development has been assessed as having a low risk of dust soiling impacts and dust related human health impacts and a medium risk of dust-related ecological impacts during the construction phase as a result of earthworks, construction and trackout activities (see Section 8.3.3). Therefore, the following dust mitigation measures shall be implemented during the construction phase of the proposed development. These measures are appropriate for sites with a 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), 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.

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 bowsers and regularly cleaned.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
- Access gates to be located at least 10 m from receptors where possible.

Monitoring

- Undertake daily on-site and off-site inspections, where receptors (including roads) are nearby, to monitor dust, record inspection results in the site inspection log. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary, with cleaning to be provided if necessary.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.

8.8 References

Dublin City Council (DCC) (2018) Air Quality Monitoring and Noise Control Unit's Good Practice Guide for Construction and Demolition

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

Environmental Protection Agency (2015) Advice Notes for Preparing Environmental Impact Statements – Draft

Environmental Protection Agency (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports - Draft

Environmental Protection Agency (2023) Air Quality Monitoring Report 2022 (& previous annual reports)

Environmental Protection Agency (2024) EPA website Available at: http://www.epa.ie/whatwedo/monitoring/air/

European Commission (2013) Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment

European Commission (2017) Environmental Impact Assessment of Projects – Guidance on the preparation of the Environmental Impact Assessment Report

German VDI (2002) Technical Guidelines on Air Quality Control – TA Luft

Government of Ireland (2023) the Clean Air Strategy for Ireland

Institute of Air Quality Management (IAQM) (2020) A Guide To The Assessment Of Air Quality Impacts On Designated Nature Conservation Sites (Version 1.1)

Institute of Air Quality Management (IAQM) (2024) Guidance on the Assessment of Dust from Demolition and Construction Version 2.2

Met Éireann (2024) Met Éireann website: https://www.met.ie/

The Scottish Office (1996) Planning Advice Note PAN50 Annex B: Controlling The Environmental Effects Of Surface Mineral Workings Annex B: The Control of Dust at Surface Mineral Workings

Transport Infrastructure Ireland (TII) (2022a) Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106

Transport Infrastructure Ireland (TII) (2022b) TII Road Emissions Model (REM): Model Development Report – GE-ENV-01107

UK Office of Deputy Prime Minister ODPM (2002) Controlling the Environmental Effects of Recycled and Secondary Aggregates Production Good Practice Guidance

USEPA (1997) Fugitive Dust Technical Information Document for the Best Available Control Measures

World Health Organisation (2006) Air Quality Guidelines - Global Update 2005 (and previous Air Quality Guideline Reports 1999 & 2000).

9.0. Climate

9.1 Introduction

AWN Consulting Ltd. has been commissioned to carry out an assessment of the likely climate impacts associated with the proposed mixed use development on lands at the junction of Santry Avenue and Swords Road, Santry, Dublin 9.

This chapter was completed by Aisling Cashell, an Environmental Consultant in the air quality section of AWN Consulting Ltd. She holds a BA and an MAI in Civil, Structural and Environmental Engineering from Trinity College Dublin. She is a member of Engineers Ireland. She specialises in the area of air quality, climate and sustainability.

This chapter was reviewed by Ciara Nolan, a Senior 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 Institute of Environmental Science (MIEnvSc). She specialises in the fields of air monitoring, air quality & climate assessments for EIA and air dispersion modelling.

9.2 Guidance, Legislation and Policy

9.2.1 Guidance

This chapter has been prepared having regard to the following guidelines;

- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning & Local Government, 2018);
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022);
- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017);
- PE-ENV-01104: Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document (Transport Infrastructure Ireland (TII), 2022a);
- GE-ENV-01106: TII Carbon Assessment Tool for Road and Light Rail Projects and User Guidance Document (TII, 2022c);
- Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment (European Commission, 2013);
- 2030 Climate and Energy Policy Framework (European Commission, 2014);
- 2030 EU Climate Target Plan (European Commission, 2021b);
- Climate Action and Low Carbon Development (Amendment) Act 2021 (the 2021 Climate Act) (No. 32 of 2021) (Government of Ireland, 2021);
- Climate Action Plan 2024 (DECC, 2023);
- 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);
- UK Design Manual for Roads and Bridges (DMRB) Volume 11 Environmental Assessment, Section 3 Environmental Assessment Techniques, Part 14 LA 114 Climate (UK Highways Agency, 2019); and
- Technical guidance on the Climate Proofing of Infrastructure in the Period 2021-2027 (European Commission, 2021a).

9.2.2 Legislation

In 2015, the Climate Action and Low Carbon Development Act 2015 (No. 46 of 2015) (Government of Ireland, 2015) was enacted (the Act). The purpose of the Act was to enable Ireland "*to pursue, and achieve, the transition to a low carbon, climate resilient and environmentally sustainable economy by the end of the year 2050"* (3.(1) of No. 46 of 2015). This is referred to in the Act as the *'National Transition Objective'*. The Act made provision for a national mitigation plan, and a national adaptation framework. In addition, the Act provided for the establishment of the Climate Change Advisory Council with the function to advise and make recommendations on the preparation of the national mitigation and adaptation plans and compliance with existing climate obligations.

The first Climate Action Plan (CAP) was published by the Irish Government in June 2019 (Government of Ireland, 2019). The Climate Action Plan 2019 outlined the current status across key sectors including Electricity, Transport, Built Environment, Industry and Agriculture and outlined the various broadscale measures required for each sector to achieve ambitious decarbonisation targets. The 2019 CAP also detailed the required governance arrangements for implementation including carbon-proofing of policies, establishment of carbon budgets, a strengthened Climate Change Advisory Council and greater accountability to the Oireachtas. The Government published the second Climate Action Plan in November 2021 (Government of Ireland, 2020) and a third update in December 2022 (Government of Ireland, 2022) with an Annex of Action published in March 2023. The fourth and most recent update to the CAP was published in December 2023. This is discussed in more detail in Section 9.2.3.

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) Bill 2021 (hereafter referred to as the 2021 Climate Bill) 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 will also "*provide for carbon budgets and a decarbonisation target range for certain sectors of the economy*". The 2021 Climate Act defines the carbon budget as "*the total amount of greenhouse gas emissions that are permitted during the budget period*".

In relation to carbon budgets, the 2021 Climate Action and Low Carbon Development (Amendment) Act states "*A*

carbon budget, consistent with furthering the achievement of the national climate objective, shall be proposed by the Climate Change Advisory Council, finalised by the Minister and approved by the Government for the period of 5 years commencing on the 1 January 2021 and ending on 31 December 2025 and for each subsequent period of 5 years (in this Act referred to as a 'budget period')". The carbon budget is to be produced for 3 sequential budget periods, as shown in Table 9.1. The carbon budget can be revised where new obligations are imposed under the law of the European Union or international agreements or where there are significant developments in scientific knowledge in relation to climate change. In relation to the sectoral emissions ceiling, the Minister for the Environment, Climate and Communications (the Minister for the Environment) shall prepare and submit to government the maximum amount of Greenhouse Gas (GHG) emissions that are permitted in different sectors of the economy during a budget period and different ceilings may apply to different sectors. The sectorial emission ceilings for 2030 were published in July 2022 and are shown in Table 9.2. Industry and Buildings (Residential) have a 35% and 40% reduction requirement respectively and a 2030 emission ceiling of 4 Mt CO_2e[11].

Budget Period	Carbon Budget	Reduction Required
2021-2025	295 Mt CO_2e	Reduction in emissions of 4.8% per annum for the first budget period.
2026-2030	200 Mt CO_2e	Reduction in emissions of 8.3% per annum for the second budget period.
2031-2035	151 Mt CO_2e	Reduction in emissions of 3.5% per annum for the third provisional budget.

Note 1 Table derived from Department of the Taoiseach press release 28 July 2022 from Government announces sectoral emissions ceilings, setting Ireland on a pathway to turn the tide on climate change

Table 9.1: 5-Year Carbon Budgets 2021-2025, 2026-2030 and 2031-2025

Sector	Baseline ($MtCO_2e$)	Carbon Budgets ($MtCO_2e$)		2030 Emissions ($MtCO_2e$)	Indicative Emissions % Reduction in Final Year of 2025- 2030 Period (Compared to 2018)
	2018	2021-2025	2026-2030		
Transport	12	54	37	6	50
Electricity	10	40	20	3	75
Built Environment - Residential	7	29	23	4	40
Built Environment - Commercial	2	7	5	1	45
Agriculture	23	106	96	17.25	25
LULUCF	5	TBC	TBC	TBC	TBC
Industry	7	30	24	4	35

[11] Mt CO_2e denotes million tonnes carbon dioxide equivalent.

Sector	Baseline ($MtCO_2e$)	Carbon Budgets ($MtCO_2e$)		2030 Emissions ($MtCO_2e$)	Indicative Emissions % Reduction in Final Year of 2025- 2030 Period (Compared to 2018)
	2018	2021-2025	2026-2030		
Other (F-gases, waste, petroleum refining)	2	9	8	1	50
Unallocated Savings	-	7	5	-5.25	-
Total	68	TBC	TBC	-	-
Legally Binding Carbon Budgets and 2030 Emission Reduction Targets	-	295	200	-	51

Note 1 Table derived from CAP23
Note 2 TBC – these values were not populated in the Government of Ireland Report

Table 9.2: Sectoral Emission Ceilings 2030 Note 1

9.2.3 Policy

In December 2023, CAP24 was published (Government of Ireland, 2023). This is the second CAP since the publication of the carbon budgets and sectoral emissions ceilings and builds on the progress of CAP23, 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: renewable energy, energy efficiency of buildings, transport, sustainable farming, sustainable business and change of land-use. CAP24 states that the decarbonisation of Ireland's manufacturing industry is key for Ireland's economy and future competitiveness. There is a target to reduce the embodied carbon in construction materials by 10% for materials produced and used in Ireland by 2025 and by at least 30% for materials produced and used in Ireland by 2030. CAP24 states that these reductions can be brought about by product substitution for construction materials and reduction of clinker content in cement. Cement and other high embodied carbon construction elements can be reduced by the adoption of the methods set out in the Construction Industry Federation 2021 report Modern Methods of Construction. In order to ensure economic growth can continue alongside a reduction in emissions, the IDA Ireland will also seek to attract businesses to invest in decarbonisation technologies.

In April 2023 the Government published a draft Long-Term Strategy on Greenhouse Gas Emissions Reductions (Government of Ireland, 2023). This strategy provides a long-term plan on how Ireland will transition towards net carbon zero by 2050, achieving the interim targets set out in the Climate Action Plan. The strategy will be updated on the basis of a second round of public consultation throughout 2023 with an updated strategy published after this is complete.

The Fingal County Council (FCC) Climate Action Plan 2024 – 2029 (FCC and Codema, 2024) outlines FCC's

goals to mitigate GHG emissions and plans to prepare for and adapt to climate change. The FCC Climate Action Plan states that FCC aims to reduce car dependency by encouraging modal shifts from cars to more sustainable modes, including public transport and cycling. FCC states that it wishes to work with the relevant transportation bodies to introduce measures to achieve modal shifts and promote interchange between modes.

The FCC Climate Action Plan highlights the risks that climate change poses to the transportation network, with risks mainly associated with extreme weather events. The FCC Climate Action Plan notes that cold snaps and fluvial flooding have the greatest future risk when both the likelihood and consequence are accounted for. Increases in fluvial and pluvial flooding will cause road damage, which can lead to disruption of transport services.

9.3 Methodology

The climate assessment is divided into two distinct sections – a greenhouse gas assessment (GHGA) and a climate change risk assessment (CCRA).

- Greenhouse Gas Emissions Assessment (GHGA) – Quantifies the GHG emissions from a project over its lifetime. The assessment compares these emissions to relevant carbon budgets, targets and policy to contextualise magnitude; and
- Climate Change Risk Assessment (CCRA) – Identifies the impact of a changing climate on a project and receiving environment. The assessment considers a projects vulnerability to climate change and identifies adaptation measures to increase project resilience.

9.3.1 Greenhouse Gas Assessment

As per the EU guidance document Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment (European Commission, 2013) the climate baseline is first established with reference to EPA data on annual GHG emissions (see Section 9.4).

9.3.1.1 Construction Phase

PE-ENV-01104 (TII, 2022a) recommends the calculation of the construction stage embodied carbon using the TII Online Carbon Tool (TII, 2022c). Embodied carbon refers to the sum of the carbon needed to produce a good or service. It incorporates the energy needed in the mining or processing of raw materials, the manufacturing of products and the delivery of these products to site. The 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 assist in aligning the project to Irelands CAP24 goal of Net Carbon Zero for 2050.

Given the nature of the proposed development as a residential and mixed-use development, the use of the TII Carbon Tool was not considered suitable for the building elements. As such an alternative tool was used; the Carbon Designer for Ireland tool. The Irish Green Building Council in partnership with One Click LCA Ltd. have developed the Carbon Designer for Ireland tool (One Click LCA Ltd., 2023) for use on Irish specific building projects. The Carbon Designer tool is promoted by the EPA and the Land Development Agency. OneClickLCA

is certified to EN 15978, EN 15978, ISO 21931–1 & ISO 21929, and data requirements of ISO 14040 & EN 15804, and is LEED, BREEAM and PAS 2080 aligned. It allows users to assess the carbon impact of buildings at an early stage using typical default materials and values. Inputs to the tool include the gross floor area and number of stories above ground level along with the building frame type. Once the baseline is established using generic data, the tool allows for optioneering and optimization of the carbon impact. It highlights the key areas within the building with the highest carbon impact and provides options for lower carbon intensive materials. The Carbon Designer for Ireland tool has been used to assess the embodied carbon impact of the proposed development.

The carbon 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 in the OneClick tool, 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. These stages have been included within the scope of this assessment.

- 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. This has been included within the scope of the assessment.

- In-Use Stages (category B1 to B5): This covers a wide range of sources from the embodied carbon emissions associated with the operation of the building, including the materials used during maintenance, replacement and refurbishment. Category B6 and B7 refer to operational emissions. In-Use Stages are not included in the assessment scope of this study. Material refurbishment and replacement throughout the lifetime of the development (category B4 – B5) has been included within this assessment.

- 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. This stage as not included within the scope of this study.

- Benefits and loads beyond the system boundary Module (D): Any potential benefit from the reuse, recovery and recycling potential of a building or a building product. This module is not included in the assessment scope of this study.

The assessment conducted as part of this EIAR included categories A1 – A5 and B4 – B5. All other categories were outside the scope of this assessment as this level of detailed information was not available at this stage or these categories are not considered relevant to this development type.

The GHG assessment has been conducted using estimated areas and information from the Schedule of Areas, with these areas for the various building types input into the OneClick tool. Detailed information on building materials was not available at this stage in the project and therefore, the assessment has assumed generic default values within the OneClick tool to provide an initial high-level assessment of the potential embodied carbon impact of the project.

9.3.1.2 Operational Phase

Traffic Emissions

Emissions from road traffic associated with the proposed development have the potential to emit carbon dioxide (CO_2) which will impact climate.

The UK Highways Agency DMRB guidance document in relation to climate impact assessments LA 114 Climate (UK Highways Agency, 2019) contains the following scoping criteria to determine whether a detailed climate assessment is required for a proposed project during the operational stage. If any of the road links impacted by the proposed development meet or exceed the below criteria, then further assessment is required.

- A change of more than 10% in AADT;
- A change of more than 10% to the number of heavy duty vehicles; and
- A change in daily average speed of more than 20 km/hr.

The above DMRB scoping criteria will be used to determine whether a detailed modelling assessment of traffic emissions is required as part of the EIAR assessment. The proposed development will not cause a change in traffic of more than any of the above scoping criteria and therefore no detailed assessment was required as there is no potential for significant impacts.

Operational Energy Use

The EU guidance (2013) also states indirect GHG emissions as a result of a development must be considered, this includes emissions associated with energy usage. An Energy Statement and Building Lifecycle Report have been prepared in relation to the proposed development and are submitted separately with this planning application. The reports outline a number of measures which have been incorporated into the overall design of the development which will have the benefit of reducing the impact to climate where possible during operation. Information on some of the measures in relation to operational energy usage and sustainability measures has been supplied to inform the climate assessment.

9.3.1.1 Significance Criteria for GHGA

The Transport Infrastructure Ireland (TII) guidance document entitled PE-ENV-01104 Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document (TII 2022a) outlines a recommended approach for determining the significance of both the construction and

operational phases of a development. The approach is based on comparing the '*Do Something*' scenario and the net project GHG emissions (i.e. Do Something – Do Minimum) to the relevant carbon budgets (Department of the Taoiseach, 2022).

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 IEMA significance determination. This takes account of any embedded or committed mitigation measures that form part of the design which should be considered.

TII (TII, 2022a) states that professional judgement must be taken into account when contextualising and assessing the significance of a project's GHG impact. In line with IEMA Guidance (IEMA, 2022), TII state that the crux of assessing significance is "*not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero*[12] *by 2050*".

Significance is determined using the criteria outlined in Table 9.3 (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.

[12] Net Zero: "*When anthropogenic emissions of greenhouse gases to the atmosphere are balanced by anthropogenic removals over a specified period.*" Net zero is achieved where emissions are first educed in line with a 'science-based' trajectory with any residual emissions neutralised through offsets.

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.

Table 9.3: GHGA Significance Criteria

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, 2023). 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. The relevant sector budgets are for Transport and Industry. The Transport sector emitted approximately 12 Mt CO_2e in 2018 and has a ceiling of 6 Mt CO_2e in 2030 which is a 50% reduction over this period. The Industry sector emitted approximately 7 Mt CO_2e in 2018 and has a ceiling of 4 Mt CO_2e in 2030 which is a 35% reduction over this period (see Table 9.2).

9.3.2 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:

- EU (2021) 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, 2020a).

The baseline environment information provided in Section 9.4, future climate change modelling and input from other experts working on the proposed development (i.e. hydrologists) should be used in order to assess the likelihood of a climate risk.

First an initial screening CCRA based on the operational phase is carried out, according to the TII guidance PE-ENV-01104. This is carried out by determining the sensitivity of proposed development assets (i.e. receptors) and their exposure to climate change hazards.

The proposed development asset categories must be assigned a level of sensitivity to climate hazards. PE-ENV-01104 (TII, 2022a) provides the below list of asset categories and climate hazards to be considered. The asset categories will vary for development type and need to be determined on a development by development basis.

- **Asset Categories** Pavements; drainage; structures; utilities; landscaping; signs, light posts, buildings, and fences.
- **Climate Hazards** Flooding (coastal, pluvial, fluvial); extreme heat; extreme cold; wildfire; drought; extreme wind; lightning and hail; landslides; fog.

The sensitivity is based on a High, Medium or Low rating with a score of 1 to 3 assigned as per the criteria below.

- **High Sensitivity** The climate hazard will or is likely to have a major impact on the asset category. This is a sensitivity score of 3.
- **Medium Sensitivity** It is possible or likely the climate hazard will have a moderate impact on the asset category. This is a sensitivity score of 2**.**
- **Low Sensitivity** It is possible the climate hazard will have a low or negligible impact on the asset category. This is a sensitivity score of 1.

Once the sensitivities have been identified the exposure analysis is undertaken. The exposure analysis involves determining the level of exposure of each climate hazard at the project location irrespective of the project type for example: flooding could be a risk if the project location is next to a river in a floodplain. Exposure is assigned a level of High, Medium or Low as per the below criteria.

- **High Exposure** It is almost certain or likely this climate hazard will occur at the project location i.e. might arise once to several times per year. This is an exposure score of 3.
- **Medium Exposure** It is possible this climate hazard will occur at the project location i.e. might arise a number of times in a decade. This is an exposure score of 2.
- **Low Exposure** It is unlikely or rare this climate hazard will occur at the project location i.e. might arise a number of times in a generation or in a lifetime. This is an exposure score of 1.

Once the sensitivity and exposure are categorised, a vulnerability analysis is conducted by multiplying the sensitivity and exposure to calculate the vulnerability. TII guidance (TII, 2022a) and the EU technical guidance (European Commission, 2021a) note that if all vulnerabilities are ranked as low in a justified manner, no detailed climate risk assessment may be needed. The impact from climate change on the proposed development can therefore 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.

9.3.2.1 Significance Criteria for CCRA

The CCRA involves an initial screening assessment to determine the vulnerability of the proposed development to various climate hazards. The vulnerability is determined by combining the sensitivity and the exposure of the proposed development to various climate hazards. The vulnerability assessment takes any proposed mitigation into account.

Vulnerability = Sensitivity x Exposure

Table 9.4 details the vulnerability matrix; vulnerabilities are scored on a high, medium and low scale. A risk that is low or medium is classed as non-significant, while a high or extreme risk is classed as a significant risk.

TII guidance (TII, 2022a) and the EU technical guidance (European Commission, 2021a) note that if all vulnerabilities are ranked as low in a justified manner, no detailed climate risk assessment may be needed. The impact from climate change on the proposed development can therefore considered to be not significant.

Where residual medium or high vulnerabilities exist the assessment may need to be progressed to a detailed climate change risk assessment and further mitigation implemented to reduce risks. An assessment of construction phase CCRA impacts is only required according to the TII guidance (TII, 2022a) if a detailed CCRA is required.

		Exposure		
		High (3)	Medium (2)	Low (1)
Sensitivity	High (3)	9 - High	6 – High	3 - Medium
	Medium (2)	6 - High	4 – Medium	2 - Low
	Low (1)	3 - Medium	2 – Low	1 - Low

Table 9.4: Vulnerability Matrix

9.4 Baseline Environment

9.4.1 Current GHGA Baseline

PE-ENV-01104 (TII, 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.

Climate impacts are assessed at a national level and in relation to national targets and sectoral emission ceilings. The study area for climate is the Republic of Ireland and the baseline is determined in relation to this study area.

Ireland's GHG emissions in 2022 are estimated to be 60.76 million tonnes carbon dioxide equivalent (Mt CO_2e), which is 1.9% lower (or 1.19 Mt CO_2e) than emissions in 2021 (61.95 Mt CO_2e) and follows a 5.1% increase in emissions reported for 2021 (EPA, 2023). In 2022 emissions in the stationary emissions trading scheme (ETS) sector decreased by 4.3% and emissions under the ESR (Effort Sharing Regulation) decreased by 1.1%. When LULUCF is included, total national emissions decreased by 1.8%. The sector with the highest emissions in 2022 (excluding LULUCF) was agriculture at 38.4% of the total, followed by transport at 19.1%. Decreased emissions in 2022 compared to 2021 were observed in the largest sectors except for transport, waste and commercial services. These 3 sectors showed increases in emissions (6.0%, 4.9% and 0.2% respectively). For 2022, the total national emissions (excluding LULUCF) were estimated to be 68,069 kt CO_2e as shown in Table 9.5 (EPA, 2023).

Sector	2021 Emissions (Mt CO_2e)	2022 Emissions (Mt CO_2e)	% Total 2022 (including LULUCF)	% Change from 2021 to 2022
Agriculture	23.626	23.337	34%	-2.1
Transport	10.978	11.634	17%	6.0
Energy Industries	10.262	10.076	15%	-1.8
Residential	6.992	6.105	9%	-12.7
Manufacturing Combustion	4.614	4.288	6%	-7.1
Industrial Processes	2.475	2.289	3%	-7.5
F-Gases	0.745	0.741	1%	-0.5
Commercial Services	0.765	0.767	1%	0.2
Public Services	0.672	0.659	1%	-1.9
Waste Note 2	0.726	0.867	1%	4.9
LULUFC	7.338	7.305	11%	-0.5
National Total excluding LULUFC	61.955	60.764	89%	-1.9
National Total including LULUFC	62.293	68.069	100%	-1.8

Note 1 Reproduced from Latest emissions data on the EPA website (EPA, 2023)

Note 2 Waste includes emissions from solid waste disposal on land, solid waste treatment (composting and anaerobic digestion), wastewater treatment, waste incineration and open burning of waste

Table 9.5: Total National GHG Emissions in 2022 Note 1

9.4.2 Future GHGA Baseline

The future baseline with respect to the GHGA can be considered in relation to the future climate targets which the assessment results will be compared against. In line with TII (TII, 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 CAP23, and future CAPs, alongside binding 2030 EU targets. In order to meet the commitments under the Paris Agreement, the European Union (EU) enacted *'Regulation (EU) 2018/842 on binding annual GHG emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No. 525/2013'* (hereafter referred to as the Regulation) (European Union, 2018). The Regulation aims to deliver, collectively by the EU in the most cost-effective manner possible,

reductions in GHG emissions from the Emission Trading Scheme (ETS) and non-ETS sectors amounting to 43% and 30%, respectively, by 2030 compared to 2005. The 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 thus includes GHG emissions from transport, residential and commercial buildings and agriculture.

9.4.3 Current CCRA Baseline

The region of the proposed development has a temperate, oceanic climate, resulting in mild winters and cool summers. The Met Éireann weather station at Dublin Airport is the nearest weather and climate monitoring station to the proposed development with meteorological data recorded for the 30-year period from 1991 to 2020. The historical regional weather data for Dublin Airport Metrological station is representative of the current climate in the region of the proposed development. The data for the 30-year period from 1991 to 2020 indicates that the wettest months at Dublin Airport Metrological Station were November and December, and the driest month on average was June. July was the warmest month with a mean temperature of 15.4 Celsius. January was the coldest month with a mean temperature of 5.2 Celsius.

Met Éireann's 2023 Climate Statement (Met Éireann, 2023) 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 9.1).

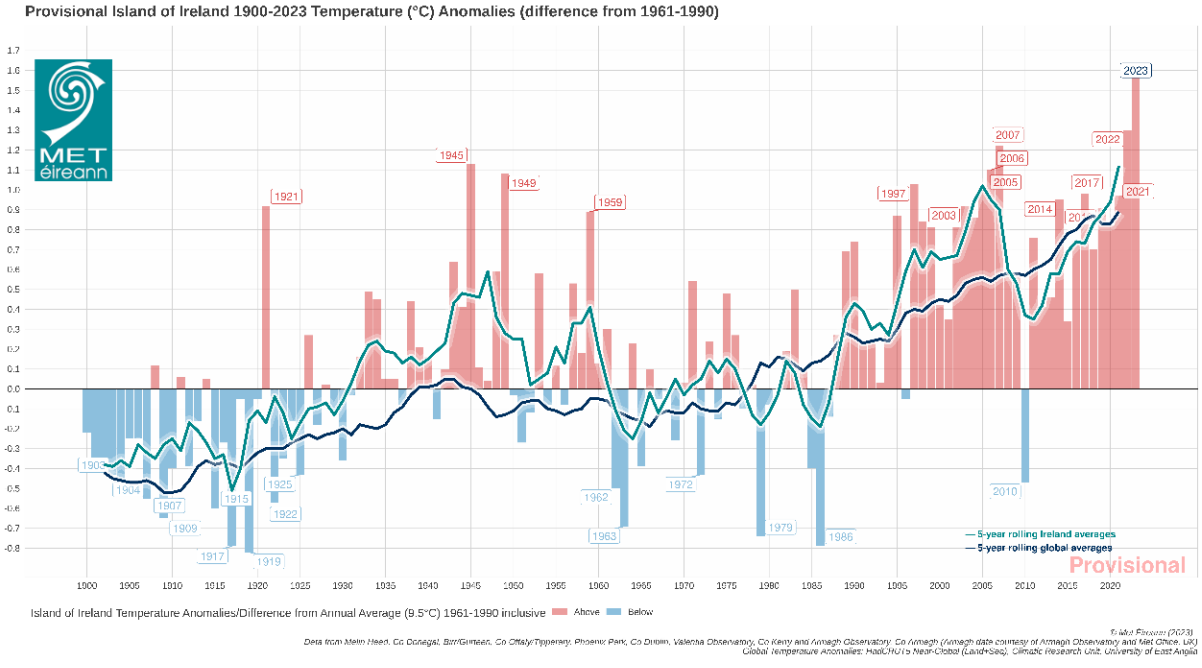


Figure 9.1: 1900-2023 Temperature (°C) Temperature Anomalies (differences from 1961-1990)

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 means the likelihood of extreme weather events occurring has increased. This will result in longer dry periods and heavy rainfall events. Storm surges and coastal flooding due to sea level rise. Compound events, where coastal surges and extreme rainfall events occur simultaneously will also increase. Met Éireann has high confidence in maximum rainfall rates increasing but not in how the frequency or intensity of storms will change with climate change.

9.4.4 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, 2021). 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, 2021):

- More intense storms and rainfall events;
- Increased likelihood and magnitude of river and coastal flooding;
- Water shortages in summer in the east;
- Adverse impacts on water quality; and
- Changes in distribution of plant and animal species.

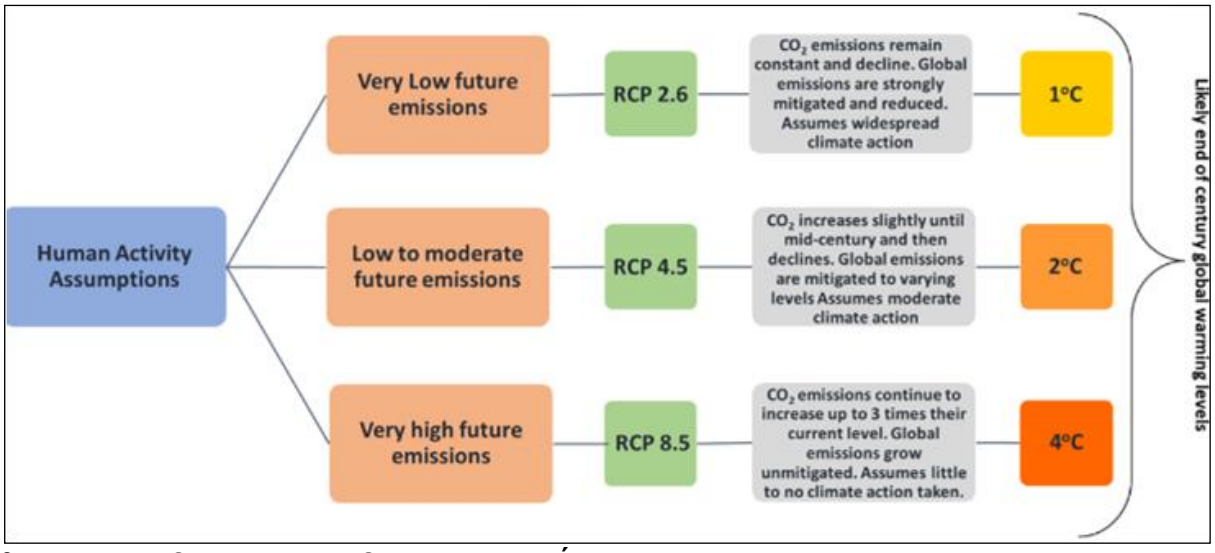
The EPA's *State of the Irish Environment Report (Chapter 2: Climate Change)* (EPA, 2020a) notes that projections show that full implementation of additional policies and measures, outlined in the 2019 Climate Action Plan, will result in a reduction in Ireland's total GHG emissions by up to 25 per cent by 2030 compared with 2020 levels. Climate change is not only a future issue in Ireland, as a warming of approximately 0.8°C since 1900 has already occurred. The EPA state that it is critically important for the public sector to show leadership and decarbonise all public transport across bus and rail networks to the lowest carbon alternatives. The report (EPA, 2020a) underlines that the next decade needs to be one of major developments and advances in relation to Ireland's response to climate change in order to achieve these targets and that Ireland must accelerate the rate at which it implements GHG emission reductions. The report states that mid-century mean annual temperatures in Ireland are projected to increase by between 1.0°C and 1.6°C (subject to the emissions trajectory). In addition, heat events are expected to increase by mid-century (EPA, 2020a). While individual storms are predicted to have more severe winds, the average wind speed has the potential to decrease (EPA, 2020a).

TII's Guidance document PE-ENV-01104 (TII, 2022a) states that for future climate change a moderate to high Representative Concentration Pathways (RCP) should be adopted. RPC4.5 is considered moderate while RPC8.5 is considered high. Representative Concentration Pathways (RCPs) describe different 21st century pathways of GHG emissions depending on the level of climate mitigation action undertaken.

Future climate predictions undertaken by the EPA have been published in *'Research 339: High-resolution Climate Projections for Ireland – A Multi-model Ensemble Approach'* (EPA, 2020b). The future climate was simulated under both Representative Concentration Pathway 4.5 (RCP4.5) (medium-low) and RCP8.5 (high) scenarios. This study indicates that by the middle of this century (2041–2060), mid-century mean annual temperatures are projected to increase by 1 to 1.2°C and 1.3 to 1.6°C for the RCP4.5 and RCP8.5 scenarios, respectively, with the largest increases in the east. Warming will be enhanced at the extremes (i.e. hot days and cold nights), with summer daytime and winter night-time temperatures projected to increase by 1 to 2.4°C. There is a projected substantial decrease of approximately 50%, for the number of frost and ice days. Summer heatwave events are expected to occur more frequently, with the largest increases in the south. In addition, precipitation is expected to become more variable, with substantial projected increases in the occurrence of both dry periods and heavy precipitation events. Climate change also has the potential to impact future energy supply which will rely on renewables such as wind and hydroelectric power. Wind turbines need a specific range of wind speeds to operate within and droughts or low ground water levels may impact hydroelectric energy generating sites. More frequent storms have the potential to damage the communication networks requiring additional investment to create resilience within the network.

The EPA's *Critical Infrastructure Vulnerability to Climate Change* report (EPA, 2021) assesses the future performance of Irelands critical infrastructure when climate is considered. With respect to road infrastructure, fluvial flooding and coastal inundation/coastal flooding are considered the key climate change risks with snowstorm and landslides being medium risks. Extreme winds and heatwaves/droughts are considered low risk to road infrastructure. One of the key outputs of the research was a framework that will provide quantitative risk-based decision support for climate change impacts and climate change adaptation analysis for infrastructure.

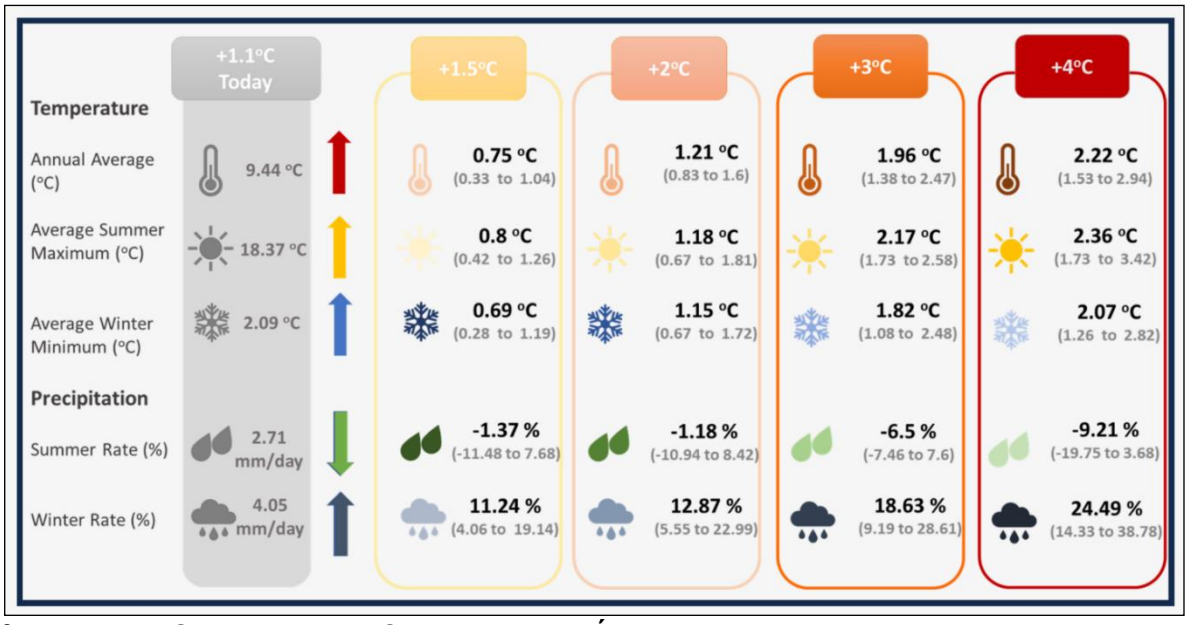
National Framework for Climate Services (NFCS) was founded in June 2022 to streamline the provision of climate services in Ireland and will be led by Met Éireann. The aim of the NFCS is to enable the co-production, delivery and use of accurate, actionable and accessible climate information and tools 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, 2023) 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 9.2 overleaf.



Source **TRANSLATE Project Story Map (Met Éireann, 2023)**

Figure 9.2: Representative Concentration Pathways Associated Emission Levels

TRANSLATE (Met Éireann, 2023) provides the first standardised and bias-corrected national climate projections for Ireland to aid climate risk decision making across multiple sectors (for example, transport, energy, water), by providing information on how Ireland's climate could change as global temperatures increase to 1.5˚C ,2˚C, 2.5˚C, 3˚C or 4˚C (see Figure 9.3). Projections broadly agree with previous projections for Ireland. Ireland's climate is dominated by the Atlantic Meridional Overturning Circulation (AMOC), a large system of ocean currents – including the Gulf Stream – characterised by a northward flow of warm water and a southward flow of cold water. Due to the AMOC, Ireland does not suffer from the extremes of temperature experienced by other countries at a similar latitude. Recent studies have projected that the AMOC could decline by 30 – 40 % by 2100, resulting in cooler North Atlantic Sea surface temperatures (SST)s (Met Éireann, 2023). Met Éireann projects that Ireland will nevertheless continue to warm, although the AMOC cooling influence may lead to reduced warming compared with continental Europe. AMOC weakening is also expected to lead to additional sea level rise around Ireland. With climate change Ireland's temperature and rainfall will undergo more and more significant changes e.g. on average summer temperature could increase by more than 2°C, summer rainfall could decrease by 9% while winter rainfall could increase by 24%. Future projects also include a 10-fold increase in the frequency of summer nights (values > 15°C) by the end of the century, a decrease in the frequency of cold winter nights and an increase in the number of heatwaves. A heatwave in Ireland is defined as a period of 5 consecutive days where the daily maximum temperature is greater than 25°C.



SOURCE **TRANSLATE PROJECT STORY MAP (MET ÉIREANN, 2023)**

Figure 9.3: Change of Climate Variables for Ireland for Different Global Warming Thresholds

9.5 Potential Impact of the Proposed Development

9.5.1 Do Nothing Scenario

Under the Do Nothing Scenario no demolition or construction works will take place and the site will remain as it currently is. The climate baseline will continue to develop in line with the identified trends (see Section 9.4). This scenario is considered neutral in relation to climate.

9.5.2 Greenhouse Gas Assessment

There is the potential for a number of greenhouse gas emissions to atmosphere during the construction and operational phases of the development. As per the TII guidance (2022a), the significance of the effect of GHG emissions on climate is assessed for the total GHG emissions across all proposed development stages.

9.5.2.1 Demolition Phase

There are some demolition works proposed as part of the proposed development. A total of c. 4,196 m^2 of buildings are proposed for demolition which include the Chadwicks building providers, warehouse, trade shop and offices. While the repurposing of buildings is generally considered more sustainable it is not always feasible depending on the intended new use of the building. In the case of this proposed development, it is considered necessary to demolish the existing buildings as they are unsuitable for refurbishment and repurposing for residential uses.

A *Demolition Justification Report* has been completed separately as part of this planning application and was used to inform this assessment. The report details the justification for demolishing the buildings on site. Embodied carbon is a key feature of the report. As discussed within this chapter, embodied carbon is carbon within building materials associated with their manufacture and end-of-life in this context. Depending on the final end-use of the demolition wastes, the associated embodied carbon has the potential to impact climate. This has been considered as part of the demolition proposed.

Section 4.1 of the Demolition Justification Report includes detail on embodied carbon. It states that as the existing buildings are not fit for purpose to limit carbon emissions as far as possible, several measures will be implemented as per policy CA8 of the Dublin City Development Plan. The report states "*when considering new materials, those with EPD's (Environmental Product Declarations) will be prioritised and locally sourced as far as possible. Materials with high recycled content will be considered and any waste from demolition will be reviewed in relation to re-use and recycling as far as possible. To properly assess the effects this demolishment will have on the environment, it is important to identify the waste generated and to analyse the remaining life cycle of that waste*".

Mitigation will be required as part of the demolition works to reduce the embodied carbon impact. Where possible demolished materials should be re-used on site or sent to a suitably licenced waste facility for re-use on other sites. Brickwork, concrete, steel and glazing are materials which have the potential for very high embodied carbon but also have to potential for recovery or recycling.

9.5.2.2 Construction Phase

Embodied carbon is carbon dioxide emitted during the manufacture, transport and construction of building materials, together with site activities. The most significant proportion of carbon emissions tend to occur during the construction phase because of embodied carbon in construction materials and emissions from construction activities. Therefore, the assessment has included the construction phase embodied carbon for the purposes of the EIAR. The assessment is broken down into the following stages as per Section 9.3.1.1:

- Product stage (A1 – A3)
- Transportation to site (A4)
- Site operations (A5)
- Material replacement & refurbishment (B4 – B5)

The construction phase embodied carbon emissions comprise stages A1 – A5 include the construction materials, the transport of the materials to site and the construction activities or site operations. Ongoing material refurbishment and replacement throughout the lifetime of the development is included within category B4 – B5, these are default values based on the typical maintenance requirements for the chosen material types over the assumed 50 year lifetime. Figure 9.4 shows the embodied carbon for the proposed development per life-cycle stage.

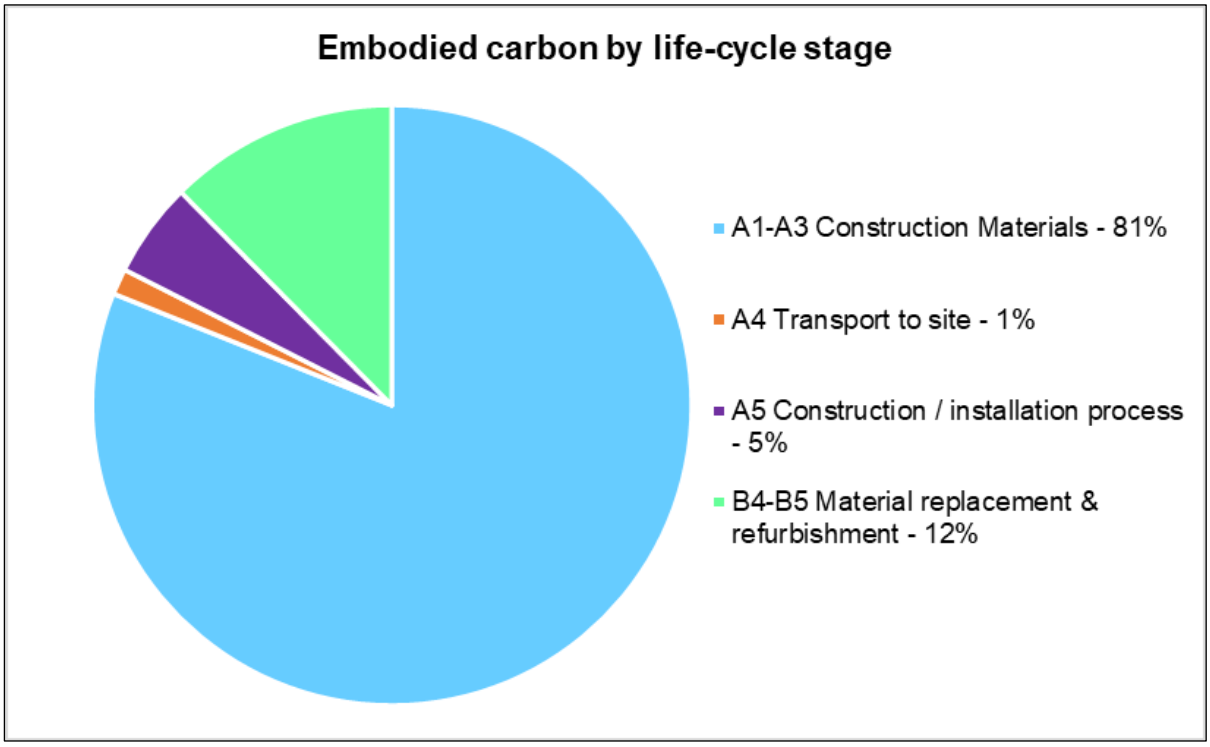


Figure 9.4: Embodied Carbon by Life-Cycle Stage

Construction materials make up the majority of carbon emissions for the proposed development making up c.81% of the total construction phase embodied carbon emissions across the different buildings. The external walls as well as the beams, floors and roofs are the areas with the highest carbon impact, based on the general default values and assumptions made for the carbon calculations. Transportation to site, site operations and material replacement make up the remainder of the construction embodied carbon emissions.

It has been calculated that the total construction phase embodied carbon (including maintenance and replacement of materials over the development lifetime) will be 23,122 tonnes CO_2e. When this is annualised over the assumed 50 year lifespan of the development this equates to 0.012% of the Industry sector or Residential sector 2030 carbon budget of 4 Mt CO_2e (both have the same carbon budget). Annualising the full carbon emissions over the lifetime of the development allows for appropriate comparison with annual GHG targets. The impact to climate is predicted to be moderate, negative and not significant.

The carbon assessment has highlighted the areas where the highest embodied carbon emissions occur, specifically as a result of building materials. The carbon emissions have been calculated based on standard default materials for the various building types within the OneClick tool as detailed material information was not available at this stage in the project. There is the potential to reduce carbon emissions through the use of alternative materials with lower embodied carbon emissions such as timber frame walls or concrete with a 50% recycled cement content for example.

9.5.2.3 Operational Phase

Ongoing maintenance of the proposed development materials has been accounted for within Section 9.5.2.2 above. The following section outlines the impact of operational energy use on GHG emissions.

Operational Energy Usage

The proposed development has been designed to reduce the impact to climate where possible. A number of measures have been incorporated into the design to ensure the operational phase emissions are minimised. These are outlined fully within the Energy Statement and Building Lifecycle Report prepared in relation to the development. The primary elements with respect to reducing climate impacts and optimising energy usage are summarised below.

As per the Energy Statement, the development will be a Nearly Zero Energy Building (NZEB) in accordance with the Part L requirements. In relation to the apartment units, these will aim to achieve a Building Energy Ratio (BER) of A2. The units will have an energy performance coefficient (EPC) that complies with NZEB (maximum permitted under NZEB requirements is <0.3). The units will also have a carbon performance coefficient (CPC) and renewable energy ratio (RER) that comply with NZEB requirements (maximum permitted CPC under NZEB requirements is <0.35 and RER is 0.20). The following items will assist in achieving the NZEB compliance:

- Energy efficient LED lighting will be utilised
- Exhaust air source heat pump technology will be installed
- Up to 1 No. 300W PV panel per unit will be installed dependent on orientation
- Limiting heat loss and heat gains

Similar to the apartment units, the commercial spaces will also comply with the NZEB requirements. The commercial spaces will aim toa chieve a BER of A3, the EPC will comply with the NZEB requirements (maximum permitted under NZEB requirements is <1.0). The units will also have a CPC and RER that comply with NZEB requirements (maximum permitted CPC under NZEB requirements is <1.15 and RER is 0.20).

The Building Lifecycle Report also states that the following measures in addition to those outlined above are being considered for the proposed development, which will have the benefit of reducing energy related impacts to climate during operation. These measures include:

- Use of natural ventilation
- Use of natural light to reduce the need for artificial lighting
- Incorporation of green roofs
- Long-lasting and durable materials will be chosen, where feasible, to reduce ongoing maintenance and replacement requirements
- Proximity to public transport to reduce private car journeys and promote more sustainable travel options

The above measures will assist in optimising the energy consumed by the development and will also have the

benefit of reducing the impact to climate during the operational phase of the development.

9.5.2.4 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 9.7 has therefore been taken into account when determining the significance of the proposed development's GHG emissions. According to the TII significance criteria described in Section 9.3.1.1 and Table 9.3, the significance of the GHG emissions during the construction and operational phase is minor adverse.

In accordance with the EPA guidelines (EPA, 2022), the above significance equates to a significance of effect of GHG emissions during the construction and operational phase which is direct, long-term, negative and slight, which is overall not significant.

9.5.3 Climate Change Risk Assessment

9.5.3.1. Construction Phase

A detailed CCRA of the construction phase has been scoped out, as discussed in Section 9.3.2.1. 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 9.7:

- 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.

9.5.3.2 Operational Phase

In order to determine the vulnerability of the proposed development to climate change the sensitivity and exposure of the development to various climate hazards must first be determined. The following climate hazards have been considered in the context of the proposed development: flooding (coastal, pluvial, fluvial), extreme heat, extreme cold, wildfire, drought, extreme wind, lightning, hail, landslides and fog.

The sensitivity of the proposed development to the above climate hazards is assessed irrespective of the project location. Table 9.6 details the sensitivity of the proposed development on a scale of high (3), medium (2) and low (1). Once the sensitivity has been established the exposure of the proposed development to each of the climate hazards is determined, this is the likelihood of the climate hazard occurring at the project location

and is also scored on a scale of high (3), medium (2) and low (1). The product of the sensitivity and exposure is then used to determine the overall vulnerability of the proposed development to each of the climate hazards as per Table 9.4. The results of the vulnerability assessment are detailed in Table 9.6.

Climate Hazard	Sensitivity	Exposure	Vulnerability
Flooding (Coastal, Pluvial, Fluvial)	1 (Low)	2 (Medium)	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)

Table 9.6: Climate Change Vulnerability Assessment

The OPW flood maps database (OPW, 2023) was reviewed as part of the vulnerability assessment and this indicated that there have been past fluvial flood events in the area of the proposed development site. Increased rainfall in future years as a result of climate change has the potential to result in flooding. The drainage design standards used for the proposed development allowed for an additional increase in rainfall as a result of climate change. Therefore, once the design measures for the proposed development are implemented there is a low risk of fluvial/pluvial flooding at the site. Additionally, due to the site's location coastal flooding is not a risk at the site. The proposed development is not considered at risk due to flooding (coastal, fluvial or pluvial).

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% and 10% chance of experiencing weather that could support a problematic wildfire in your project area that may cause disruptions and low but tangible risk of life and property loss in any given year. Future climate modelling indicates that there could be an increase in the weather conditions which are favourable to fire conditions, these include increases in temperature and prolonged dry periods. However, due to the project location in a suburban area the risk of wildfire is significantly lessened and it can be concluded that the proposed development is of low vulnerability to wildfires.

The Geological Society of Ireland (GSI) landslide susceptibility mapping database (GSI, 2023) was reviewed in order 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.

In relation to extreme temperatures, both extreme heat and extreme cold, these have the potential to impact the building materials and some related infrastructure. However, the building materials selected at the detailed design stage will be of high quality and durability. Therefore, extreme temperatures are not considered a significant risk.

There is no additional vulnerability with respect to all climate hazards when design mitigation has been put in place in order to alleviate this known vulnerability to future climate change risk.

9.5.2.3 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.

9.6 Potential Cumulative Impacts

With respect to the requirement for a cumulative assessment PE-ENV-01104 (TII, 2022a) states that *"for GHG Assessment is the global climate and impacts on the receptor from a project are not geographically constrained, the normal approach for cumulative assessment in EIA is not considered applicable."*

However, by presenting the GHG impact of a proposed development 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 proposed development to affect Ireland's ability to meet its national carbon reduction target. Therefore, the assessment approach is considered to be inherently cumulative. The cumulative impact of the proposed development in relation to GHG emissions is considered direct, long-term, negative and slight, which is overall not significant in EIA terms.

9.7 Mitigation Measures

9.7.1 Construction Phase

Embodied carbon of materials and construction activities will be the primary source of climate impacts during the construction phase. The Demolition Justification Report which accompanies this planning application details some measures to reduce the embodied carbon of the demolition works. These include:

- Creating a demolition and construction program which allows for sufficient time to determine reuse and recycling opportunities for demolition wastes.
- Appointing a suitably competent demolition contractor who will undertake a pre-demolition audit detailing resource recovery best practice and identify materials/building components that can be reused/recycled.
- Materials will be reused on site within the new build areas where possible.
- The project shall review and determine compliance with the requirements set out in the EU taxonomy in relation to circular economy. This is specific to reuse, recycling and material recovery of demolition and construction wastes.

During the construction phase the following best practice measures shall be implemented on site to prevent significant GHG emissions and reduce impacts to climate:

- Appointing a suitably competent contractor who will undertake waste audits detailing resource recovery best practice and identify materials can be reused/recycled;
- Materials will be reused on site where possible;
- 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; and
- Sourcing materials locally where possible to reduce transport related CO_2 emissions.

In terms of impact on the proposed development due to climate change, during construction the Contractor will be required to mitigate against the effects of extreme rainfall/flooding through site risk assessments and method statements. The Contractor will also be required to mitigate against the effects of extreme wind/storms, temperature extremes through site risk assessments and method statements. All materials used during construction will be accompanied by certified datasheets which will set out the limiting operating temperatures. Temperatures can affect the performance of some materials, and this will require consideration during construction. During construction, the Contractor will be required to mitigate against the effects of fog, lighting and hail through site risk assessments and method statements.

9.7.2 Operational Phase

Some measures have been incorporated into the of the development to mitigate the impacts of future climate change. For example, adequate attenuation and drainage have been incorporated to avoid potential flooding impacts due to increased rainfall events in future years. These measures have been considered when assessing the vulnerability of the proposed development to climate.

No additional specific mitigation measures in relation to climate have been identified for the operational phase.

9.8 Residual Impacts of the Proposed Development

The proposed development will result in some impacts to climate through the release of GHGs. TII state that the crux of assessing significance is "*not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050*". The proposed development has proposed some best practice mitigation measures and is committing to reducing climate impacts where feasible. As per the assessment criteria in Table 9.3 the impact of the proposed development in relation to GHG emissions is 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.

9.9 Monitoring

There is no monitoring proposed in relation to climate.

9.10 Interactions

Climate has the potential to interact with a number of other environmental attributes.

Climate and Air Quality

Air quality and climate have interactions due to the emissions from the burning of fossil fuels associated with vehicles and machinery during the construction and operational phases. The emissions 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.

Climate and Hydrology

Construction Phase
There are no potentially significant interactions identified between climate, and hydrology during the construction phase.

Operational Phase
Climate change has the potential to increase the risk of flooding in future years due to increased rainfall. The hydrology assessment has concluded that no residual risk is foreseen as the development is located primarily outside any flooding zone designations. The proposed development has been assessed as having a low vulnerability to climate change related flooding. The impact will be neutral.

Climate and Material Assets, including Utilities, Waste Management, and Transport

Construction Phase
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. However, the change in traffic is not predicted to be significant. There are no potentially significant interactions identified between climate and traffic.

Waste management measures will be put in place during the construction phase to minimise the amount of waste entering landfill, which has higher associated embodied carbon emissions than other waste management such as recycling. The impact to climate as a result of embodied carbon in waste materials is not considered significant.

Operational Phase
During operation traffic emissions have the potential to emit GHGs, such as CO_2, which impact climate. The change in traffic because of the proposed development has been assessed and the impact is predicted to be insignificant. There are no potentially significant interactions identified between climate and traffic.

9.11 References

Department of Environment, Climate and Communications (DECC) (2023) Climate Action Plan (CAP) 2024

Department of Housing, Planning & Local Government (DHPLG) (2018) Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment

Department of the Taoiseach (2022) Carbon Budgets Available at https://www.gov.ie/en/publication/9af1b-carbon-budgets/

Environmental Protection Agency (2020a) State of the Irish Environment Report (Chapter 2: Climate Change)

Environmental Protection Agency (2020b) Research 339: High-resolution Climate Projections for Ireland – A Multi-model Ensemble Approach'

Environmental Protection Agency (2021) Critical Infrastructure Vulnerability to Climate Change Report no. 369

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

Environmental Protection Agency (2023) Ireland's Final Greenhouse Gas Emissions 1990-2022

European Commission (2013) Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment

European Commission (2014) 2030 Climate and Energy Policy Framework

European Commission (2017) Guidance on the preparation of the Environmental Impact Assessment Report

European Commission (2021a) Technical guidance on the Climate Proofing of Infrastructure in the Period 2021-2027

European Commission (2021b) 2030 EU Climate Target Plan

European Union (2018) Regulation 2018/842 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No. 525/2013

Fingal County Council & Codema (2019) Fingal County Council Climate Change Action Plan 2019 -2024

Global Facility for Disaster Reduction and Recovery (GFDRR) (2023) Think Hazard!

Government of Ireland (2015) Climate Action and Low Carbon Development Act

Government of Ireland (2019) Climate Action Plan 2019

Government of Ireland (2020) Climate Action Plan 2020

Government of Ireland (2021) Climate Action and Low Carbon Development (Amendment) Act 2021 (the 2021 Climate Act) (No. 32 of 2021)

Government of Ireland (2022) Climate Action Plan 2022

Government of Ireland (2023) Climate Action Plan 2024

Institute of Environmental Management & Assessment (IEMA) (2020a) Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (hereafter referred to as the IEMA 2020 EIA Guide)

Institute of Environmental Management & Assessment (IEMA) (2020b) GHG Management Hierarchy (hereafter referred to as the IEMA 2020 GHG Management Hierarchy)

Institute of Environmental Management & Assessment (IEMA) (2022) Environmental Impact Assessment Guide to: Assessing GHG Emissions and Evaluating their Significance (hereafter referred to as the IEMA 2022 GHG Guidance)

Met Éireann (2023) Met Éireann's 2023 Climate Statement

One Click LCA Ltd. (2023) Carbon Designer for Ireland Tool

OPW (2023) Flood Maps Database

The Geological Society of Ireland (GSI) (2023) 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 (2022c) GE-ENV-01106: TII Carbon Assessment Tool for Road and Light Rail Projects and User Guidance Document

UK Highways Agency (2019) UK Design Manual for Roads and Bridges (DMRB) Volume 11 Environmental Assessment, Section 3 Environmental Assessment Techniques, Part 14 LA 114 Climate.

10.0 Noise

10.1 Introduction

This section of the EIAR has been prepared by AWN Consulting Ltd (AWN) to assess the potential noise and vibration impact of the proposed development in the context of current relevant standards and guidance.

This chapter includes a description of the receiving ambient noise climate in the vicinity of the subject site and an assessment of the potential noise and vibration 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 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 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 Leo Williams (Senior Acoustic Consultant) Senior Acoustic Consultant at AWN Consulting who has over 7 years' experience as an environmental consultant specialising in Acoustics and Environmental Impact Assessment. He graduated from TCD with a BA, BAI (Mechanical and Manufacturing Engineering) and an MAI (Mechanical and Manufacturing Engineering). Leo is a Member of the Institute of Acoustics and has extensive experience in environmental noise impact assessment, in particular residential developments, industrial/manufacturing and renewable energy noise sources. He has experience in room and building acoustics modelling and assessment. He has completed the IOA Diploma in Acoustics and Noise Control.

10.2 Assessment Methodology

The assessment has been undertaken with reference to the most appropriate guidance documents relating to environmental noise and vibration which are set out in the following sections. In addition to specific noise and vibration guidance documents, the following Environmental Protection Agency (EPA) guidelines were considered and consulted in the preparation of this Chapter:

- 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 – (2022); and
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning & Local Government, 2018);

The study has been undertaken using the following methodology:

- An environmental noise survey has been undertaken in the vicinity of the subject site in order to characterise the existing baseline noise environment;

- A review of the most applicable standards and guidelines has been conducted in order to set a range of acceptable noise and vibration criteria for the construction and operational phases of the proposed development;
- Predictive calculations have been performed during the construction phase of the project at the nearest sensitive locations to the development site;
- Predictive calculations have been performed to assess the potential impacts associated with the operation of the development at the most sensitive locations surrounding the development site;
- A schedule of mitigation measures has been proposed to reduce, where necessary, the identified potential outward impacts relating to noise and vibration from the proposed development; and
- An inward noise impact assessment from the existing noise sources on the proposed development.

10.2.1 Construction Phase – Noise Impacts

There is no published statutory Irish guidance relating to the maximum permissible noise level that may be generated during the construction phase of a project. Dublin City Council (DCC) typically controls construction activities by imposing limits on the hours of operation and consider noise limits at their discretion.

10.2.1.1 DCC – Air Quality Monitoring and Noise Control Unit's Good Practice Guide for Construction and Demolition

Dublin City Council's *"Air Quality Monitoring and Noise Control Unit's Good Practice Guide for Construction and Demolition"* (hereinafter referred to as DCC GPG) outlines a risk assessment methodology directly applicable to the specific construction activities on the proposed site.

The proposed development has been classed as a high risk category site based on the DCC GPG risk assessment factors as detailed below: -

- Duration of the works;
- Distance to NSLs;
- Ambient noise levels;
- Site operating hours;
- Location of works;
- Duration of demolition; and
- Intrusive noise activities, including vibration generating activities.

As the proposed development is in the high risk category, the monitoring section (S.6) of the DCC GPG document identifies that: *"The ABC Method detailed in Paragraph E.3.2 of BS 5228-1:2009 shall be used to determine acceptable noise levels for day, evening and night time work."*
Please note that construction works in relation to this development are proposed during normal working hours only as set out below:

- Monday to Friday: 07:00 to 19:30hrs
- Saturdays: 08:00 to 14:00hrs
- Sundays and Bank Holidays: No construction works.

10.2.1.2 British Standard BS 5228 – 1: 2009+A1:2014

DCC GPG refers to 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) as appropriate criteria relating to permissible construction noise threshold levels for a development of this scale may be found in BS 5228-1:2009+A1:2014.

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 10.1 sets out the values which, when exceeded, signify a significant effect at the facades of residential receptors.

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

Table 10.1: Example Threshold of Significant Effect at Dwellings

A. Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values.

B. Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as category A values.

C. Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are higher than category A values.

D. 19:00 – 23:00 weekdays, 13:00 – 23:00 Saturdays and 07:00 – 23:00 Sundays.

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 an excessively onerous thresholds being set.

The closest neighbouring noise sensitive properties to the proposed development are within a new residential development, some 25m to the south of the site, currently under construction, which will present future noise sensitive receivers. Other residential receptors include a dwelling approximately 35m to the north of the proposed development site and dwellings located above retail properties approximately 35m to the east of the proposed 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

Taking into account the proposed documents outlined above and making reference to the baseline noise environment monitored around the development site (see Section 10.3), BS 5228-1:2009+A1:2014 has been used to inform the assessment approach for construction noise in line with the DCC GPG.

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 - 75 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 environment in which the closest commercial properties reside, in line with BS 5228-1:2009+A1:2014 and DCC GPG.

Interpretation of the CNT

In order to assist with interpretation of CNTs, Table 10.2 includes guidance as to the likely magnitude of impact associated with construction activities, relative to the CNT. This guidance is derived from Table 3.16 of *DMRB: Noise and Vibration* and adapted to include the relevant significance effects from the *EPA Guidelines* (EPA 2017).

Guidelines for Noise Impact Assessment Significance (DMRB)	CNT per Period	EPA EIAR Significance Effects	Determination
Negligible	Below or equal to baseline noise level	Not Significant	Depending on CNT, duration & baseline noise level
Minor	Above baseline noise level and below or equal to CNT	Slight to Moderate	
Moderate	Above CNT and below or equal to CNT +5 dB	Moderate to Significant	
Major	Above CNT +5 to +15 dB	Significant, to Very Significant	
	Above CNT +15 dB	Very Significant to Profound	

Table 10.2: Construction Noise Significance Ratings

The adapted DMRB guidance outlined will be used to assess the predicted construction noise levels at NSLs and comment on the likely impacts during the construction stages.

10.2.1.3 Construction Phase – Noise Impacts

In order to assist with the interpretation of construction traffic noise, Table 10.3 includes guidance as to the likely magnitude of impact associated with changes in traffic noise levels along an existing road. This is taken from Table 3.17 of the *DMRB Noise and Vibration* (UKHA 2020).

Magnitude of Impact	Increase in Traffic Noise Level (dB)
Negligible	Less than 1.0
Minor	Greater than or equal to 1.0 and less than 3.0
Moderate	Greater than or equal to 3.0 and less than 5.0

Magnitude of Impact	Increase in Traffic Noise Level (dB)
Major	Greater than or equal to 5.0

Table 10.3: Likely Effect Associated with Change in Traffic Noise Level – Construction Phase

In accordance with the *DMRB Noise and Vibration*, construction noise and construction traffic noise impacts shall constitute a significant effect where it is determined that a major or moderate magnitude of impact will occur for a duration exceeding:

- Ten or more days or night in any 15 consecutive day or nights;
- A total number of days exceeding 40 in any six consecutive months.

10.2.2 Construction Phase – 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.

10.2.2.1 Building Damage

With respect to vibration, *British Standard BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Vibration* recommends that, for soundly constructed residential property and similar structures that are generally in good repair, a threshold for minor or cosmetic (i.e. non-structural) damage should be taken as a peak component particle velocity (in frequency range of predominant pulse) of 15mm/s at 4Hz increasing to 20mm/s at 15Hz and 50mm/s at 40Hz and above. The standard also notes that below 12.5 mm/s PPV the risk of damage tends to zero. It is therefore common, on a cautious basis to use this lower value. Taking the above into consideration the vibration criteria in Table 10.4 are recommended.

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**
12 mm/s	20 mm/s	50 mm/s

Table 10.4: Recommended Vibration Criteria During Construction Phase

Expected vibration levels from the construction works will be discussed further in Section 10.5.

10.2.2.2 Human Perception

People are sensitive to vibration stimuli at levels orders of magnitude below those which have the potential to cause any cosmetic damage to buildings. There are no current standards which provide guidance on typical ranges of human response to vibration in terms of PPV for continuous or intermittent vibration sources.

BS5228-2:2009+A1:2014, provides a useful guide relating to the assessment of human response to vibration in terms of the PPV. Whilst the guide values are used to compare typical human response to construction works, they tend to relate closely to general levels of vibration perception from other general sources.

Table 10.5 below summarises the range of vibration values and the associated potential effects on humans.

Vibration Level, PPV	Effect
0.140mm/s	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies. At lower frequencies people are less sensitive to vibration.
0.3mm/s	Vibration might be just perceptible in residential environments.
1mm/s	It is likely that a vibration level of this magnitude in residential environments will cause complaint.

Table 10.5: Guidance on Effects of Human Response to PPV Magnitudes

Vibration typically becomes perceptible at around 0.15 to 0.3 mm/s and may become disturbing or annoying at higher magnitudes. However, higher levels of vibration are typically tolerated for single events or events of short-term duration, particularly during construction projects and when the origin and or the duration of vibration is known. For example, ground breaking can typically be tolerated at vibration levels up to 2.5 mm/s if adequate public relations are in place and timeframes are known. These values refer to the day-time periods only.

During surface construction works (demolition and ground breaking etc.) the vibration limits set within Table 10.5 would be perceptible to building occupants and have the potential to cause subjective effects. The level of effect is, however, greatly reduced when the origin and time frame of the works are known and limit values relating to structural integrity are adequately communicated. In this regard, the use of clear communication and information circulars relating to planned works, their duration and vibration monitoring can significantly reduce vibration effects to the neighbouring properties.

<u>Interpretation of the Human Response to Vibration</u>

In order to assist with interpretation of vibration thresholds, Table 10.6 presents the significance table

relating to potential impacts to building occupants during construction based on guidance from BS5228-2:2009+A1:2014.

Criteria	Impact Magnitude	Significance Rating
≥10 mm/s PPV	Very High	Very Significant
≥1 mm/s PPV	High	Moderate to Significant
≥0.3 mm/s PPV	Medium	Slight to Moderate
≥0.14 mm/s PPV	Low	Not significant to Slight
Less than 0.14 mm/s PPV	Very Low	Imperceptible to Not significant

Table 10.6: Human Response Vibration Significance Ratings

10.2.3 Operational Phase – Noise

10.2.3.1 Mechanical Plant

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,* $L_{Aeq,\,Tr}$" 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*" $L_{Ar,Tr}$ 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 specific noise 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.

10.2.3.2Additional Vehicular Traffic on Surrounding Roads

There are no specific guidelines or limits relating to traffic related sources along the local or surrounding roads. Given that traffic from the development will make use of existing roads already carrying traffic volumes, it is appropriate to assess the calculated increase in traffic noise levels that will arise because of vehicular movements associated with the development. In order to assist with the interpretation of the noise associated with additional vehicular traffic on public roads, Table 10.7 is taken from DMRB Design Manual for Roads and Bridges (DMRB), Highways England Company Limited, Transport Scotland, The Welsh Government and The Department for Regional Development Northern Ireland, (2020).

Change in sound Level (dB)	Subjective Reaction	Magnitude of Impact	EPA Glossary of Effects[13]
10+	Over a doubling of loudness	Major	Significant
5 – 9.9	Up to a doubling of loudness	Moderate	Moderate
3 – 4.9	Perceptible	Minor	Slight
0.1 – 2.9	Imperceptible	Negligible	Imperceptible
0	None	No Change	Neutral

Table 10.7: Significance in Change of Noise Level

The guidance outlined in Table 10.7 will be used to assess the predicted increases in traffic levels on public roads associated with the proposed development and comment on the likely long-term impacts during the operational phase.

10.2.3.3 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.

10.2.3.4 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

13 EPA Guidelines on the Information to be contained in Environmental Impact Assessment Reports, (Draft August 2017)

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 10.1 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.

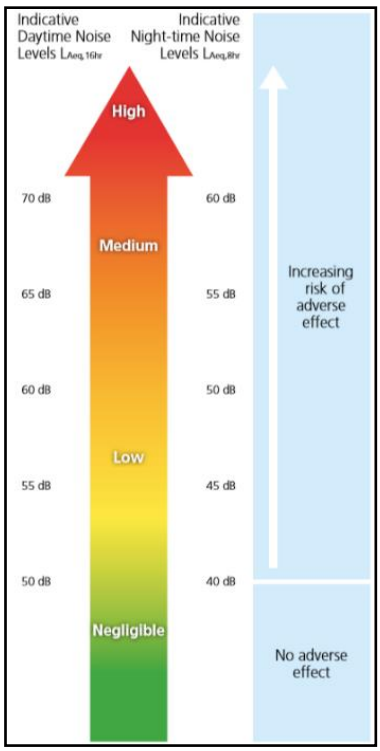


Figure 9.1: ProPG Stage 1 - Initial Noise Risk Assessment

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 10.8 and are based on annual average data, that is to say they omit occasional events where higher intermittent noisy events may occur.

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 $L_{Amax,T}$*

Table 10.8: ProPG Internal Noise Levels

*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 $L_{Aeq,16hr}$."*

10.2.3.5 Inward Noise – Aircraft Noise

The proposed development site is located within Airport Noise Zone D. While the site is situated within Dublin City Council (DCC) bounds, it is appropriate to reference the Fingal County Council (FCC) guidance documents.

Fingal Development Plan Policy on Aircraft Noise

The members of Fingal County Council resolved to adopt Variation No. 1 of the Fingal Development Plan 2017-2023 at a Council meeting on 9 December 2019. Variation No. 1 outlines revised Noise Zones and policy objectives in relation to aircraft noise from Dublin Airport.

Four noise zones (Zone A to D) are now indicated representing potential site exposure to aircraft exposure. The council will actively resist residential development within Zone A and resist in Zone B and C pending independent acoustic advice and mitigation measures. Certain specific residential developments located in Zone D may be required to demonstrate that aircraft noise intrusion has been considered in the design.

Table 10.9 below outlines the objectives to be adhered to by applicants for developments in Zone D.

Zone	Indication of Potential Noise Exposure during Airport Operations	Objective
D	≥ 50 dB and < 54 dB $L_{Aeq,\ 16hr}$ and ≥ 40 dB and < 48 dB L_{night}	**To identify noise sensitive developments which could potentially be affected by aircraft noise and to identify any larger residential developments in the vicinity of the flight paths serving the Airport in order to promote appropriate land use and to identify encroachment.** *All noise sensitive development within this zone is likely to be acceptable from a noise perspective. An associated application would not normally be refused on noise grounds, however where the development is residential-led and comprises non residential noise sensitive uses, or comprises 50 residential units or more, it may be necessary for the applicant to demonstrate that a good acoustic design has been followed.* *Applicants are **advised** to seek expert advice.*

Table 10.9: Aircraft Noise Zones Objectives

In line with the above objectives, aircraft noise is therefore considered as part of this assessment. Figure 10.2 illustrates the development location in the context of the future airport noise zones.

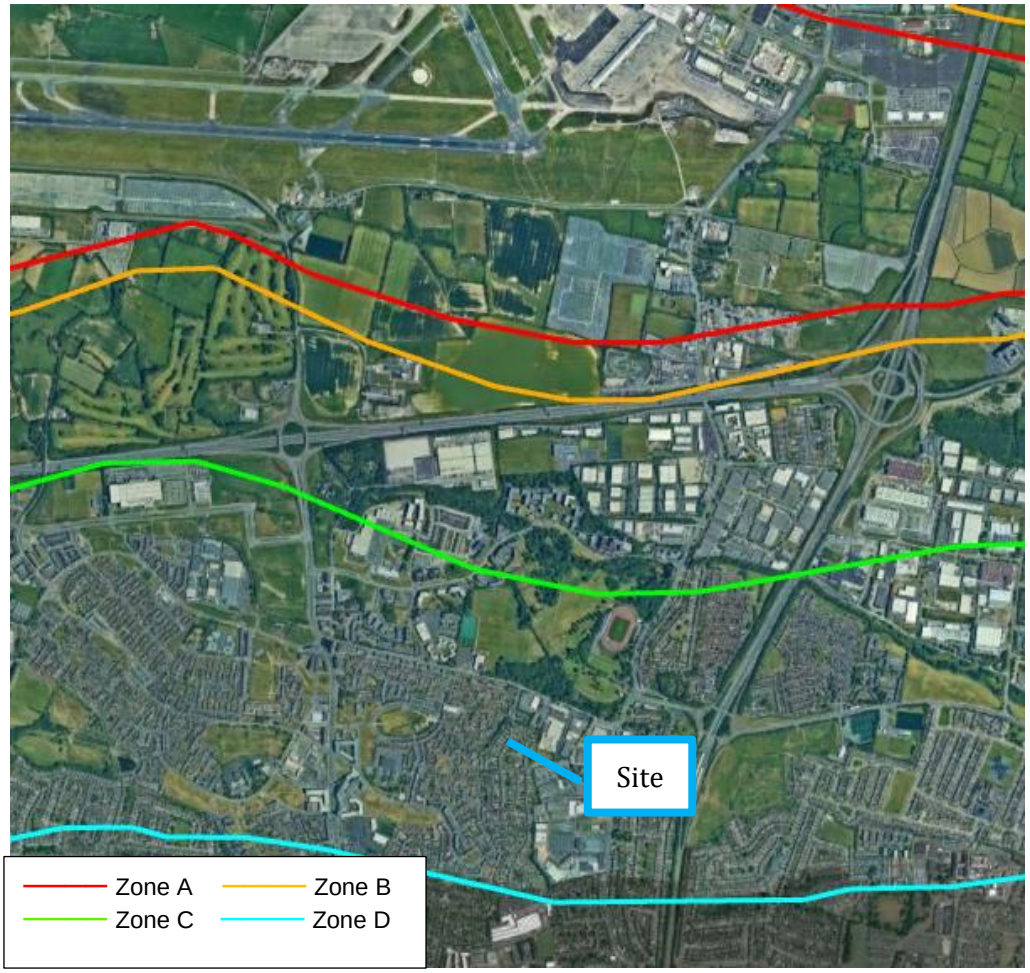


Figure 10.2: Development Location in the Context of Aircraft Noise

10.3 Receiving Environment

The subject site is located within the Dublin 9 area, bound to the north by Santry Avenue, to the east by Swords Road, to the west by existing commercial buildings within the Santry Avenue Industrial Estate and to south by a residential development that is nearing completion. The surrounding environment in the vicinity of the development site is mixed in nature with retail units and warehousing making up the majority of the surrounding building uses.

10.3.1 Baseline Noise Environment

Baseline noise monitoring has been undertaken across the development site to determine the range of noise levels at varying locations across the site.

10.3.1.1 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 10.2.

N1 located to the east of the site in Santry Villas residential estate.
N2 located to the south of the site at a small commercial park.
N3 located to the west of the site within Santry Avenue Industrial Estate.
N4 unattended noise monitor located inside the north-eastern site boundary adjacent to the Santry Avenue Junction.

Figure 10.3: Noise Monitoring Locations (Image Source: Google Maps)

Survey Periods

The noise survey was carried out over the following periods:

Aspect	Survey Position	Survey Period
Noise	N1	11:55hrs to 13:49hrs on 30 July 2020 12:40hrs to 16:19hrs on 26 February 2024
	N2	
	N3	
	N4 (unattended)	11:22hrs on 30 July to 09:36hrs on 6 August 2020[Note A]
	N5	12:40hrs to 16:19hrs on 26 February 2024

Table 10.10: Survey Periods

(**Note A***:* Access not granted by current occupant of the site.)

Instrumentation

The noise measurements were carried out using the equipment listed below. The instrument was calibrated before and after the survey with no significant drift noted.

Measurement	Manufacturer	Equipment Model	Serial Number	Calibration date
Sound Level Meter	Rion	NL-52	164426	5 May 2020
Sound Level Meter	Rion	NL-52	1076328	15 August 2018
Sound Level Meter	Rion	NL-52	1076330	13 January 2023
Calibrator	Brüel & Kjær	Type 4231	3010369	14 January 2020

Table 10.11: Noise Monitoring Equipment Details

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 $2x10^{-5}$ Pa.

Survey Results and Discussion

The results of the noise survey at the four monitoring locations are summarised below.

Location N1

Date	Time	Measured Noise Levels (dB re. $2x10^{-5}$Pa)		
		L_{Aeq}	L_{Amax}	L_{A90}
30 July 2020	11:55	58	70	54
	12:54	58	72	53
	13:54	56	68	52
26 February 2024	12:40	63	81	57
	14:04	63	79	57
	15:25	63	84	57

Table 10.12: Measured Noise Levels at N1

30 July 2020

At this location, the primary noise sources were observed to be vehicles passing on the Swords Road, occasional local traffic within the residential estate, distant construction noise and aircraft noise. Traffic noise from junctions with Santry Avenue and the R104 also contributed to measured noise levels. Ambient noise levels were in the range of 56 to 58 dB L_{Aeq}. Background noise levels were in the range of 52 to 54 dB L_{A90}.

26 February 2024

At this location, the primary noise sources were observed to be vehicles passing on the Swords Road, occasional local traffic within the residential estate. Ambient noise levels were consistent at 63 dB L_{Aeq}. Background noise levels were consistent at 57 dB L_{A90}.

Location N2

Date	Time	Measured Noise Levels (dB re. $2x10^{-5}$Pa)		
		L_{Aeq}	L_{Amax}	L_{A90}
30 July 2020	12:16	69	85	60
	13:14	69	88	59
	14:13	69	95	60
26 February 2024	13:04	69	81	59
	14:22	79	111	59
	15:46	70	83	60

Table 10.13: Measured Noise Levels at N2

30 July 2020

At this location the primary noise sources were observed to be traffic noise on the Swords Road, movements within the carpark of the commercial park. Construction noise from adjacent sites and passing pedestrian activity also contributed to measured levels to vary degrees. Ambient noise levels were of the order of 69 dB L_{Aeq}. The elevated max level of 95 dB was caused by a passing pedestrian talking loudly in close proximity to the microphone. Background noise levels were in the range of 59 to 60 dB L_{A90}.

26 February 2024

At this location the primary noise sources were observed to be traffic noise on the Swords Road and pedestrian activity close to the monitoring location. An ambulance with siren sounding was noted during the second measurement, elevating the L_{Aeq} and L_{Amax} levels. Ambient noise levels were in the range of 69 to 79 dB L_{Aeq}. Background noise levels were in the range of 59 to 60 dB L_{A90}.

Location N3

Date	Time	Measured Noise Levels (dB re. $2x10^{-5}$Pa)		
		L_{Aeq}	L_{Amax}	L_{A90}
30 July 2020	11:33	57	78	46
	12:35	57	83	47
	13:34	51	69	46

Table 10.14: Measured Noise Levels at N3

At this location the primary noise sources were observed to be from distant vehicle movements along Santry Avenue and the Swords Road, as well as distant construction. Aircraft, birdsong and birdcall were also noted to be contributing to measured noise levels. Ambient noise levels were in the range of 51 to 57 dB L_{Aeq}. Background noise levels were in the range of 46 to 47 dB L_{A90}.

Location N4

The unattended measurements collected over the survey period are summarised below.

Date	Period	Measured Noise Levels (dB re. $2x10^{-5}$ Pa)		
		L_{Aeq}	L_{Amax}	L_{A90}
30 July	Day	63	100	56
	Night	57	90	48
31 July	Day	63	93	56
	Night	55	75	45
1 August	Day	61	91	54
	Night	55	80	44
2 August	Day	60	86	53
	Night	55	77	45
3 August	Day	60	96	52
	Night	57	84	44
4 August	Day	62	87	57
	Night	55	76	45
5 August	Day	63	95	56
	Night	56	80	45
Average	Day	62	93	55
	Night	56	80	45

Table 10.15: Measured Noise Levels at N4

On installation and collection at this location the primary noise sources were observed to be traffic noise on Swords Road and Santry Avenue. 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 60 to 63 dB L_{Aeq} with an average of 62 dB L_{Aeq}. Daytime background noise levels ranged from 52 to 57 dB L_{A90} with an average of 55 dB L_{A90}.

Night-time ambient noise levels ranged from 55 to 57 dB L_{Aeq} with an average of 56 dB L_{Aeq}.
Night-time background noise levels ranged from 44 to 48 dB L_{A90} with an average of 45 dB L_{A90}.
Night-time maximum noise levels were in the range of 75 to 90 dB L_{Aeq} with an average of 80 dB.

In addition, the L_{AFmax} values were measured over 15-minute intervals over the duration of the unattended monitoring survey. Figure 9.4 presents the number of measured L_{AFmax} events for each decibel level during the night period measured at Location N4. On review of the maximum noise levels the value of 74 dB L_{AFmax} is not regularly exceeded on a given night (less than 10 events).

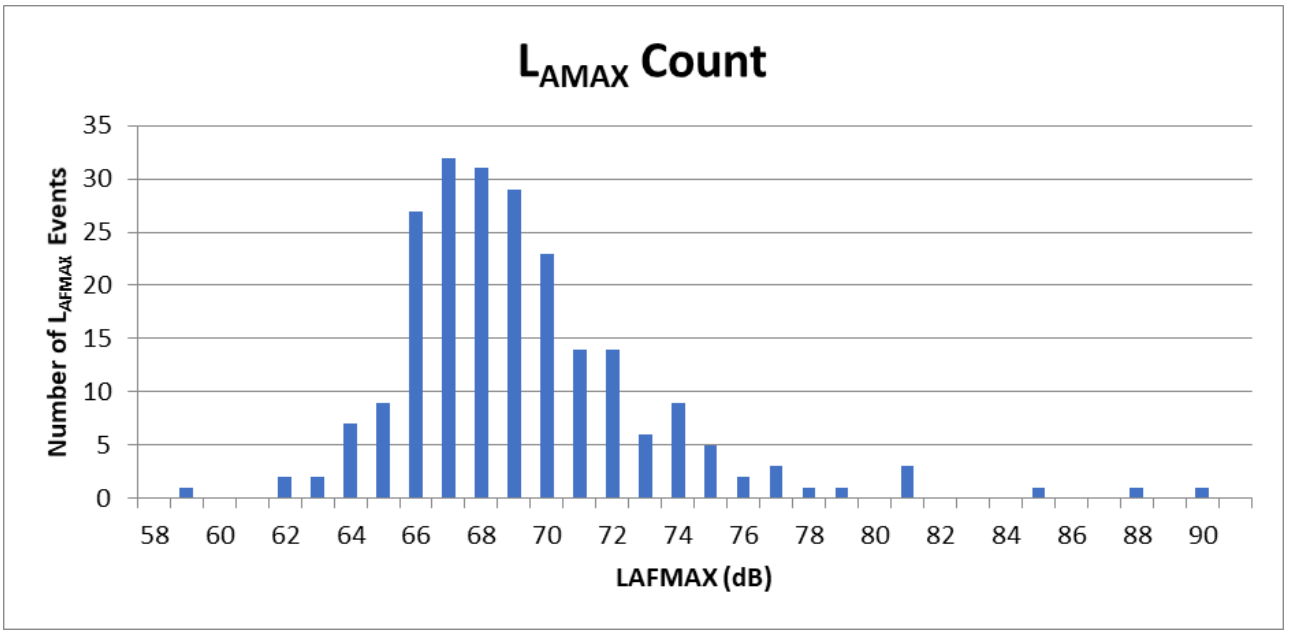


Figure 10.4: Distribution of L_{Amax} events – Night-time

Location N5

Date	Time	Measured Noise Levels (dB re. $2x10^{-5}$Pa)		
		L_{Aeq}	L_{Amax}	L_{A90}
26 February 2024	13:23	69	87	61
	14:41	68	88	60
	16:04	68	90	59

Table 10.16: Measured Noise Levels at N5

At this location the primary noise source was observed to be traffic noise on the Swords Road including motorbike engines and car horns. Ambient noise levels were in the range of 68 to 69 dB L_{Aeq}. Background noise levels were in the range of 59 to 61 dB L_{A90}.

Survey Summary

The baseline noise levels were typical of an urban location. At Location N2 the noise environment was dominated by traffic on the Swords Road. At N1 and N3 the noise environment was dictated more so by local sources such as pedestrian and vehicular activity around residential units and industrial buildings, with traffic noise from the Swords Road and its junctions with the R104 and Santry Avenue at N1 and distant construction from numerous sites surrounding Location N3 contributing to background noise levels.

The first baseline noise survey was carried out during the Covid-19 Pandemic. Due to restrictions applied during the pandemic period it is possible that road traffic levels were not typical of 'normal' levels.

A review of the noise maps has confirmed that measured daytime levels from the baseline noise survey may be below the noise levels arising from traffic in 'normal' times. Night-time noise levels were in-line with those measured during the baseline noise survey. Therefore, in order to provide a robust assessment, 3 dB will be added to measured daytime baseline noise levels. This is assumed as a worst-case scenario as with road traffic noise, typically a 25% increase in volumes would be required to give rise to a 1 dB increase in noise levels.

The 2024 noise survey has been reviewed with particular attention paid to Location N5, i.e. the most representative location in terms of future façade noise levels. Once noise levels measured at N5 have been extrapolated to the location of the nearest future building façade – the noise levels match the assumed façade noise level derived by adding 3 dB to the 2020 noise survey, to account for reduced road traffic noise during the 2020 survey.

The assessment of inward noise is therefore based on corrected measured noise levels collected at Location N4 in 2020, verified by second noise survey in 2024.

10.3.1.2 Do Nothing Scenario

In the absence of the proposed development being constructed, the noise environment at the nearest noise sensitive locations and within the development site will remain largely unchanged.

10.4 Characteristics of the Proposed Development

10.4.1 General Characteristics

The proposed development is located on the former Chadwicks Santry site and consists of circa 321 no. dwelling units, ground floor amenity, medical, community and retail spaces and all associated ancillary site development works. 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 considfered 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 noise sources, namely road traffic and aircraft noise, has also been assessed.

10.5 Potential Impacts

The potential noise and vibration impacts associated with the construction and operational phases of the proposed development are discussed in the following sections.

10.5.1 Construction Phase

10.5.1.1 Noise

During the construction phase of the proposed development, a variety of items of plant will be in use, such as excavators, dumper trucks, compressors and generators. AWN has been advised that initial site investigations indicate that it is not anticipated that piling will be required during the construction of building foundations.

Due to the nature of daytime activities undertaken on a construction site of this nature, 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.

Taking into account the outline construction programme, it is possible to predict typical noise levels using guidance set out in BS 5228-1:2009+A1:2014. Table 10.17 outlines typical plant items and associated noise levels that are anticipated for various phases of the construction programme.

Activity	Item of Plant *(BS5228 Ref)*	L_{Aeq} at 10m
Site Clearance/Demolition	Tracked excavator (C2.21)	71
	Dump Truck (C2.30)	79
	Concrete Breaker (C1.4)	85
	Tracked Mobile Crane (C4.50)	71
	Tracked Crusher (C1.14)	82
General Construction	Dump Truck (C2.30)	79
	Tracked excavator (C2.21)	71
	Compressor (D7.8)	70
	Telescopic Handler (C4.54)	79
	Hand-Held Circular Saw (C4.72)	79
	Diesel Generator (C4.76)	61
	Internal Fit out	70
Road Works/Landscaping	Asphalt Paver & Tipping Lorry (C5.30)	75
	Electric Water Pump (C5.40)	68
	Vibratory Roller (C5.20)	75

Table 10.17 Reference Plant Noise Emissions

The calculations also assume that the equipment will operate for 66% of the 12-hour working day (i.e. 8 hours) and that a standard site hoarding, typically 2.4m height will be erected around the perimeter of the construction site for the duration of works. It is assumed that construction works will take place during normal working hours only.

The closest noise sensitive locations have been identified as shown in Figure 10.5 and described below.

NSL 1 A residential development currently under construction at Santry Place some 25m from the nearest significant site works;
NSL 2 Residential units above retail units on the Swords Road some 35m from the nearest significant site works;
NSL 3 A residential dwelling located to the north of the proposed site some 35m from the nearest significant site works; and,
NSL4 Commercial units, some 30m from the nearest significant site works, located to the west of site.

Review of the baseline noise survey and the Construction Noise Thresholds detailed in Section 10.2.1.2 indicates that the appropriate daytime CNTs for construction noise at residential properties are as follows:

- NSL 1: 65 dB $L_{Aeq,1hr}$
- NSL 2: 75 dB $L_{Aeq,1hr}$
- NSL 3: 65 dB $L_{Aeq,1hr}$

The following CNT has been applied to NSL4:

- NSL 4: 75 dB $L_{Aeq,1hr}$

It is assumed that construction works will take place during normal working hours only.

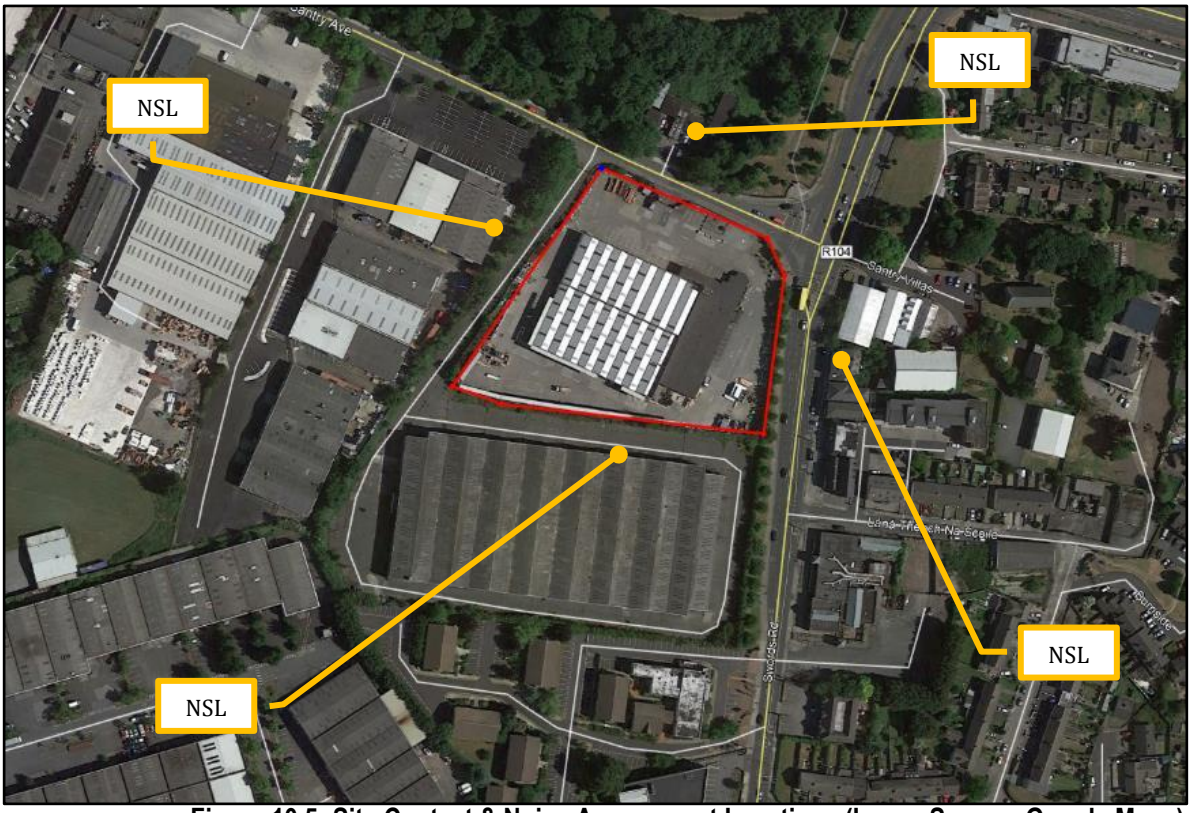


Figure 10.5: Site Context & Noise Assessment Locations (Image Source: Google Maps)

Table 10.18 below and overleaf presents the predicted daytime noise levels from an indicative construction period at these noise sensitive locations (NSLs).

Construction Phase	Item of Plant (*BS 5228-1* Ref)	L_{Aeq} at distance (m)			
		NSL1 (25m)	NSL2 (35m)	NSL3 (35m)	NSL4 (30m)
Site Clearance and Demolition	Tracked excavator (C2.21)	56	**53**	**53**	55
	Dump Truck (D2.30)	64	**61**	**61**	63
	Concrete Breaker (C4.76)*	68	65	65	66
	Tracked Mobile Crane (C4.50)	61	58	58	60
	Tracked Crusher (C1.4)	67	64	64	66
	Cumulative Site Clearance and Demolition	**72**	**69**	**69**	**71**
	Dump Truck (C2.30)	64	61	61	63

Construction Phase	Item of Plant (*BS 5228-1* Ref)	L_{Aeq} at distance (m)			
		NSL1 (25m)	NSL2 (35m)	NSL3 (35m)	NSL4 (30m)
General Construction	Tracked excavator (D2.21)	56	53	53	55
	Compressor (D7.08)	55	52	52	54
	Telescopic Handler (C4.54)	64	61	61	63
	Hand Held Circular Saw (C4.72)	64	61	61	63
	Diesel Generator (C4.76)	46	43	43	45
	Internal Fit out	55	52	52	54
	Cumulative General Construction	**70**	**67**	**67**	**68**
Road Works/ Landscaping	Asphalt Paver & Tipping Lorry (C5.30)	60	57	57	59
	Electric Water Pump (C5.40)	53	50	50	52
	Vibratory Roller (C5.20)	60	57	57	59
	Cumulative Landscaping and Road Works	**64**	**61**	**61**	**62**

*An on-time of 40% has been assumed for concrete breaking during demolition.

Table 10.18: Indicative Construction Noise Levels at Nearest Noise Sensitive Locations

At a distance of 25m from areas of major construction, representative of NSL1, the predicted construction noise levels associated with breaking and crusher activities are above the 65 dB(A) CNT. The impact of this, assuming breaking and crushing occurring at the same time is negative, significant to very significant and temporary. Other activities are predicted to be under the CNT and therefore with reference to Table 10.2, it is expected that there will be a negative, moderate to significant and short-term impact associated with general construction, and a negative, slight to moderate and temporary impact associated. These predicted effects are presented in the absence of mitigation measures.

At a distance of 35m from areas of major construction, representative of NSL2, the predicted construction noise levels are in-line and below the CNT, i.e. 75 dB(A) and therefore it is expected that there will be a negative, moderate and short-term impact at this location in the absence of mitigation.

At a distance of 35m from areas of major construction, representative of NSL3, taking into account the measured ambient noise levels and the derived CNT, i.e. 65 dB(A), the individual construction activities noted in Table 10.16 are predicted to be in line or below the CNT. Considering a worst case scenario whereby several of these activities

may occur at the same time, a negative, moderate to significant and short-term impact is predicted, in the absence of mitigation.

Predicted noise levels at the commercial units to the west of the site are below the CNT adopted for non-residential receptors, i.e. 75 dB(A). Therefore a significant impact is not predicted.

At greater distances predicted construction noise levels are lower, therefore any impact is expected to be negative, moderate and short-term.

Construction Traffic

The noise levels associated with mobile plant items such as concrete mixer trucks, loaders etc. operational on site have been included as part of the construction noise assessment and calculated noise levels in Table 10.18. Consideration should also be given to the addition of construction traffic along the site access routes. Access to the development site for construction traffic will be via the site entrance on Santry Avenue to the north-east of the site.

It is possible to calculate the noise levels associated with the passing vehicle using the following formula.

$$L_{Aeq,T} = L_{AX} + 10\log_{10}(N) - 10\log_{10}(T) + 10\log_{10}(r_1/r_2)\ dB$$

where:

$L_{Aeq,T}$ is the equivalent continuous sound level over the time period T in seconds);
L_{AX} is the "A-weighted" Sound Exposure Level of the event considered(dB);
N is the number of events over the course of time period T;
r_1 is the distance at which L_{AX} is expressed;
r_2 is the distance to the assessment location.

A calculation distance of 5m from the road has been used to assess noise levels at the closest buildings along the construction routes. The mean value of Sound Exposure Level for truck moving at low to moderate speeds (i.e. 15 to 45km/hr) is of the order of 82 dB L_{AX} at a distance of 5 metres from the vehicle. This figure is based on a series of measurements conducted under controlled conditions.

The construction vehicle numbers for the various construction phases are summarised below:

Construction Phase	No. of trucks/peak hour	Calculated Noise level at edge of road (5m), dB $L_{Aeq,1hr}$
Site Clearance	12	61
Excavation	12	61
General Construction	8	60

Table 10.19: Calculated Construction Traffic Noise Levels at Edge of Road

The predicted noise level associated with construction vehicle traffic numbers above is in the range 60-61 dB $L_{Aeq,1hr}$. This level is below the construction noise threshold and the prevailing noise levels along the Swords Road and Santry Avenue, and would result in a negative, slight and short-term impact.

10.5.1.2 Vibration

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 9.4 to avoid any cosmetic damage to buildings.

In terms of disturbance to building occupants, works undertaken within close proximity to the residential receptors on the 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 10.4 during all activities. Further discussion on mitigation measures during this phase are discussed in Section 10.6.1.

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.

10.5.2 Operational Phase

10.5.2.1 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 10.2.3.1. 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.

The effect associated with building services plant, once designed to achieve the relevant noise criteria, is categorised as negative, imperceptible and permanent.

10.5.2.2 Additional Traffic on Adjacent Roads

During the operational phase of the proposed development, there will be an increase in vehicular traffic associated with the site on some surrounding roads.

A traffic impact assessment relating to the proposed development has been prepared by DBFL Consulting Engineers, as part of this EIAR. Using this information, the related noise impacts along the relevant road links has been assessed.

Figure 10.6 overleaf outlines the breakdown of sections of road and Table 10.20 displays the predicted change in noise level at different road links around the site for the year of opening and the design year using the Annual Average Daily Traffic (AADT) flows along the road links under consideration.

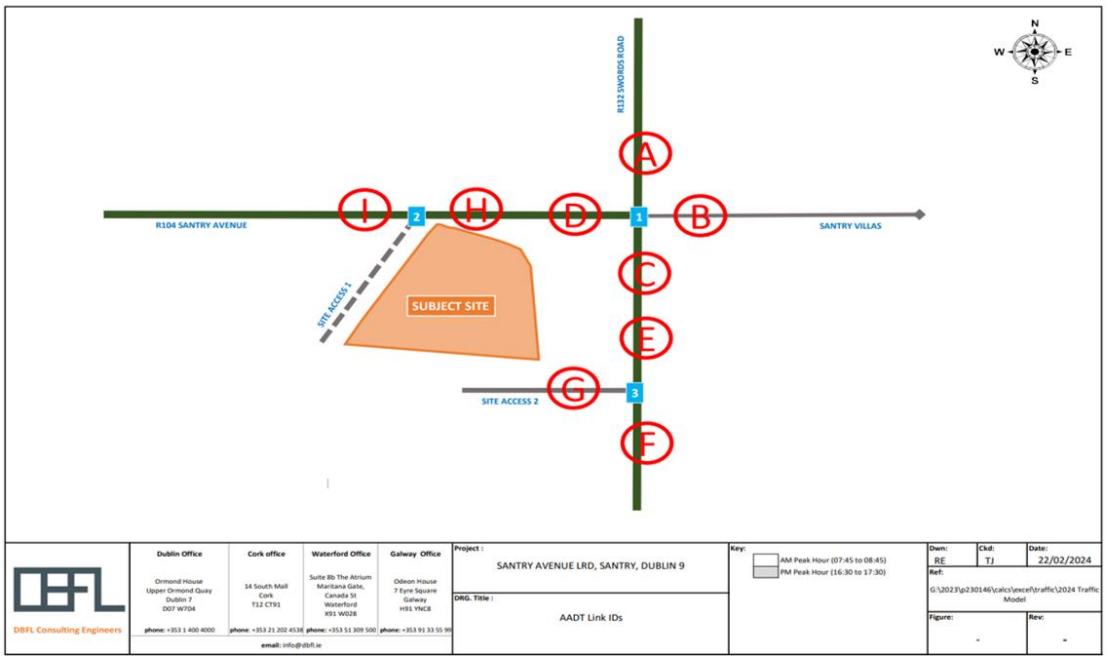


Figure 10.6: Traffic Assessment – Road Links

Road Link	Opening Year (2027)		
	AADT Without Development	AADT With Development	Change in Noise Level (dB)
A	19,741	19,852	0.0
B	437	437	0.0
C	19,442	19,605	0.0
D	12,578	12,777	+0.1
E	19,056	19,218	0.0
F	18,734	18,889	0.0
G	1,055	1,171	+0.5
H	12,581	12,779	+0.1
I	12,581	12,779	+0.1
Road Link	**Design Year (2042)**		
	AADT Without Development	**AADT With Development**	**Change in Noise Level (dB)**
A	21,854	21,965	0.0
B	486	487	0.0
C	21,454	21,616	0.0
D	13,899	14,098	+0.1
E	21,023	21,186	0.0
F	20,662	20,818	0.0
G	1,139	1,256	+0.4
H	13,902	14,101	+0.1
I	13,902	14,101	+0.1

Table 10.20: Predicted Change in Noise Level associated with Vehicular Traffic

For the opening year (2027) traffic flows, the predicted changes in noise level along the road links range from 0.0 to +0.5 dB. For the design year (2042) traffic flows, the predicted changes in noise level along the road links also range from 0.0 to +0.4 dB.

With reference to Table 10.7, the predicted change in noise level associated with additional traffic on the existing road network, is negligible in magnitude. The impact is therefore imperceptible and long term.

10.5.2.3 Inward Noise Assessment

The development lands in question are bounded to the north and east by Santry Avenue and Swords Road respectively. The site is also located some 2.6km south of Dublin Airport. Noise from road traffic and aircraft movements has the potential to impact on residential dwellings within the proposed development.

In order to establish noise levels across the development site an acoustic noise model was developed and calibrated against noise levels measured during the baseline study.

Noise Model of Study Area

Proprietary noise calculation software was used for the purposes of establishing the prevailing noise levels on the proposed site. The selected software, Brüel & Kjær Type 7810 Predictor, calculates noise levels in accordance with the *Calculation of Road Traffic Noise* (CRTN) issued by the UK Department of Transport in 1988. This is the standard recognised for the prediction of road traffic noise by Transport Infrastructure Ireland (TII) and the *Environmental Noise Regulations 2006* SI/140 2006.

The following information was included in the model:

- Site layout drawings of proposed development;
- OS mapping of surrounding environment; and
- Annual Average Daily Traffic (AADT) along adjacent roads estimated from site calibration results.

Noise Model Validation

Noise levels recorded during the unattended survey were used to calibrate the noise model to within 1 dB of the calculated values. This is regarded as very strong correlation in respect of predicted noise levels. Noise levels are calculated over daytime periods, i.e. 07:00 to 23:00hrs and night-time periods, 23:00 to 07:00 hrs.

Location	Time Period	Measured Noise Level (dB)	Calculated Noise Level (dB)
N4	Daytime, $L_{Aeq,16hr}$	65*	65
	Night-time, $L_{Aeq,8hr}$	56	55

*Note *3dB has been added to daytime measured noise levels as outlined in Section 9.3.1.1*

Table 10.21: Calculated and Measured Noise Levels at Development Site

Figures 10.7 and 10.8 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 and east of the site in proximity to the road edges and reduce considerably by more than 10 dB towards the southwest part of the site, in the absence of any development buildings.

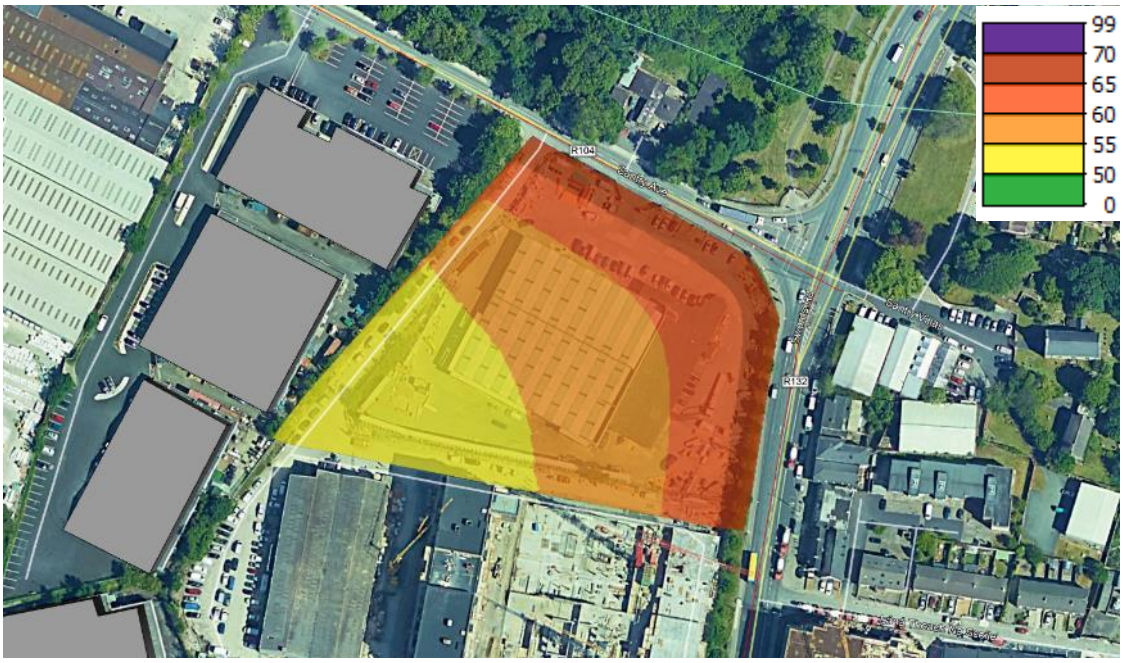


Figure 10.7: ProPg Stage 1 – Initial Noise Risk Assessment – Daytime

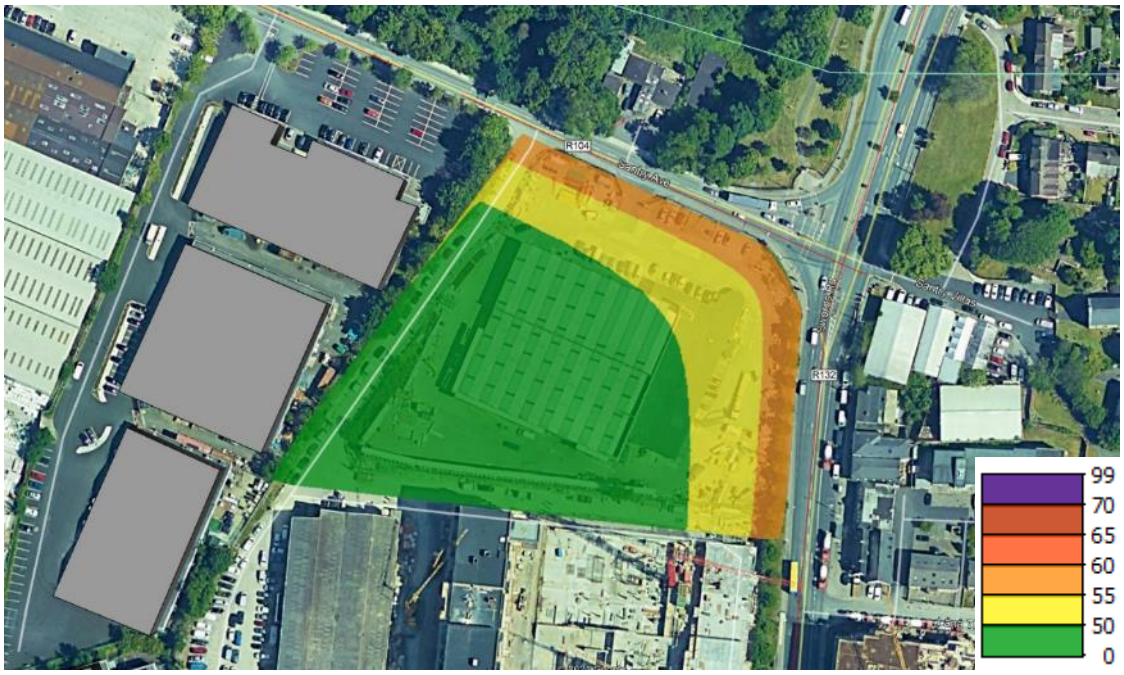


Figure 10.8: ProPg Stage 1 – Initial Noise Risk Assessment – Night-time

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 low to medium noise risk categories.

ProPG states the following with respect to low, medium and high risks areas:

Low Risk At low noise levels, the site is likely to be acceptable from a noise perspective provided that a good acoustic design process is followed and is demonstrated in an ADS which confirms how the adverse impacts of noise will be mitigated and minimised in the finished development.

Medium RiskAs 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.

Given the above it can be concluded that the development site may be categorised as *Low to Medium Risk* and as such the Acoustic Design Statement (following here and also in Section 10.6.3.4) 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,

"2.12 It is important that the assessment of noise risk at a proposed residential development site is not the basis for the eventual recommendation to the decision maker. The recommended approach is intended to give the developer,

the noise practitioner, and the decision maker an early indication of the likely initial suitability of the site for new residential development from a noise perspective and the extent of the acoustic issues that would be faced. Thus, a site considered to be high risk will be recognised as presenting more acoustic challenges than a site considered as low risk. A site considered as negligible risk is likely to be acceptable from a noise perspective and need not normally be delayed on noise grounds. A potentially problematical site will be flagged at the earliest possible stage, with an increasing risk indicating the increasing importance of good acoustic design."

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.

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. Figures 10.9 and 10.10 illustrate the predicted traffic noise levels for daytime and night-time.

Figure 10.9: ProPg Stage 2 – Predicted Noise Levels – Daytime

Predicted daytime noise levels across the site range from 40 dB in sheltered areas, screened from road traffic, to 70 dB along the northern and eastern boundary which face on to Santry Avenue and Swords Road.

Predicted night-time noise levels across the site range from 29 dB in sheltered areas, screened from road traffic, to 60 dB along the northern and eastern boundary which face on to Santry Avenue and Swords Road.

Figure 9.10: ProPg Stage 2 – Predicted Noise Levels – Night-time

Where façade noise levels are less than 55 dB $L_{Aeq,16hr}$ during the day and 50 dB $L_{Aeq,8hr}$ at night it is possible to achieve reasonable internal noise levels while also ventilating the dwellings with open windows. Therefore, for those properties where the façade noise levels are less than 55 dB $L_{Aeq,16hr}$ during the day and 50 dB $L_{Aeq,8hr}$ at night no further mitigation is required.

Where façade levels are above these levels the sound insulation performance of the building façade becomes important and a minimum sound insulation performance specification is required for windows to ensure that when windows are closed the internal noise criteria are achieved.

Predicted noise levels on several facades are above a level whereby internal noise levels are achieved with standard double glazing and therefore mitigation in the form of enhanced glazing will be required. These facades include:

- Block A (northern façade, eastern façade, western façade - partial);
- Block B (eastern façade, southern façade);
- Block C (southern façade, eastern façade - partial);
- Block D (northern façade, western façade – partial, eastern façade - partial);
- Block E (northern façade, western façade, eastern façade – partial); and
- Block F (western façade – partial).

The specification of this enhanced façade is discussed in Section 10.6.3.

External Noise Levels

Figure 10.11 presents the calculated day time noise levels across the site with the development buildings in place. The contours are calculated for a height of 1.5m.

External noise levels within the vast majority of communal open spaces across the development site are within the recommended range of noise levels from ProPG of between 50 – 55 dB $L_{Aeq,16hr}$ as illustrated in Figure 10.13. 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.

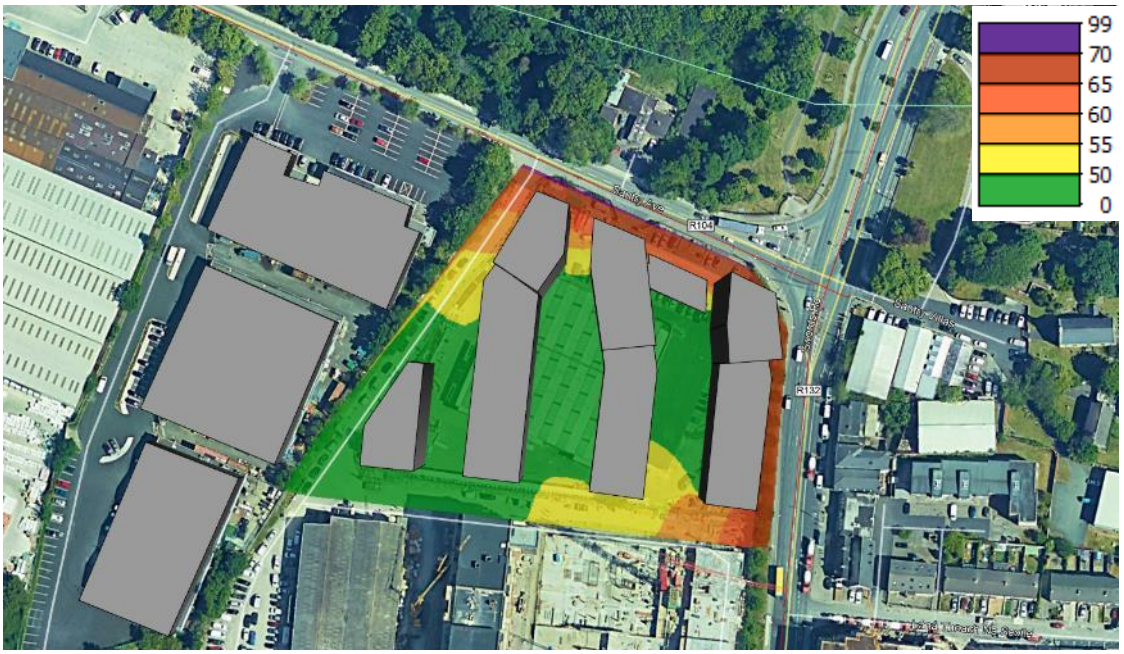


Figure 10.11: Predicted Noise Levels across External Areas (1.5m above ground)

Future Aircraft Noise Levels

Due to the location of the proposed development site, future aircraft noise levels have been reviewed in order to consider the potential for noise impacts on the development. The noise levels set out for Zone D have been determined not to pose a potential for noise impacts as the predicted worst case aircraft noise levels are sufficiently below prevailing noise levels across the development site, which is dictated by road traffic noise as presented in the above section.

10.6 Mitigation Measures

Mitigation measures for the construction phase are set out below in order to reduce potential impacts as far as practicable to within the adopted criteria for noise and vibration. These mitigation measures should be read in tandem with the specific noise mitigation measures in line with the DCC GPG for high risk sites, as presented in Appendix 10.1.

10.6.1 Construction Phase – Noise

The contract documents will clearly specify the construction noise criteria included in this chapter which the construction works must operate within. The Contractor undertaking the construction of the works will be obliged to take specific noise abatement measures and comply with the recommendations of BS 5228-1:2009+A1:2014 *Code of Practice for Noise and Vibration Control on Construction and Open Sites – Noise* and the *European Communities (Noise Emission by Equipment for Use Outdoors) Regulations, 2001*. These measures will ensure that:

- No plant used on site will be permitted to cause an ongoing public nuisance due to noise.
- The best means practicable, including proper maintenance of plant, will be employed to minimise the noise produced by on site operations.
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract.
- Compressors will be attenuated models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers.
- Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use;
- Any plant, such as generators or pumps that is required to operate outside of normal permitted working hours will be surrounded by an acoustic enclosure or portable screen.

BS 5228 -1:2009+A1 2014 includes guidance on several aspects of construction site practices, which include, but are not limited to: -

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

Detailed comment is offered on these items in the following paragraphs. Noise control measures that will be considered include the selection of quiet plant, enclosures and screens around noise sources, limiting the hours of work and noise and vibration monitoring, where required.

10.6.1.1 Selection of Quiet Plant

This practice is recommended in relation to static plant such as compressors and generators. It is recommended that these units be supplied with manufacturers' proprietary acoustic enclosures. The potential for any item of plant to generate noise will be assessed prior to the item being brought onto the site. The least noisy item should be selected wherever possible. Should a particular item of plant already on the site be found to generate high noise levels, the first action should be to identify whether or not said item can be replaced with a quieter alternative.

10.6.1.2 Noise Control at Source

If replacing a noisy item of plant is not a viable or practical option, consideration will be given to noise control "at source". This refers to the modification of an item of plant or the application of improved sound reduction methods in consultation with the supplier. For example, resonance effects in panel work or cover plates can be reduced through stiffening or application of damping compounds; rattling and grinding noises can often be controlled by fixing resilient materials in between the surfaces in contact.

Referring to the potential noise generating sources for the works under consideration, the following best practice migration measures should be considered:

- Where practical, site compounds will be located in excess of 30m from noise sensitive receptors within the site constraints. The use lifting bulky items, dropping and loading of materials within these areas should be restricted to normal working hours.
- For mobile plant items such as dump trucks, excavators and loaders, the installation of an acoustic exhaust and or maintaining enclosure panels closed during operation can reduce noise levels by up to 10dB. Mobile plant should be switched off when not in use and not left idling.
- For concrete mixers, control measures should be employed during cleaning to ensure no impulsive hammering is undertaken at the mixer drum.
- For all materials handling ensure that materials are not dropped from excessive heights, lining drops chutes and dump trucks with resilient materials.
- For compressors, generators and pumps, these can be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation.
- Demountable enclosures can also be used to screen operatives using hand tools and will be moved around site as necessary.
- All items of plant should be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures.

10.6.1.3 Screening

Screening is an effective method of reducing the noise level at a receiver location and can be used successfully as an additional measure to all other forms of noise control. Construction site hoarding will be constructed around the site boundaries as standard. The hoarding will be constructed of a material with a mass per unit of surface area greater than 7 kg/m^2 to provide adequate sound insulation.

In addition, careful planning of the site layout will also be considered. The placement of site buildings such as offices and stores will be used, where feasible, to provide noise screening when placed between the source and the receiver.

10.6.1.4 Liaison with the Public

A designated environmental liaison officer will be appointed to site during construction works. Any noise complaints should be logged and followed up in a prompt fashion by the liaison officer. In addition, where a particularly noisy construction activity is planned or other works with the potential to generate high levels of noise, or where noisy works are expected to operate outside of normal working hours etc., the liaison officer will inform the nearest noise sensitive locations of the time and expected duration of the noisy works.

10.6.1.5 Monitoring

Where required, construction noise monitoring will be undertaken at periodic sample periods at the nearest noise sensitive locations to the development works to check compliance with the construction noise criterion.

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

10.6.1.6 Project Programme

The phasing programme will be arranged so as to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. During excavation/ demolition or other high noise generating works are in progress on a site at the same time as other works of construction that themselves may generate significant noise and vibration, the working programme will be phased so as to **prevent unacceptable disturbance at any time.**

10.6.2 Construction Phase – Vibration

10.6.2.1 The vibration from construction activities will be limited to the values set out in Section 10.2. Magnitudes of vibration slightly greater than those in the table are normally unlikely to cause cosmetic damage, but construction work creating such magnitudes should proceed with caution. Limit values have been provided for soundly constructed residential and commercial properties.

10.6.3 Operational Phase – Noise

10.6.3.1 Additional Traffic on Adjacent Roads

During the operational phase of the development, noise mitigation measures with respect to the outward impact of traffic from the development are not deemed necessary.

10.6.3.2 Mechanical Services Plant

Taking into account that sensitive receivers within the development are much closer than off-site sensitive receivers, once the relevant noise criteria is achieved within the development it is expected that there will be no negative impact at sensitive receivers off site, and therefore no further mitigation required.

10.6.3.4 Inward Noise

As is the case in most buildings, the glazed elements and ventilation paths of the building envelope 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, noise intrusion via the wall construction will be minimal.

In this instance, the facades highlighted in Figure 10.12 and Figure 10.13 will be provided with glazing and ventilation that achieves the minimum sound insulation performances as set out in Table 10.22 and Table 10.23. Other facades in the development have no minimum requirement for sound insulation.

Mark-up	Octave Band Centre Frequency (Hz)						R_w
	125	250	500	1000	2000	4000	
RED	26	27	34	40	38	46	**37**
ORANGE	26	29	33	28	24	24	**33**

Table 10.22: Sound Insulation Performance Requirements for Glazing, SRI (dB)

The overall R_w and $D_{ne,w}$ outlined in this section are provided for information purposes only. The over-riding 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 10.22 and Table 10.23 or greater.

The following performance requirements apply to all ventilation paths from outside the building. This can be achieved by passive acoustic wall or window vents or via mechanical ventilation systems.

Octave Band Centre Frequency (Hz)						$D_{n,e,w}$
125	250	500	1000	2000	4000	
30	33	38	37	36	36	**38**

Table 10.23: Sound Insulation Performance Requirements for Ventilation, $D_{n,e,w}$ (dB)

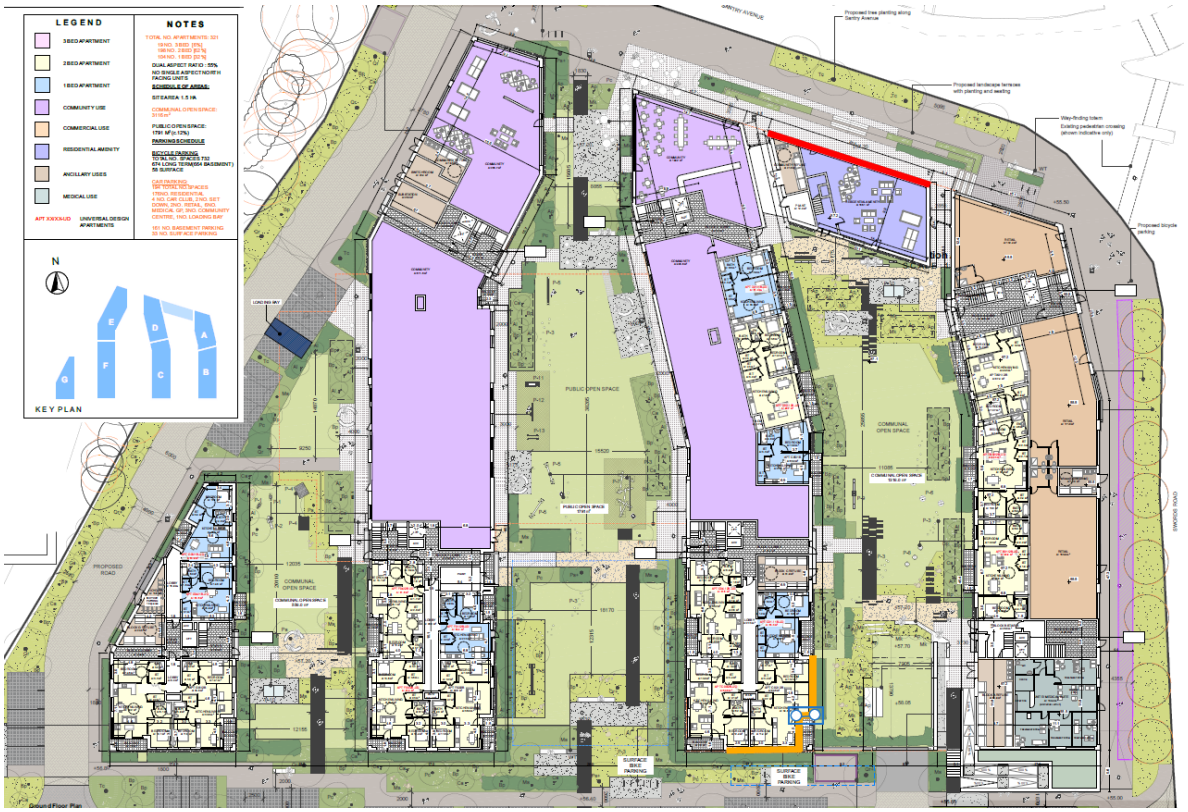


Figure 10.12: Façade Acoustic Requirements – Ground Floor

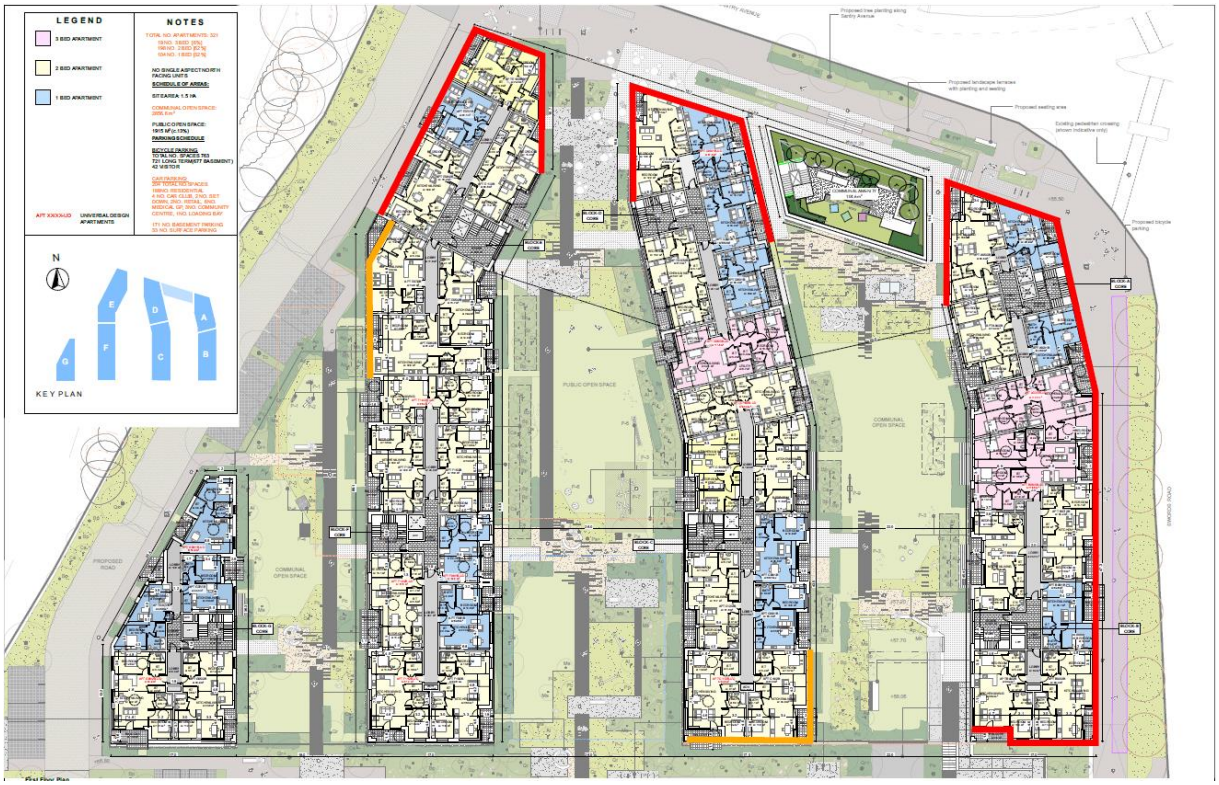


Figure 10.13: Façade Acoustic Requirements – First Floor to Seventh Floor

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 can be achieved through consideration of the proposed façade elements at the design stage. The calculated glazing and ventilation specifications are preliminary and are intended to form the basis for noise mitigation at the detailed design stage. Consequently, these may be subject to change as the project progresses.

10.6.4 Operational Phase – Vibration

No vibration mitigation measures are required applicable the operational phase.

10.7 Residual Impacts

10.7.1 Construction Phase

During the construction phase of the project there is the potential for significant and moderate impacts on nearby noise sensitive properties due to noise emissions from site activities. The application of binding noise limits, hours of operation, along with implementation of appropriate noise and vibration control measures, so that noise and vibration will have a ***negative***, ***moderate to significant*** and ***short-term*** impact on the surrounding environment.

10.7.2 Operational Phase

10.7.2.1 Additional Vehicular Traffic

The predicted change noise levels associated with additional traffic is predicted to be of imperceptible impact along the existing road network. In the context of the existing noise environment, the overall contribution of induced traffic is considered to be of ***neutral***, ***imperceptible*** and ***long-term*** impact to nearby residential locations.

10.7.2.2 Mechanical Plant

Assuming the operational noise levels do not exceed the adopted design goals in line with the relevant noise criteria, the resultant residual noise impact from this source will be of ***neutral***, ***imperceptible***, ***long term*** impact.

10.8 Cumulative Impacts

During the construction phase of the proposed development, construction noise on site will be localised and will therefore likely the primary noise source at the nearest noise sensitive receivers. There is a development currently under construction to the south of the proposed development. Should construction of both sites occur simultaneously there is potential for cumulative noise impacts at noise sensitive receivers equidistant from the sites.

In this scenario, it is recommended that liaison between construction sites is on-going throughout the duration of the construction phase. Contractors should schedule work in a co-operative effort to limit the duration and magnitude of

potential cumulative impacts on nearby sensitive receptors. Cumulative construction noise impacts are expected to be negative, significant and short-term at times of high activity on both sites.

The contractor will be required to control noise impacts associated with this development in line with the guidance levels included in Table 10.1 and follow the best practice control measures within BS 5228 -1.

With the above in mind, it is likely that the neighbouring development will be completed before construction commences on the subject development.

In the context of the operational phase, permitted developments are included in the traffic impact and therefore the potential for a cumulative impact has been assessed (and found to be negative, imperceptible to moderate, and long-term).

Any large scale future projects that are not yet proposed or permitted would also need to be the subject of EIA in turn, to ensure that no significant impacts resulting from noise and vibration will occur as a result of those developments.

10.9 Difficulties Encountered

No difficulties were encountered during the preparation of the EIAR chapter.

10.10 References

- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017);
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports – (EPA, 2022);
- BSI (1993). BS 7385: 1993 Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration;
- BS 4142: 2014: Methods for Rating and Assessing Industrial and Commercial Sound;
- BSI (2014). BS 5228-1:2009 +A1:2014 Code of Practice for noise and vibration control of construction and open sites - Part 1: Noise;
- BSI (2014). BS 5228-2:2009+A:2014 Code of Practice for noise and vibration control of construction and open sites - Part 2: Vibration;
- EPA (2020). EPA Maps [Online] Available from gis.epa.ie/EPAMaps;
- ISO (2016). ISO 1996-1:2016 Acoustics - Description, measurement and assessment of environmental noise. Part 1: Basic quantities and assessment procedures;
- UK Department of Transport (1998). Calculation of Road Traffic Noise;
- UKHA (2020). Design Manual for Roads and Bridges Sustainability & Environment Appraisal LA 111 Noise and Vibration Revision 2; and
- (IoA, 2017). Professional Practice Guidance on Planning & Noise (ProPG).

11.0. Material Assets: Built Services

11.1 Introduction

This chapter of the EIAR assesses and evaluates the likely impact of the proposed development on existing surface water and foul drainage and utility services in the vicinity of the site during both the construction and operational phases, as well as identifying the nature of any impacts and providing the necessary mitigation measures arising from the proposed development. The material assets considered in this chapter include Surface Water Drainage, Foul Drainage, Water Supply, Power, Gas and Telecommunications.

A detailed description of the proposed development can be found in Chapter 3 of this EIAR.

This chapter was prepared by both Laura McLoughlin BEng (Hons) CEng and Ryan Parkes BEng (Hons) MIEI of DBFL Consulting Engineers. Laura is an Associate with DBFL Consulting Engineers with over 15 years' experience as a civil engineer with particular expertise in infrastructure and road design.

Ryan Parkes is a Civil Engineer with DBFL Consulting Engineers and has over four years' experience within the industry. Ryan graduated from Technological University Dublin with a Bachelors in Civil Engineering. He has gained considerable knowledge and experience in drainage and road design within DBFL with the majority of his experience to date being focused upon the civil design of Large-scale Residential Developments (LRDs).

11.2 Assessment Methodology

- As part of assessing the likely impact of the proposed development, surface water runoff, foul drainage discharge and water usage calculations were carried out in accordance with the following guidelines;
- Irish Water Code of Practice for Water Infrastructure;
- Irish Water Code of Practice for Wastewater Infrastructure;
- Greater Dublin Strategic Drainage Study, (DCC 2005);
- Regional Code of Practice for Drainage Works, (DCC 2005);
- Dublin City Council Development Plan – 2022 – 2028.

Assessment of the potential impacts of the proposed development on existing built services in the vicinity of the site included:

- Review of Irish Water utility plans (foul drainage and water supply)
- Review of Dublin City Council utility plans (surface water drainage)
- Receipt of Confirmation of Feasibility (CoF) letter from Irish Water CDS23007437
- Review of ESB Network Utility Plans

- Review of Gas Networks Ireland Service Plans
- Review of EIR E-Maps
- Liffey Contracts topographical mapping
- GSI.ie Geological datasets

11.3 Receiving Environment (Baseline Scenario)

Dwyer Nolan Developments Ltd. wishes to apply for permission for a Large-Scale Residential Development (LRD) on this site, c. 1.5 hectares, located at the junction of Santry Avenue and Swords Road, Santry, Dublin 9. The development site is bounded to the north by Santry Avenue, to the east by Swords Road, to the west by Santry Avenue Industrial Estate, and to the south by the permitted Santry Place development (granted under Dublin City Council Ref.s. 2713/17 (as extended under Ref. 2713/17/X1), 2737/19 & 4549/22).

The proposed development provides for 321 no. apartments, comprised of 104 no. 1 bed, 198 no. 2 bed, & 19 no. 3 bed dwellings, in 4 no. seven to thirteen storey buildings, over basement level, with 3 no. retail units, a medical suite / GP Practice unit and community/arts & culture space, all located at ground floor level, as well as a one storey residential amenity unit, facing onto Santry Avenue, located between Blocks A & D.

Permission is sought for the demolition of the existing buildings on site (4,196.8m^2). Vehicular access to the proposed development will be via two proposed access points: (i) on Santry Avenue and (ii) off Swords Road, and as permitted under the adjoining development at Santry Place development (REF.2713/17).

Figure 11.1 – Site Location – Swords Road, Santry, Dublin 9.

11.3.1 Existing Surface (Storm) Water Infrastructure

There is an existing 225mm diameter public surface water sewer located on the Swords Road (R104) to the east of the site and Santry Avenue to the north of the site.

A surface water system was constructed within the previously approved mixed-use development (Planning Ref: 2713/17 & 2737/19) to the south of the proposed development. This system contains an attenuation system, hydrobrake and petrol interceptor on the outfall surface water sewer. This outfall sewer discharges to the existing 225mm diameter sewer located on Swords Roads as noted above. A connection to the public sewer has been made at the junction of the Swords Road with Schoolhouse Lane. This connection has been approved under Planning Ref: 2713/17 & 2737/19 and agreement with Dublin city Council.

Existing surface water infrastructure within the site boundary is currently unknown. Further investigatory work is to be undertaken to determine the presence of any private infrastructure and such will be removed/utilised if appropriate.

11.3.2 Existing Foul Water Infrastructure

There is an existing 300mm diameter public foul sewer located on Swords Road (R104) to the east of the proposed site.

As part of Irish Water Connection, reference: CDS19003221, a 225mm diameter foul sewer was constructed to connect the previously approved mixed-use development (Planning Ref: 2713/17 & 2737/19) to the public foul network. This connection has been approved by Irish Water, works completed and the sewer has been taken in charge. It is proposed to connect to the foul sewer constructed as part of the planning ref above within the site boundaries and therefore utilise this connection to the public foul network and cause minimal disruption to members of the public.

Existing foul water infrastructure within the proposed site boundary is currently unknown. Further investigatory work is to be undertaken to determine the presence of any private infrastructure and remove/utilise if appropriate.

11.3.3 Existing Potable Water Infrastructure

There is an existing 4" cast iron 1965 watermain in Santry Avenue to the north of the site. There is a 12" cast iron 1955 watermain and 100mm ductile iron 1996 watermain in Swords Road (R104).

Existing water infrastructure within the site boundary is unknown. Further investigatory work is to be undertaken to determine the presence of this infrastructure and removed/utilised if appropriate.

11.3.4 Existing ESB Infrastructure

An ESB Networks plan is included in Appendix 11-1 showing the location of existing electrical services in the vicinity of the site.

There is an MV/LV (10KV/20KV/400V/230V) underground cable route along the western boundary of the site. Santry Place Kiosk is on this route. This cable route continues under Santry Avenue and Swords Road. There are 38KV & higher voltage underground cable routes and LV (400V/230V) overhead lines in Santry Avenue and Swords Road.

11.3.5 Existing Telecoms Infrastructure

EIR network plans are included in Appendix 11-2 showing the location of telecommunications infrastructure in the vicinity of the site. Telecommunications infrastructure is located along Santry Avenue and Swords Road. There is an existing connection from Heiton Buckley Building Suppliers shown on the records.

11.3.6 Existing Gas Infrastructure

Gas Networks Ireland plans are included in Appendix 10-3 showing the location of gas distribution infrastructure in the vicinity of the site.

There is an existing 90 PE 25 mbar CP connection from Heiton Buckley Building Suppliers to an unknown size gas pipe in Swords Road. This pipeline then connects to a 200mm ST 19 bar transmission pipeline at junction of Swords Road and Santry Avenue.

11.4 Characteristics of the Proposed Development

The proposed development provides for 321 no. apartments, comprised of 104 no. 1 bed, 198 no. 2 bed, & 19 no. 3 bed dwellings, in 4 no. seven to thirteen storey buildings, over basement level, with 3 no. retail units, a medical suite / GP Practice unit and community/arts & culture space (total c.1,460sq.m), all located at ground floor level, as well as a one storey residential amenity unit, facing onto Santry Avenue, located between Blocks A & D.
The proposed development consists of the following:

Demolition of the existing building on site i.e. the existing Chadwicks Builders Merchants (c. 4,196.8m^2).

Construction of 321 no. 1, 2, & 3 bed apartments, retail units, medical suite / GP Practice, community/arts & culture space, and a one storey residential amenity unit in 4 no. buildings that are subdivided into Blocks A-G as follows:

Block A is a 7-13 storey block consisting of 51 no. apartments comprised of 22 no. 1 bed, 23 no. 2 beds & 6 no. 3 bed dwellings, with 2 no. retail units located on the ground floor (c. 132sq.m & c.172sq.m respectively). Adjoining same is Block B, which is a 7 storey block consisting of 38 no. apartments comprised of 6 no. 1 bed, 26 no. 2 bed, & 6 no. 3 bed dwellings, with 1 no. retail unit (c.164sq.m) and 1 no. medical suite / GP Practice unit located on the ground floor (c. 130sq.m). Refuse storage areas are also provided for at ground floor level.

Block C is a 7 storey block consisting of 53 no. apartments comprised of 14 no. 1 bed & 39 no. 2 bed dwellings. Adjoining same is Block D which is an 8 storey block consisting of 44 no. apartments comprised of 22 no. 1 bed, 15 no. 2 bed, & 7 no. 3 bed dwellings. Ground floor, community/arts & culture space (c. 583sq.m) is proposed in Blocks C & D, with refuse storage area also provided for at ground floor level.

Block E is an 8 storey block consisting of 49 no. apartments comprised of 7 no. 1 bed & 42 no. 2 bed dwellings. A refuse storage area, substation, & switchroom are also provided for at ground floor level. Adjoining same is Block F which is a 7 storey block consisting of 52 no. apartments comprised of 13 no. 1 bed & 39 no. 2 bed dwellings. Ground floor, community/arts & culture space (c.877sq.m) is proposed in Blocks E & F. A refuse storage area, bicycle storage area, substation, & switchroom are also provided for at ground floor level of Blocks E & F.

Block G is a 7 storey block consisting of 34 no. apartments comprised of 20 no. 1 bed & 14 no. 2 bed dwellings. A refuse storage area & bicycle storage area are also provided for at ground floor level.

Construction of a 1 storey residential amenity unit (c. 166.1sq.m) located between Blocks A & D.

Construction of basement level car park (c.5,470.8sq.m), accommodating 161 no. car parking spaces, 10 no. motorbike parking spaces & 672 no. bicycle parking spaces. Internal access to the basement level is provided from the cores of Blocks A, B, C, D, E, & F. External vehicular access to the basement level is from the south, between Blocks B & C. 33 no. car parking spaces & 58 no. bicycle parking spaces are also provided for within the site at surface level.

Public open space of c. 1,791sq.m is provided for between Blocks C-D & E-F. Communal open space is also proposed, located between (i) Blocks E-F & G, (ii) Blocks A-B & C-D, and (iii) in the form of roof gardens located on Blocks A, C, & F and the proposed residential amenity use unit, totalling c.2,986sq.m. The development includes for hard and soft landscaping & boundary treatments. Private open spaces are provided as terraces at ground floor level of each block and balconies at all upper levels.

Vehicular access to the development will be via 2 no. existing / permitted access points: (i) on Santry Avenue in the north-west of the site (ii) off Swords Road in the south-east of the site, as permitted under the adjoining Santry Place development (Ref. 2713/17).

The development includes for all associated site development works above and below ground, bin & bicycle storage, plant (M&E), sub-stations, public lighting, servicing, signage, surface water attenuation facilities etc.

The surface water management strategy for the proposed development is outlined in a separate document prepared by DBFL Consulting Engineers entitled “Engineering Services Report”. Also refer to Chapter 7 - Water of this EIAR for further information on the surface water infrastructure impacts and mitigation measures.

The surface water drainage from this development is proposed to discharge, following attenuation, via a new 225mm diameter surface water sewer to a manhole constructed as part of the previously approved mixed-use development (Planning Ref: 2713/17 & 2737/19) to the south of this development.

The location of the proposed connection will be on the existing 225mm surface water sewer constructed for the mixed-use development (Planning Ref: 2713/17 & 2737/19), after the installed hydrobrake and before the petrol interceptor. The petrol interceptor, which has been installed under the aforementioned planning reference, has been designed to accommodate the combined permitted discharge rate from both of this development and the development located to the south (Planning Ref: 2713/17& 2737/19). This proposed connection location will negate the requirement for any construction outside of the site boundary and minimise any disruption to the public.

Surface water runoff from the site’s road network and parking bays will be directed to a proposed surface water pipe network via the porous aggregates/ pavers beneath permeably paved road surfacing (providing an additional element of attenuation). Road gullies will be installed at low points on the permeable paving road surface in addition.

Extensive green and blue roofs will be provided at roof level and podium level and surface water run-off from the roofs of blocks A, B, C, D, E and F will be collected by slung drainage and directed to the attenuation system. Surface water

runoff from block G will be directed into the proposed surface water pipe network and then travel to the attenuation structure.

Surface water will pass through silt trap (catchpit) manholes prior to entering the attenuation system. The discharge rate from the proposed surface water drainage network will be controlled by a vortex flow control device (Hydrobrake or equivalent) and run-off contained in the associated underground attenuation tanks (Pluvial Cube or equivalent). Surface water discharge exiting the flow control device will pass through a by-pass fuel / oil separator sized to accommodate the combined permitted discharge rate from both of this development and the development located to the south (Planning Ref: 2713/17& 2737/19).

Surface water calculations are based on permissible site discharge rate of 5.6 l/s in accordance with the Greater Dublin Strategic Drainage Strategy (GDSDS). This results in a total attenuation volume required of approx. 300m³.

The surface water drainage network, attenuation storage and site levels are designed to accommodate a 100-year storm event (provision for 20% climate change included).

The Proposed surface water drainage network has been designed in accordance with the Greater Dublin Strategic Drainage Study (GDSDS), the Department of the Environment's Recommendations for Site Development Works for Housing Areas, the Department of the Environment's Building Regulations "Technical Guidance Document - Part H: Drainage and Waste Water Disposal" and BS EN 752: 2008 "Drain and Sewer Systems Outside Buildings" and Dublin City Council Development Plan 2022 - 2028

11.4.2 Proposed Foul Drainage Design

The foul sewerage from this development is proposed to discharge via a new 225mm diameter sewer to a manhole constructed as part of the previously approved mixed-use development (Planning Ref: 2713/17 & 2737/19) to the south of this development. This will negate the requirement for any construction outside of the site boundary and minimise any disruption to the public.

A Pre-Connection Enquiry was submitted to Irish Water CDS23007437 and a confirmation of feasibility received.

The proposed foul drainage network will comprise of a series of main sewers 150mm/225mm diameter in size. Foul sewage from apartment blocks A, B, C, D, E and F will be drained on separate systems via 150mm diameter pipes slung from the underside of basement roof slabs and adjacent to the basement walls. Service pipes from individual apartments will project through ground floor slabs and connect into the slung drainage system which in turn will connect by gravity to the proposed external drainage system.

Any surface water from the basement car park generated by incidental run-off only will drain through an underground system of collector pipes, gullies and ACO drains which in turn will drain through a petrol interceptor prior to discharging

into a pumping station located beneath the basement slab. This run-off will then be pumped to ground level and enter the gravity foul drainage system for the site.

The foul drainage network for the proposed development has been designed in accordance with the following guidance:

- Irish Water Code of Practice for Wastewater Infrastructure & Standard Details for Wastewater Infrastructure;
- Department of the Environment's Recommendations for Site Development Works for Housing Areas;
- Department of the Environment's Building Regulations "Technical Guidance Document Part H Drainage and Waste Water Disposal";
- BS EN 752: 2008 Drain and Sewer Systems Outside Buildings;
- IS EN 12056: Part 2 (2000) Gravity Drainage Systems Inside Buildings

A peak flow rate of 8.13l/s has been calculated using the EN752 method, which equates to a daily foul discharge volume of 955m³.

A BOD (Biochemical Oxygen Demand) loading (based on 60g per person per day) of 56.70kg has been calculated for the proposed development as outlined in the EPA Waste Water Treatment Manual.

11.4.3 Proposed Water Supply

It is proposed to form a connection to the existing 300mm diameter cast iron public watermain located on the Swords Road adjacent to the proposed site entrance to the southeast of the site.

All connections, valves, hydrants, meters etc. have been designed and are to be installed in accordance with Irish Water's Code of Practice / Standard Details and the Department of the Environment's Building Regulations "Technical Guidance Document Part B Fire Safety".

An average daily domestic demand of approx. 864.9m³/day has been calculated as outlined in Irish Water's Pre-Connection Enquiry Application Form.

A Pre-Connection Enquiry was submitted to Irish Water CDS23007437 and a confirmation of feasibility letter received.

Commercial properties will be individually metered.

11.4.4 Proposed ESB Infrastructure

Electricity supply for the proposed development will be taken from the existing ESB Network.

11.4.5 Proposed Telecoms Infrastructure

Existing EIR connection from Heiton Buckley Building Suppliers will be utilised for new development.

11.4.6 Proposed Gas Infrastructure

Gas supply for the proposed development (if required as part of the energy strategy) will be taken from the existing 90 PE 25 mbar CP connection.

11.5 Construction Impacts, Mitigation and Monitoring Measures

11.5.1 Construction Impacts

Power and water will be required during construction activities and servicing of the temporary site compound. The development site will be connected to the local electricity network system and mains water supply. Given the scale and transient nature of construction works, the power and water demand on the local electricity and mains water systems would not be considered significant and would not be anticipated to impact upon local power or water supply.

Telecommunications requirements during the construction phase will be provided using mobile phones / broadband. There would be no anticipated impacts to the local telecommunications system.

Foul water from staff welfare facilities generated during the construction phase will be collected on site in designated waste holding containers / port-a-loo units and emptied on a regular basis by a licenced waste contractor.

The installation of the utilities for the development will be conducted in parallel with the other services. This will mainly involve excavation of trenches to lay ducting, construction/installation of access chambers and backfilling of trenching. The trenching and backfilling works will be carried out in conjunction with the construction of the roads and footpaths throughout the scheme.

Connecting to ESB cable routes may lead to loss of connectivity to and / or interruption of the supply from the electrical grid to the surrounding areas. Any loss of supply will be managed by ESB Networks to minimise impact on neighbouring properties.

There may be a potential loss of connection to the Gas Networks Ireland infrastructure while carrying out works to provide service connections. This likely adverse impact may be characterised as a temporary, regionally short term, moderate impact.

Again, there may be potential loss of connection to the telecommunications infrastructure while carrying out works to provide service connections. This likely adverse impact may be characterised as a temporary, regionally short term, moderate impact. The site compound will require a power and telecommunications connection. This likely adverse impact will be temporary and negligible.

11.5.2 Construction Mitigation Measures

A detailed *"Construction Management Plan"* will be developed and implemented during the construction phase. Site inductions will include reference to the procedures and best practices as outlined in the "Construction Management Plan".

The construction works contractor shall liaise with the relevant utility providers prior to works commencing, with on-going consultation throughout the proposed development. Where new services are required, the construction works contractor shall apply to the relevant utility provider and adhere to the requirements outlined in the connection permit / licence.

The Contractor will be obliged to put measures in place to ensure that there are no interruptions to existing services unless this has been agreed in advance with the relevant service provider.

All works in the vicinity of utilities apparatus will be carried out in ongoing consultation with the relevant utility company or local authority and will be in compliance with any requirements or guidelines they may have.

Where new services or diversions to existing services are proposed, the Contractor will apply to the relevant utility company for a connection permit, where appropriate, and will adhere to their requirements.

Where possible, backup network supply to any services will be provided should the need for relocation or diversion or existing services be required. Otherwise, relocation or diversion works will be planned to incur minimal impact, with users notified in advance of any works.

Connections to the utility networks will be coordinated with the relevant utility provider and carried out by approved contractors.

11.5.2.1 Surface (Storm) Water Infrastructure

In accordance with the Greater Dublin Regional Code of Practice for Drainage Works, all sites are required to develop a drainage system which separates storm & foul water on site.

In addition to improving overall storm water quality following Dublin City Council sustainable urban drainage systems, SuDs protocols, there is also a requirement to reduce storm water runoff rates to pre-development levels.

In the event of groundwater being encountered during the construction phase, mitigation measures will include dewatering by pumping to an appropriate treatment facility prior to discharge. Other measures would include excluding contaminating materials such as fuels and hydrocarbons from sensitive parts of the site i.e. highly vulnerable groundwater areas.

Surface water pumped from excavations is to be directed to on-site settlement ponds. Surface water runoff from areas stripped of hardstanding and surface water collected in excavations will be directed to on-site settlement ponds where measures will be implemented to capture and treat sediment laden runoff prior to discharge of surface water at a controlled rate.

In order to mitigate against spillages contaminating the surrounding surface water and hydrogeological environments, all oils, fuels, paints and other chemicals shall be stored in a secure bunded hardstanding area. Refuelling and servicing of construction machinery will take place in a designated hardstanding area which is also remote from any surface water inlets (where not possible to carry out such activities off site).

Please refer to Chapter 7 of this EIAR “Water” for further mitigation measures associated with surface water during the construction stage.

11.5.2.2 Foul Infrastructure

All foul water infrastructure is under the control of Irish Water. The proposed development will be serviced by a new separate internal foul network for the proposed development. The proposed development will discharge to sewer constructed as part of the previously approved mixed-use development (Planning Ref: 2713/17 & 2737/19) to the south of this development as outlined above.

The construction compound will include adequate staff welfare facilities including foul drainage and potable water supply. Foul drainage discharge from the construction compound will be removed off site to a licensed facility until a connection to the public foul drainage network has been established.

In order to reduce the risk of defective or leaking sewers, all new sewers should be laid in accordance with Irish Water standards, pressure tested and CCTV surveyed to ascertain any possible defects.

It is envisaged that the development would take place and be occupied over a reasonable time period, and therefore the downstream foul sewerage system (foul sewer network and wastewater treatment facility) would be gradually loaded.

11.5.2.3 Potable Water Infrastructure

All potable water infrastructure is under the control of Irish Water. It is proposed to connect to the existing 300mm diameter cast iron public watermain located on the Swords Road adjacent to the proposed site entrance to the southeast of the site.

The construction compound's potable water supply shall be protected from contamination by any construction activities or materials.

Where possible backup network supply to any services will be provided should the need for relocation or diversion of existing services be required, otherwise relocation or diversion works will be planned to incur minimal impact, with users notified in advance of any works.

11.5.2.4 Electrical Supply

Contractor to prepare a Method Statement detailing proposals for works in the vicinity of existing utilities (method statement to be agreed with PSDP).

Contractor to locate and record all services on site prior to commencement of excavations (including but not limited to a GPR utility survey along Swords Road and slit trench investigation to confirm the location of electrical infrastructure).

Connections to the existing electrical networks will be coordinated with the relevant utility provider and carried out by approved contractors.

Contractor to comply with HSA Code of Practice for Avoiding Danger from Underground Services. Relocation, if required, of existing overhead ESB lines will be fully coordinated with ESB Networks to ensure interruption to the existing electricity network is minimized (e.g. agreeing electricity outage to facilitate relocation of cables).

11.5.2.5 Gas Supply

Contractor to prepare a Method Statement detailing proposals for works in the vicinity of existing utilities (method statement to be agreed with PSDP).

Contractor to locate and record all services on site prior to commencement of excavations (including but not limited to a GPR utility survey along Swords Road and slit trench investigation to confirm the location of existing gas infrastructure).

Connections to the existing gas networks will be coordinated with the relevant utility provider (e.g. agreeing outage to facilitate connection) and carried out by approved contractors. Contractor to comply with HSA Code of Practice for Avoiding Danger from Underground Services.

11.5.2.6 Telecommunications

Contractor to prepare a Method Statement detailing proposals for works in the vicinity of existing utilities (method statement to be agreed with PSDP).

Contractor to locate and record all services on site prior to commencement of excavations (including but not limited to a GPR utility survey along Swords Road and slit trench investigation to confirm the location of existing telecommunications infrastructure).

Connections to the existing telecoms networks will be coordinated with the relevant utility provider (e.g. agreeing outage to facilitate connection) and carried out by approved contractors. Contractor to comply with HSA Code of Practice for Avoiding Danger from Underground Services.

11.6 Operational Impacts, Mitigation and Monitoring Measures

11.6.1 Operational Impacts

Potential operational phase impacts on the water infrastructure are noted below:

- Accidental hydrocarbon leaks and subsequent discharge into piped surface water drainage network (e.g. along roads and in hardstanding areas);
- Increased impermeable surface area will reduce local ground water recharge and potentially increase surface water runoff (if not attenuated to greenfield runoff rate);
- Increased discharge to foul drainage network (Daily Foul Discharge Volume = approx. 955m^3);

- Increased potable water consumption (Average Daily Domestic Demand = approx. 144.6m³).

Implementation of the mitigation measures described in this report will prevent and minimize the potential impacts of this interaction.

11.6.1.1 Surface Water

During the operational phase of the works, the surface water drainage has been designed to maintain the flows from the site at the pre-construction run-off rates.

11.6.1.2 Foul Water

The impact of the operational phase of the proposed development on the foul drainage network will be the increased flows to the foul network. Irish Water have confirmed in the pre-connection response that the existing drainage network can accommodate the proposed development subject to upgrades.

11.6.1.3 Watermains

The impact of the operational phase of the proposed development on the water supply network will be the increased demand on the local system. Irish Water have confirmed in the pre-connection response that the existing watermain network can accommodate the proposed development.

11.6.1.4 Power, Gas & Telecommunications

The impact of the operational phase of the proposed development on the power supply network will be the requirement for an Electrical Diversified Load.

The impact of the operational phase of the proposed development on the gas supply will be the requirement for a Gas diversified load to accommodate the development of the lands.

The impact of the operational phase of the proposed development on the telecommunications network will be to increase the demand on the existing network.

On completion of the construction phase no further mitigation measures are proposed in relation to the electrical, gas and telecommunications infrastructure.

11.6.2 Operational Mitigation Measures

Please refer to Chapter 7 of this EIAR "Water" for mitigation measures associated with the surface water treatment. All new drainage lines (foul and surface water) will be pressure tested and will be subject to a CCTV survey to identify any possible defects prior to being made operational.

Chapter 7 includes the mitigation measures associated with the surface water system for the development.

Water conservation methods such as the use of low flush toilets and low flow taps should be incorporated to reduce water volumes and related treatment and abstraction costs of the development. Similarly, water conservation methods would reduce the loading on the foul sewer network. As part of the development, a number of different SuDS measures are proposed to minimise the impact on water quality and quantity of the runoff and maximise the amenity and biodiversity opportunities within the site.

The measures detailed below have been designed to take account of potential percolation but have not been incorporated into any storage calculations. This will result in additional storage being available in extreme events.

The proposed SuDS measures will include a combination of Source Control, Site Control and Regional Control measures as part of a Management Train whereby the surface water is managed locally in small sub-catchments rather than being conveyed to and managed in large systems further down the catchment. The combination of SuDS measures will maximise the potential for surface water interception, reducing the impact on the existing surface water drainage network. The proposed techniques will offer a high level of treatment processes and nutrient removal of the turnoff, particularly during the "first flush".

The proposed development is located within an area designated for the type of development proposed. As such the services pertaining to the development are required to facilitate the proposed scheme. It is not possible to not provide the services required. Notwithstanding this, the potable water, foul and stormwater services have all been designed in accordance with the requirements of the various stake holders, notable, Irish Water for the foul and potable water utilities and Dublin City Council for the surface water services.

11.6.2.1 ESB Infrastructure

ESB will be engaged at an early stage to ensure any potential issues with utility connections are reviewed and mitigated as early in the process as possible. ESB will not engage with design process until such time as planning has been approved and scheme name and numbering has been approved.

The proximity to an existing ESB sub-station ensures access to MV network which avoids the need for extensive network upgrades and infrastructure.

11.6.3 Operational Monitoring

All internal potable water and drainage services within the proposed development will be monitored by the local authority / management firm and their maintenance personnel will routinely inspect and carry out maintenance as required. The external potable water and foul drainage connections to the public system will be maintained by Irish Water. The public surface water drainage connections and sewers will be maintained by Dublin City Council.

The electricity network will be monitored by ESB networks. Telecoms will be monitored by EIR and Gas Networks Ireland will monitor the existing gas network.

11.7 Residual Impacts

11.7.1 Construction Phase

Implementation of the measures outlined in above will ensure that the potential impacts of the proposed development on the site's material assets do not occur during the construction phase and that any residual impacts will be short term.

11.7.2 Operational Phase

The demand on power supply, gas supply and telecommunications supply will all increase due to the development of the lands.

11.7.2.1 Surface (Storm) Water Infrastructure

The potential impacts of the proposed development are such that the requirement to attenuate the subject site to greenfield run-off rates will ensure that during extreme storm events the surface water from the development is limited to the greenfield run off rate in accordance with the GDSDS and Dublin City Council requirements. The use of sustainable urban drainage features will aid in improving overall storm water quality prior to ultimate discharge. Please refer to DBFL Engineering Services Report 230146-X-Z-X-XXX-RP-DBFL-CE-0001 for further details.

11.7.2.2 Foul Infrastructure

The potential impacts on the local and regional foul drainage system are that the proposed development would reduce capacity in the public sewer. However, A condition as per Irish Water confirmation of feasibility letter states that's there are capacity issues within the existing network and that upgrades works are required. Please refer to DBFL Engineering Services Report 230146-X-Z-X-XXX-RP-DBFL-CE-0001 for confirmation of feasibility letter.

11.7.2.3 Potable Water Infrastructure

The potential impacts for the local public potable water are that the proposed development will reduce the capacity in the public main. However, Irish Water have confirmed in Confirmation of Feasibility and Statement of Design Acceptance that there is sufficient capacity within the Irish Water network to enable the development however, a new section of watermain will need to be laid to facilitate connection. Please refer to DBFL Engineering Services Report 230146-X-Z-X-XXX-RP-DBFL-CE-0001 for further details.

11.7.2.4 ESB Infrastructure

Potential impacts for ESB are impacts on existing network capacity and potential issues with current harmonics if heat pumps are selected as energy source.

11.7.2.5 Telecoms Infrastructure

Potential impact for telecoms is considered to be negligible.

11.8 'DO NOTHING' Impact

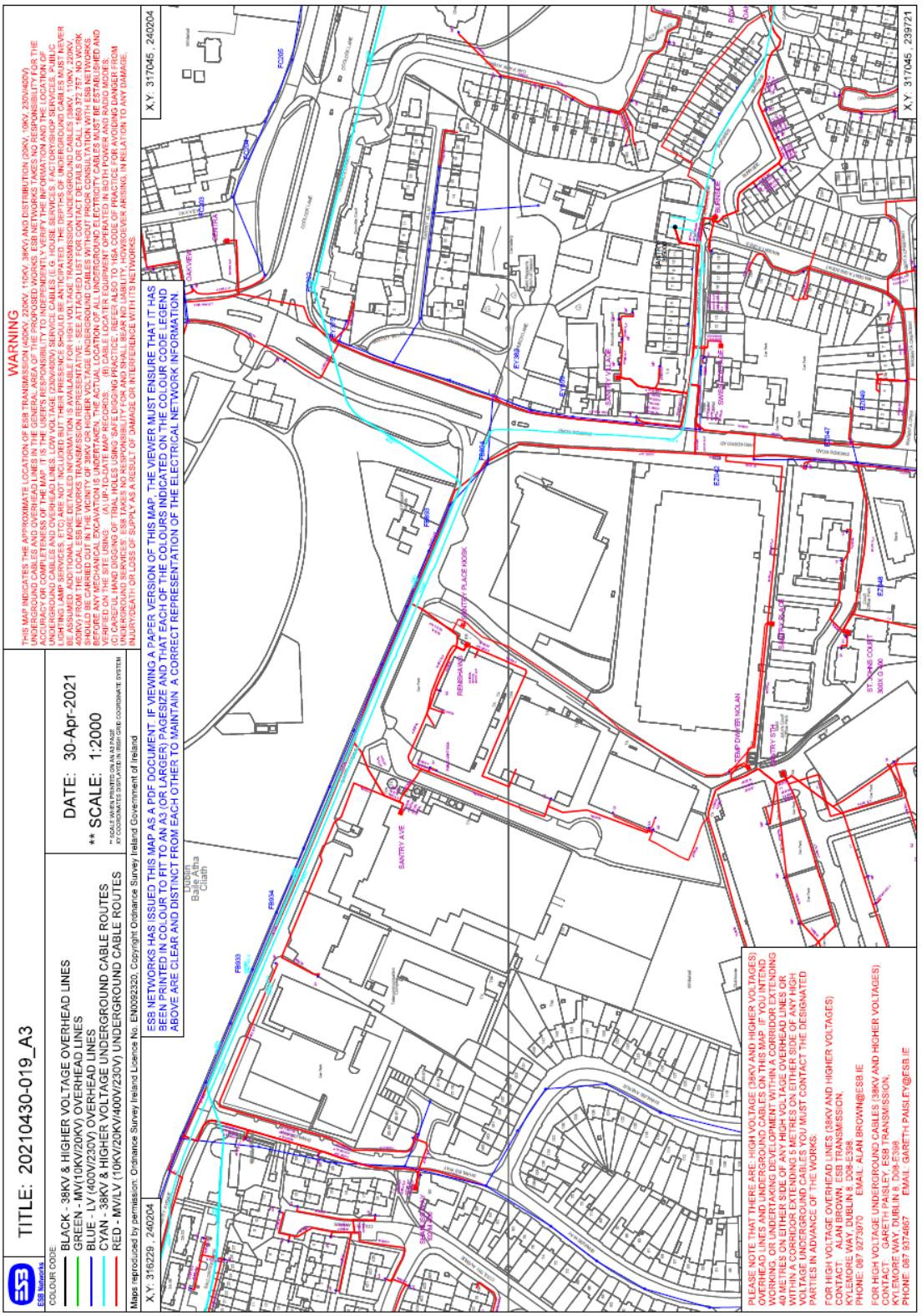
In the "do-nothing" scenario the proposed site would not be redeveloped and therefore there would be no adverse impacts to the foul, stormwater and potable water system.

There are no predicted impacts on these material assets should the proposed development not proceed.

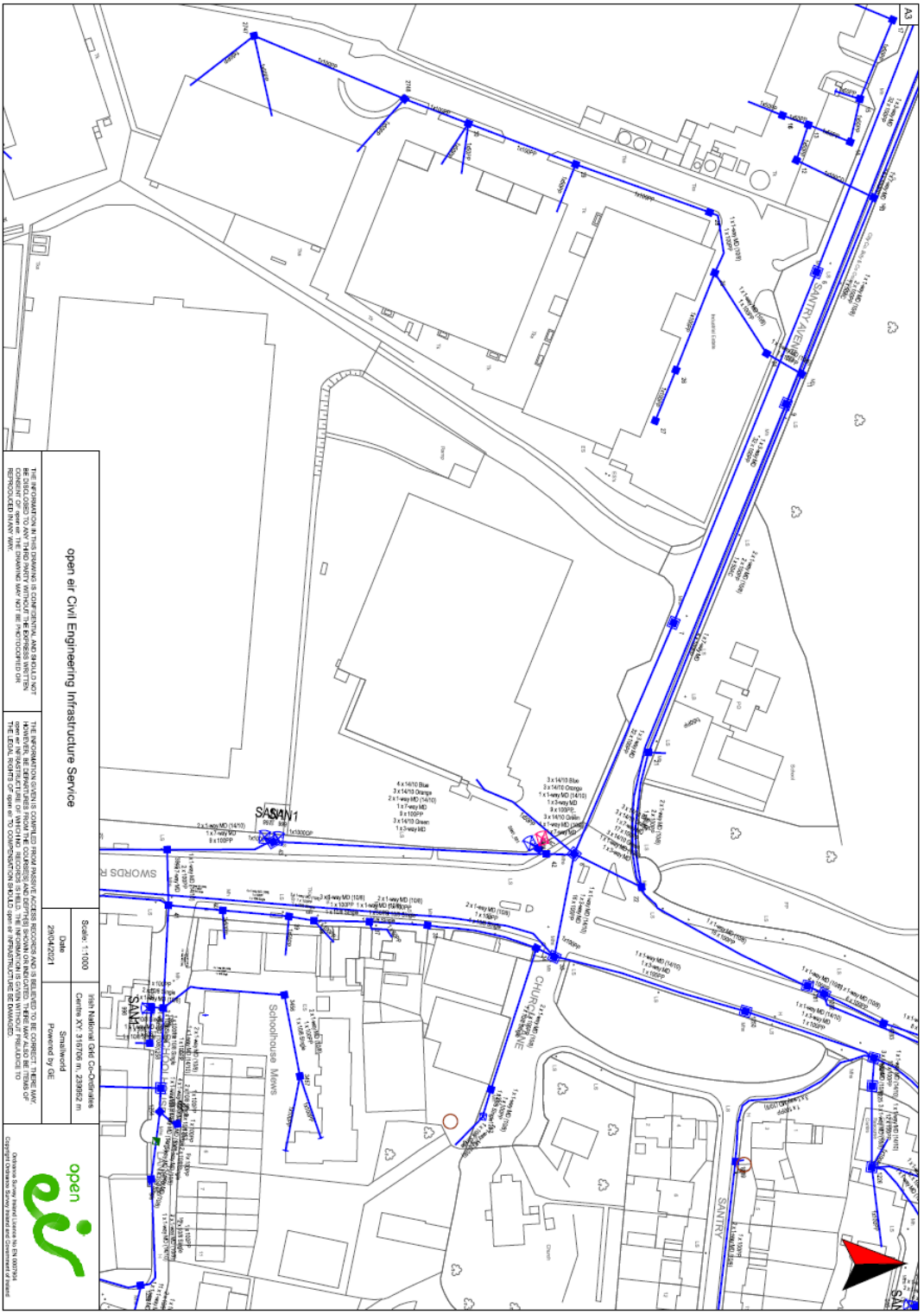
11.9 Reference List

The baseline environment and the assessment of the development in this chapter was described based on the information collected from the sources mentioned in Section 11.2.

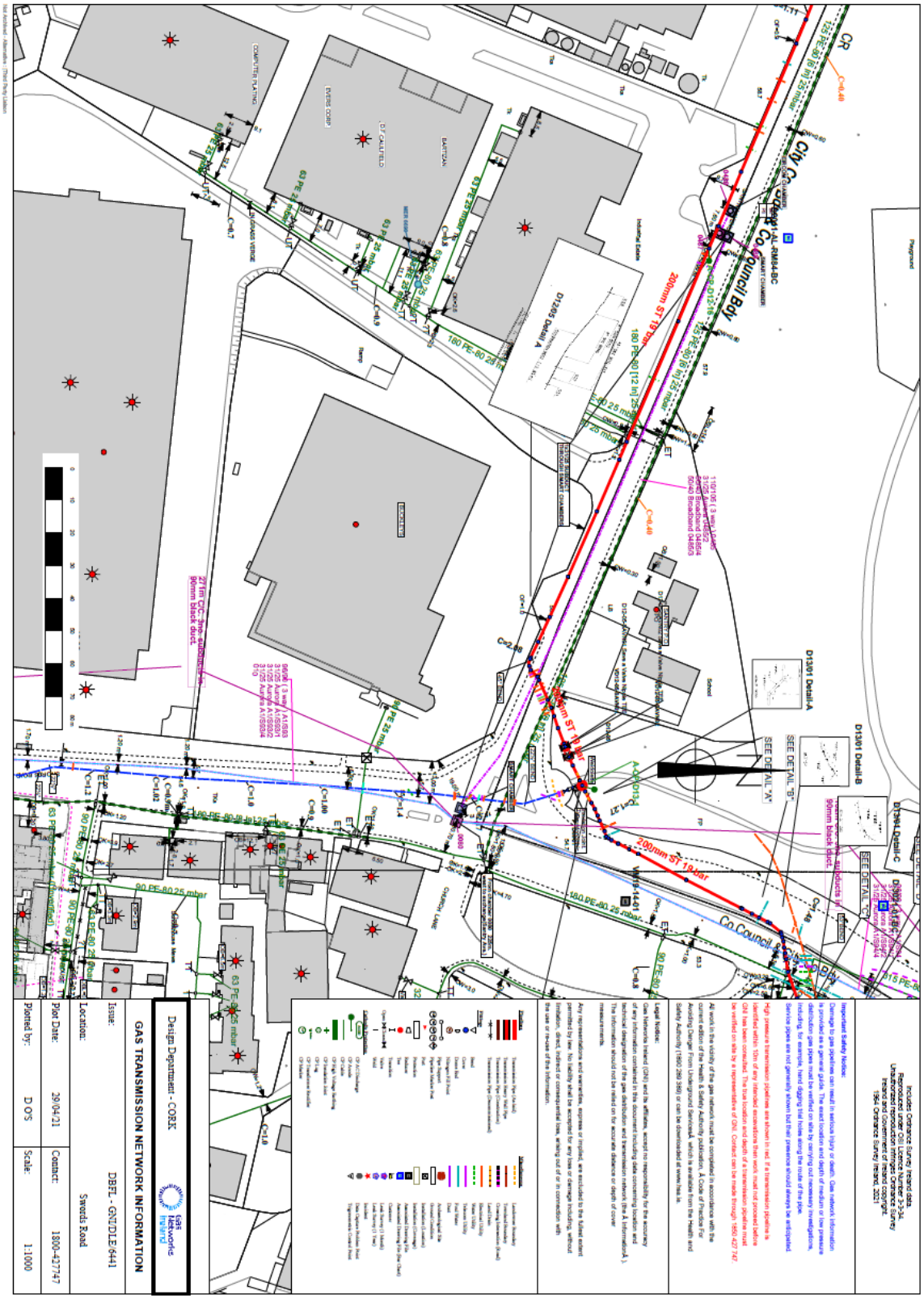
Appendix 11.1: ESB Networks Plan



Appendix 11.2: EIR Networks Plan



Appendix 11.3: Gas Network Ireland Plan



12.0 Material Assets: Transportation

12.1 INTRODUCTION

This section of the report assesses and evaluates the likely impact of the proposed development on the existing transportation system in the vicinity of the site, as well as identifying proposed mitigation measures to minimise any identified impacts arising from the mixed use development at Santry Avenue, Dublin 9.

The material assets considered in the traffic section include pedestrian, bicycle, public transport (bus, heavy Rail) infrastructure and associated services in addition to the local road network and associated junction nodes.

This chapter was prepared by both Thomas Jennings BEng (Hons) MSc MIEI CMILT MIHT and Daniel Gill BEngTech BE(Hons) MIEI of DBFL Consulting Engineers. Thomas is a Director with DBFL Consulting Engineers with 27 years' experience as a traffic engineer and transport planner with particular expertise in network management and design. Thomas currently leads the Transportation section within DBFL.

Daniel Gill is a Transportation Engineer with DBFL Consulting Engineers and has over four years' experience within the industry. Daniel graduated from Technological University Dublin with a Bachelors in Civil Engineering. He has gained considerable knowledge and experience in transport planning and design within DBFL with the majority of his experience to date being focused upon the transport assessments of Large-scale Residential Developments (LRDs).

12.2 STUDY METHODOLOGY

The purpose of this assessment is to quantify the existing transport environment and to detail the results of assessment work undertaken to identify the potential level of transport impact generated as a result of the proposed mixed use development. The scope of the assessment covers transport and sustainability issues including vehicular access and pedestrian, cyclist and public transport connectivity. Recommendations contained within this report are based on existing and proposed road layout plans, site visits, traffic observations and junction vehicle turning count data. Our methodology incorporated a number of key inter-related stages, including;

- **Site Audit:** A site audit was undertaken to quantify existing road network characteristics and identify local infrastructure management arrangements, in addition to establishing the level of accessibility to the site in terms of walking, cycling and public transport. An inventory of the local road network was also developed as this stage of the assessment.

- **Preplanning Meeting:** A preplanning meeting was undertaken with officers of Dublin City Council including representatives of the Transport Planning Department.

- **Traffic Counts:** Junction turning counts were undertaken and analysed with the objective of establishing local traffic characteristics in the immediate area of the proposed mixed use development.

- **Trip Generation:** A trip generation exercise has been carried out to establish the potential level of vehicle trips generated by the proposed mixed use development.

- **Trip Distribution:** Based upon existing traffic characteristics and anticipated travel patterns of the proposed mixed use development, a trip distribution exercise has been undertaken to assign site generated trips across the local network.

- **Network Analysis:** Further to quantifying the predicted impact of vehicle movements across the local road network for the adopted site access strategy more detailed computer simulations have been undertaken to assess the operational performance of key junctions in the post development 2027, 2032 and 2042 development scenarios.

The assessment of effects of the proposed development on material assets are assessed in terms of quality (positive, neutral or negative effects), significance (imperceptible, not significant, slight, moderate, significant, very significant or profound effects), extent, context, probability (likely, unlikely effects) and duration (temporary, short term, long term or permanent effects) in line with the criteria set out in Table 3.3 Description of Effects of the Environmental Protection Agency *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports – Draft (August 2017)*.

12.3 THE EXISTING RECEIVING ENVIRONMENT (BASELINE SITUATION)

12.3.1 Site Location

The proposed development is located to the south of R104 Santry Avenue Road corridor and west of R132 Swords Road in Santry (approximately 6.5km north of Dublin City Centre). The western boundaries are formed by existing commercial buildings and southern boundary is formed by phase 2 and phase 3 development. The general location of the subject site in relation to the surrounding road network is illustrated in Figure 12.1 below whilst Figure 12.2 indicatively shows the full extent of the subject site lands.

Figure 12.1: Site Location (Source: Google Maps)

Figure 12.2: Indicative Site Boundary (Source: Google Maps)

12.3.2 Existing Transportation Infrastructure

The subject site is adjacent to the R132 Swords Road corridor and will post construction benefit from having site accesses onto both (i) the R132 Swords Road (Left In-Left Out) and (ii) the R104 Santry Avenue. Travelling northbound from the subject site, the R132 Swords Road continues towards Swords and Balbriggan to the north and also allows access to the M50/M1 motorway via Junction No. 2. Travelling southbound from the subject site along the R132 Swords Road access is provided to Whitehall, Drumcondra and southwards to Dublin City Centre via the N1 corridor. Travelling east along the R104 corridor, the R104 Santry Avenue joins the R132 Swords Road whereas travelling westwards it connects the site with Ballymun and Finglas as well as M50 via Junction 4 at Ballymun.

The R132 Swords Road is subject to a speed limit of 50kph with street lighting available on both sides of the road. In the vicinity of the subject site pedestrians can benefit from the provision of footways on both sides of the carriageway, in addition to the pedestrian crossing facilities provided as part of the traffic signal controls at the R132 Swords Rd / R104 Santry Avenue Junction (Figure 12.3).

Figure 12.3: Pedestrian Facilities along Swords Road (Southbound)

The R104 Santry Avenue is subject to a speed limit of 50kph with street lights on one side of the road. Footpaths are provided on both sides of the road with signal-controlled pedestrian crossing (60m to the west of the existing Chadwick's Access) in close proximity of the subject site exiting entrance, in addition to the pedestrian crossing provided at Swords Road/Santry Avenue Junction.

Figure 12.4: Pedestrian Crossing at Swords Road/Santry Avenue Junction

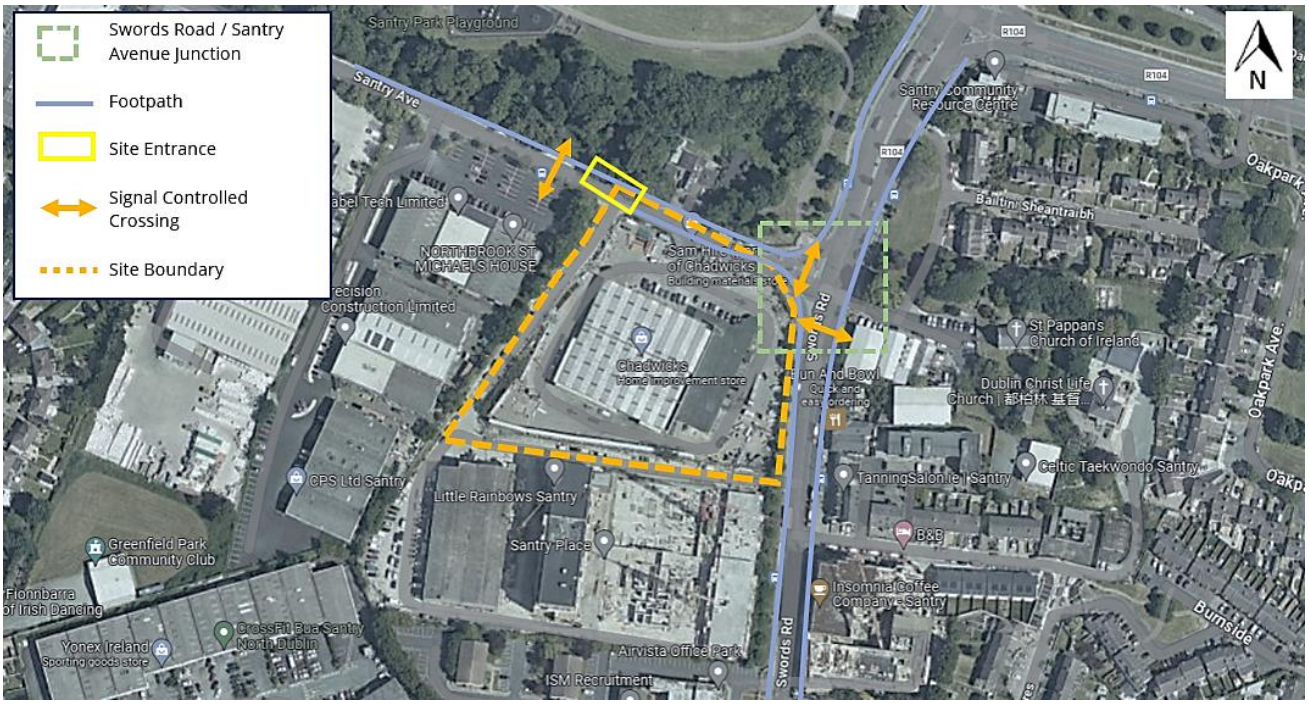


Figure 12.5: Pedestrian Crossing at Swords Road/Santry Avenue Junction

Cycle lanes are provided on both sides of R132 Swords Road corridor north of the Swords Road/ Santry Avenue signalised junction whereas no dedicated cycle facilities are currently provided towards the south of the junction along the R132 corridor. However, southbound cyclists along the R132 Swords Road corridor can benefit from the use of a bus lane though, whilst northbound cyclists along this corridor must share the road carriageway with vehicular traffic.

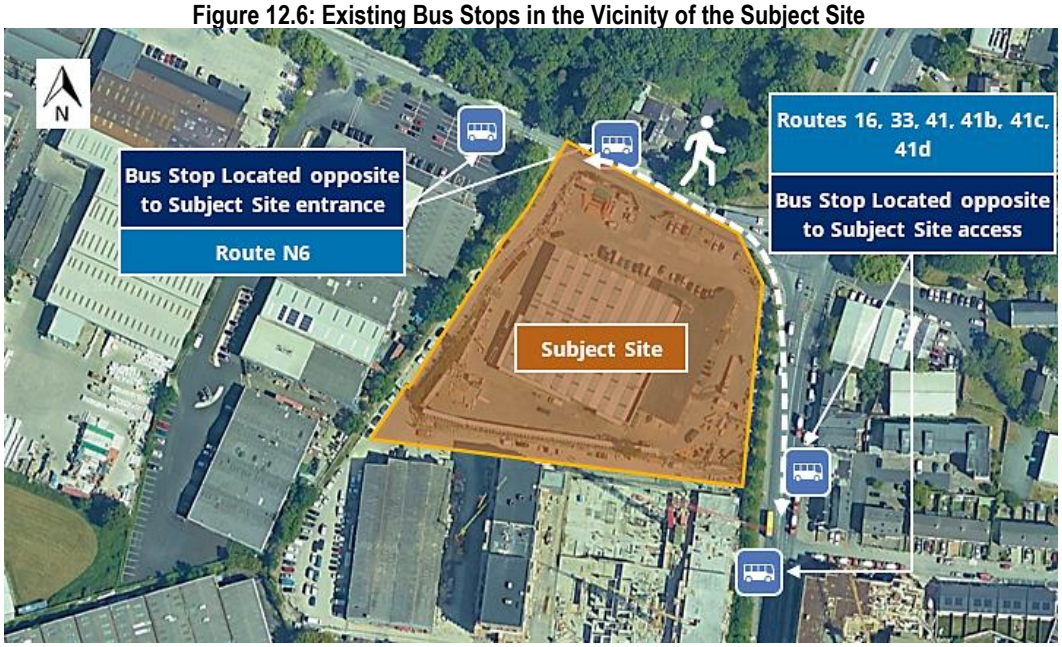
12.3.4 Existing Public Transport – Bus

Dublin Bus currently operates six services in the vicinity of the subject site. These routes provide access to destinations such as Dublin Airport, Dublin City Centre, Swords and Balbriggan. An additional route between Finglas and Kilbarrack is operated by Go Ahead Ireland. **Table 12.1** summarises the current no. of buses per day operating on each route while **Figure 12.6** presents the location of the nearest bus stop to the site entrance.

Operator	Route	Route Description	No. of Services		
			Mon - Fri	Sat	Sun
Dublin Bus	16	Dublin Airport – Ballinteer (Kingston)	86	81	63
		Ballinteer (Kingston) – Dublin Airport	88	83	65
	33	Lower Abbey St – Balbriggan	22	14	12
		Balbriggan – Lower Abbey St	25	14	12
	41	Lower Abbey St – Swords Manor	61	58	48
		Swords Manor – Lower Abbey St	68	56	53
	41b	Lower Abbey St – Rolestown	5	4	3
		Rolestown – Lower Abbey St	4	4	2
	41c	Lower Abbey St – Swords Manor	43	42	28
		Swords Manor – Lower Abbey St	50	41	29
	41d	Lower Abbey St – Swords Business Park	2	-	-
		Swords Business Park – Lower Abbey St	2	-	-
Go Ahead	N6	Finglas to Kilbarrack	106	98	56
		Kilbarrack to Finglas	106	99	56

Table 12.1: Existing Bus Services by No. of Buses per Day (Source: Transport for Ireland)

Figure 12.6: Existing Bus Stops in the Vicinity of the Subject Site



12.3.5 Proposed Transportation Infrastructure

The subject site lies within the "Dublin North Central Sector" as defined by the 2022 Greater Dublin Area Cycle Network Plan. This sector "extends between the Malahide Road to the east, the M50 motorway to the north, Finglas to the west and the North Circular Road to the South." Figure 12.7 below displays the proposed cycle routes within the vicinity of the subject site.

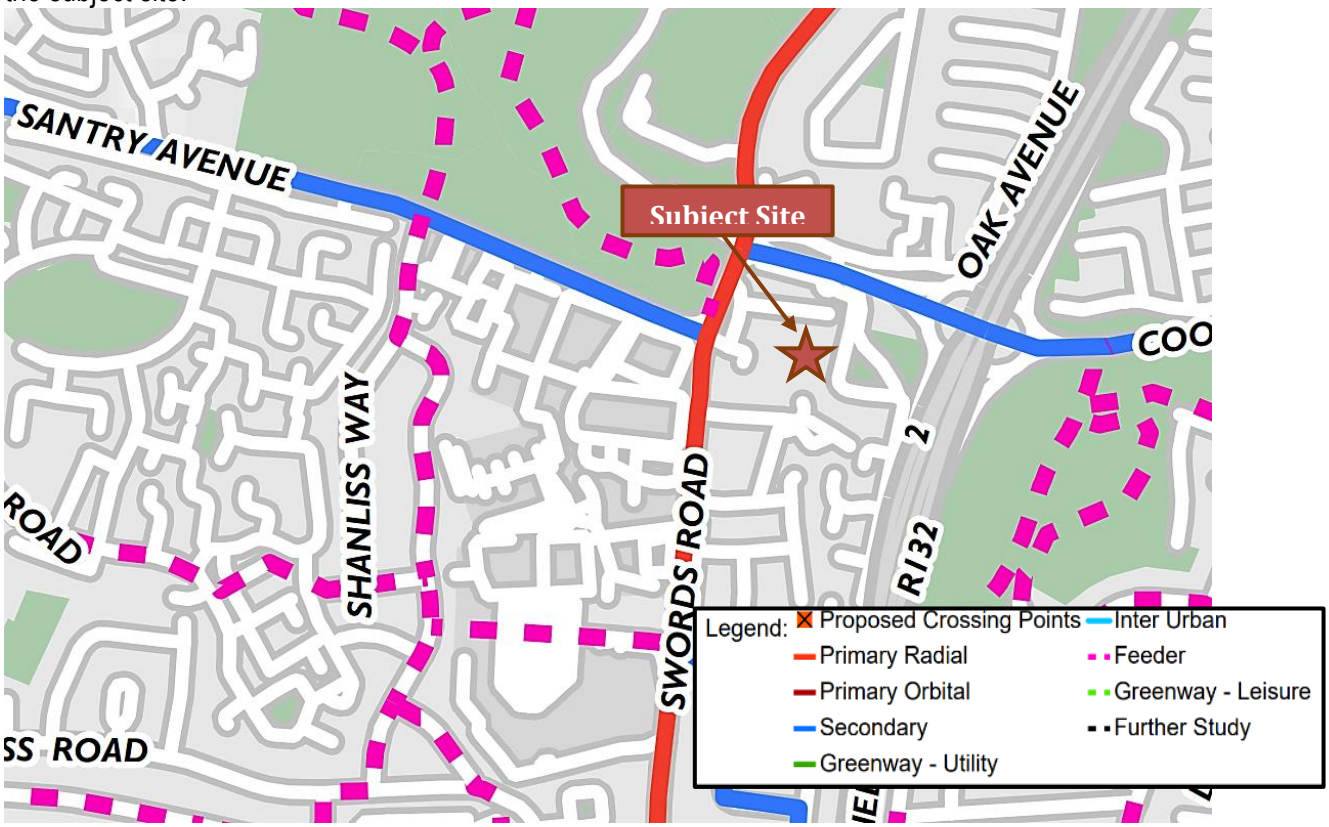


Figure 12.7: 2022 GDA Cycle Network Proposals (Source: 2022 GDA Cycle Network Plan)

The proposed development site is also ideally located to benefit from the enhanced accessibility levels that will be delivered by the BusConnects proposals. The subject site will be directly serviced by the following BusConnects routes;

- **A Spine, Branch A2:** Airport – City Centre – Ballinteer - Dundrum
- **A Spine, Branch A4:** Swords – City Centre – Tallaght
- **D Spine, Branch D4:** Swords Road – City Centre – Clondalkin
- **Orbital Route N6:** Finglas – Santry – Coolock – Donaghmede

- **Radial Route 22:** Glen Ellan road – River Valley – City Centre

A summary of the frequency at which these routes operate is presented below in Table 12.2. Figure 12.8 below illustrates the potential future bus service provision in the vicinity of the subject site as detailed within the BusConnects network redesign.

Route No.	Description	Frequency		
		Mon - Fri	Sat	Sun
A2	Airport – City Centre – Ballinteer - Dundrum	12-15	15-20	20-30
A4	Swords – City Centre – Tallaght	12-15	15-20	20-30
D4	Swords Road – City Centre – Clondalkin	30	30-40	40-60
N6	Finglas – Santry – Coolock – Donaghmede	10	10-15	15-20
22	Glen Ellan road – River Valley – City Centre	15	15-20	20-30

Table 12.2: Proposed BusConnects Service Frequency (In minutes)

Figure 12.8: Proposed Bus Network at Subject Site (Source: BusConnects)

In relation to the subject site, the proposed development lies immediately adjacent to Swords to City Centre Core Bus Corridor Scheme as illustrated in **Figure 12.9** overleaf. The corridor will commence south of Swords at the Pinnock Hill Junction, travelling in a southerly direction along the R132 Swords Road past Airside Retail Park, Dublin Airport and Santry Park. The route will continue on the R132 past Santry Demesne, where the Swords Road joins the R104 at Coolock Lane.

The route will continue on the R132 in a southerly direction through Santry village. It will continue along the Swords Road past Whitehall to Griffith Avenue. The route will follow Drumcondra Road Upper past the DCU St Patrick's Campus to the river Tolka. It will continue through Drumcondra, on Drumcondra Road Lower to Binns Bridge on the Royal Canal. From there it will continue on Dorset Street Lower as far as Eccles Street, from where it will continue on Dorset Street Upper to North Frederick Street. The Statutory Planning Application for the Swords to City Centre Core Bus Corridor Scheme has been submitted to An Bord Pleanála and is now at the formal statutory public consultation period.

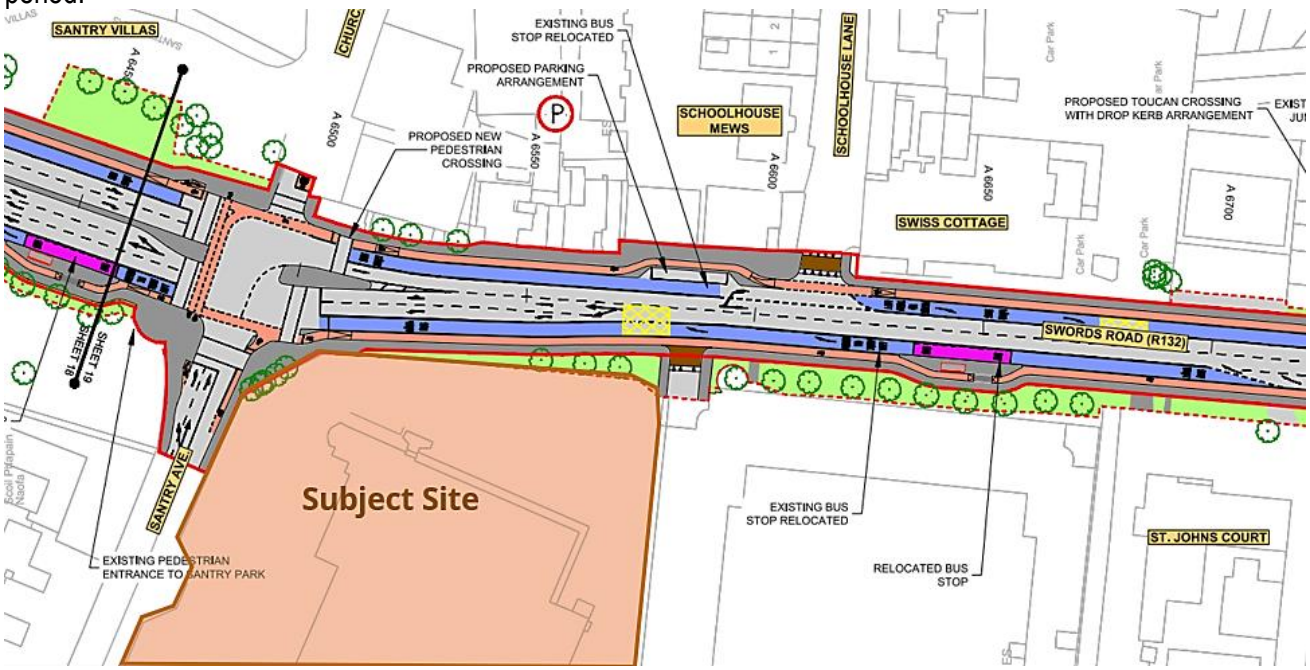


Figure 12.9: Swords to City Centre Core Bus Corridor Scheme (Source: BusConnects)

The Emerging Preferred Route of Bus Connects Swords-City Centre Corridor illustrates that the site does not cause any hindrance to the proposed corridor. It also shows improved pedestrian and Cycle facilities as well as new bus stop that will be provided adjacent to the proposed site entrance along Swords Road (as being delivered by the neighbouring permitted scheme (Ref. 2713/17). The subject site will benefit from enhanced levels of accessibility and mobility offered by NTA Bus Connects proposals. Bus Connects will also offer improved cycle and walking facilities surrounding the site in addition to the efficient and high frequency bus service and connectivity.

The MetroLink project is the proposed North-South urban high-capacity rail service that will operate between Swords and Dublin City Centre while serving Dublin Airport. MetroLink will allow for journey times of 25 minutes between Swords and the City Centre with the capacity to carry up to 20,000 passengers per direction per hour. This capacity

will be delivered by running up to 30 fully automated driverless trains per hour. The subject site is situated approximately within 1.8km walking distance from the proposed Northwood and Ballymun Stations. **Figure 12.10** overleaf highlights the proximity of the subject site to these future metro stations.

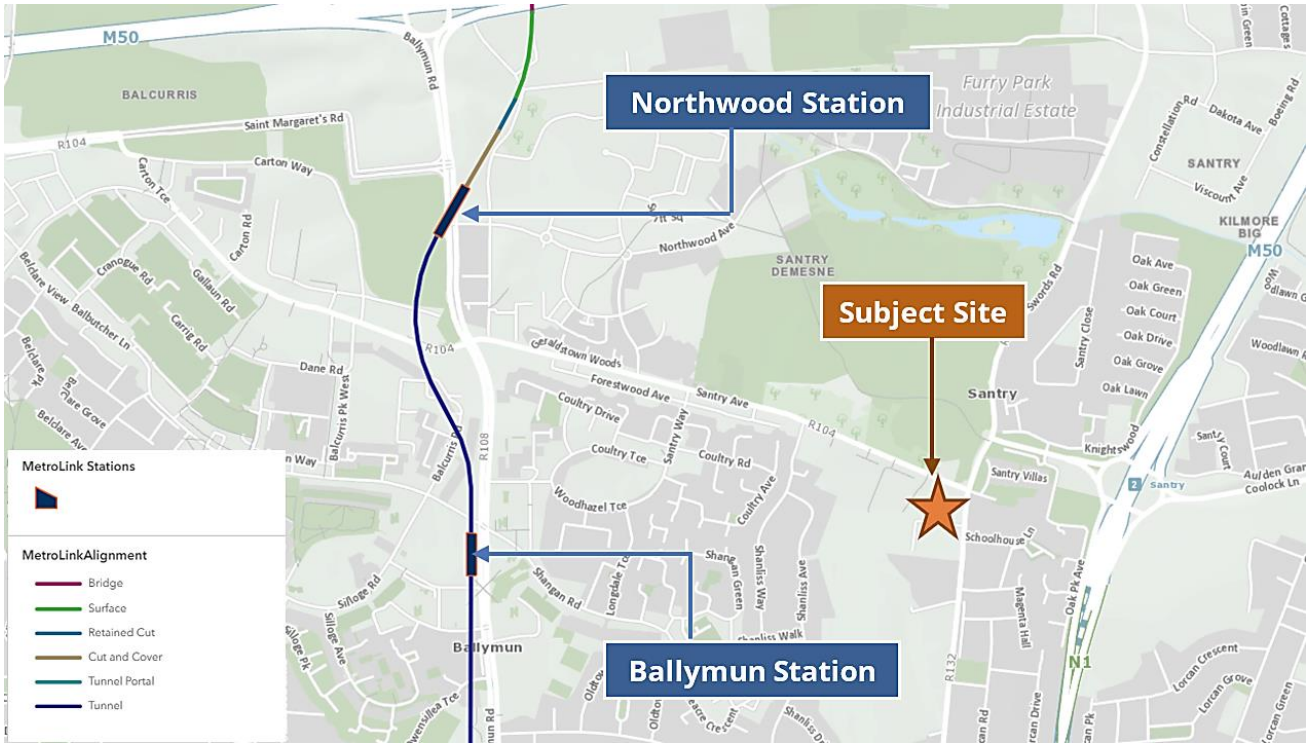


Figure 12.10: Proposed Future Metro Stations

12.4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

Dwyer Nolan Developments Ltd. wishes to apply for permission for a Large-Scale Residential Development (LRD) on this site, c. 1.5 hectares, located at the junction of Santry Avenue and Swords Road, Santry, Dublin 9. The development site is bounded to the north by Santry Avenue, to the east by Swords Road, to the west by Santry Avenue Industrial Estate, and to the south by the permitted Santry Place development (granted under Dublin City Council Reference 2713/17 (as extended under Ref. 2713/17/X1), 2737/19 & 4549/22).

The proposed development provides for 321 no. apartments, comprised of 104 no. 1 bed, 198 no. 2 bed, & 19 no. 3 bed dwellings, in 4 no. seven to thirteen storey buildings, over basement level, with 3 no. retail units, a medical suite / GP Practice unit and community/arts & culture space (total c.1,460sq.m), all located at ground floor level, as well as a one storey residential amenity unit, facing onto Santry Avenue, located between Blocks A & D. (6) Vehicular access to the development will be via 2 no. existing / permitted access points: (i) on Santry Avenue in the north-west of the site (ii) off Swords Road in the south-east of the site, as permitted under the adjoining Santry Place development (Ref. 2713/17).
A total of 194 no. car parking spaces (161 no. within basement) and 33 no. on surface including 4no. GoCar, 2 no. set down, 2 no. retail, 6 no. medical GP, 3 no. community space and 1 no. loading bay spaces are proposed.

A total of 732 no. bicycle spaces comprising of 674 no. long term (672 spaces within basement incl. 9 no. Cargo bike parking spaces and 10 spaces in Block Gground floor) and 58 no. short term on surface level. A total of 10 no. motorbike spaces will also be located within basement.

The development includes for all associated site development works above and below ground, bin & bicycle storage, plant (M&E), sub-stations, public lighting, servicing, signage, surface water attenuation facilities etc.

12.5 POTENTIAL IMPACT OF THE PROPOSED DEVELOPMENT

12.5.1 Construction Phase

125.1.1 Management of Construction Activities

All construction activities on-site will be governed by a Construction Traffic Management Plan (CTMP), the details of which will be agreed in full with Dublin City Council (DCC) prior to the commencement of construction activities on site.

The principal objective of the CTMP is to ensure that the impacts of all building activities generated during the construction of the proposed development upon both the public (off-site) and internal (on-site) workers environments, are fully considered and proactively managed / programmed respecting key stakeholders thereby ensuring that both the public's and construction workers safety is maintained at all time, disruptions minimised and undertaken within a controlled hazard free / minimised environment. The impact of the construction period will be temporary in nature.

121.5.1.2 Construction Traffic

Construction traffic will only be generated on weekdays (0700-1900 subject to Planning conditions) and will consist of the following two principal categories:

- Private vehicles owned and driven by site construction staff and by full time supervisory staff.

- Excavation plant, dumper trucks and delivery vehicles involved in site development works and material delivery vehicles for the following: granular fill materials, concrete pipes, manholes, reinforcement steel, ready-mix concrete and mortar, concrete blocks, miscellaneous building materials, etc.

On-site employees will generally arrive before 08:00, thus avoiding the morning peak hour traffic. These employees will generally depart after 16:00. It should be noted that a large proportion of construction workers are anticipated to arrive in shared transport. Considering the sensitivity of the site, opportunities for remote off-site compound parking will be explored. Deliveries will be actively controlled and subsequently arrive at a dispersed rate during the course of the working day.
The number of staff on site will vary during the construction period of each construction phase (3 No.) but is predicted to be greatest in the early period of phase 2. Based upon the experience of similar developments, a development of this type and scale would at a maximum necessitate approximately 50 staff on site at any one time, subsequently

generating no more than 34 two-way vehicle trips during the peak AM and PM periods over the period of the phased construction works.

It is anticipated that the proposed development would be constructed over three phases and a combined period of approximately 60 months. Following the completion of the initial site clearance works and basement excavation, 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. For this scale of development, we do not expect HGV vehicle movements to exceed 4 vehicles per hour during the busiest period of construction '*build*' works.

Based on a preliminary review of the existing survey data and proposed site levels we estimate that approximately 20,000 m^3 of material will require excavation as part of the scheme proposals.

It is estimated that 20,000 m^3 equates to 5 to 6 truckloads per hour depending upon vehicle characteristics. At 44 loads removed per day this equates to 52 days of earthmoving works as part of the adopted worst-case assessment to clear the entire site in one single activity.

It is predicted that the build period will occur over a longer period of time when compared to the demolition and waste material removal stage. Accordingly, the concentration of imported material activities will be spread over time. The busiest build period is predicted to be generated during the construction of the basement facility, however, the level of the HGV movements generated during this period is estimated to be less than the 5 to 6 truckloads per hour during the excavation period. Throughout the build period, it is estimated that between 3 to 4 HGV trips will be generated per hour.

An appropriate control and routing strategy for HGVs can also be implemented for the duration of site works as part of the CTMP. It is not proposed to utilise any roads with weight/height restrictions as part of the routing of HGVs during the construction phase. HGVs will be directed to use Santry Avenue (e.g. Existing Chadwicks access) when accessing/egressing the site from the wider strategic network thereby maximising the opportunity to segregate construction vehicles from other traffic.

A significant benefit of the subject development site's characteristics is that all construction traffic vehicle parking demands can be accommodated on-site thereby minimising the impact upon the operational performance and safety levels of the adjacent public road network and adjoining properties.

Considering the site's proximity to the strategic road network and following the implementation of an appropriately detailed CTMP, it is 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. At its peak, the level of construction vehicle trips generated is predicted to be less when compared to when the scheme is completed and operational. The level of significance of the above findings are categorised in Section 11.1.6.

125.2 Operational Phase

121.5.2.1 Development Schedule's Trip Generation

Whilst a significant proportion of person trips to/from the proposed development will be undertaken by sustainable modes of travel, the specific impact of the subject scheme will be predominantly influenced by the number of additional vehicle movements that the scheme could potentially generate. To assist in determining this a review of trip generation factors contained within the TRICS database was carried out. TRICS data is primarily UK based, although a number of Irish sites have recently been included and the number of Irish sites continues to expand. Nevertheless, we consider that TRICS will provide a reasonable indication of traffic generation from the proposed development.

Notwithstanding the above, internal research undertaken by TRICS has shown that there is no direct evidence of trip rate variation by country or region. The use of English, Scottish or Welsh data can be equally applicable to Ireland if users take into account important site selection filtering factors such as levels of population, location type, local public transport provision, and development size and car ownership level, amongst others.

Data supplied for inclusion in TRICS undergoes a procedure of validation testing, and there is no evidence from this procedure suggesting that data from Ireland bears any significant fundamental differences to that from the other countries included. Consequently, we consider that TRICS will provide a reasonable indication of traffic generation from the proposed development.

TRICS generated trip rates for the proposed apartment development during the weekday morning and evening peak hour periods are outlined in **Table 12.3**. The trip rate has been adjusted to reflect the basic car allocation characteristics of the development based upon the ratio of proposed car parking to the corresponding Equivalent parking (1 space/1 unit) parking level. It has been assumed that the developments non-residential units will serve predominantly the proposed development, the local walking catchment and passing traffic. As such these non-residential uses are not predicted to give rise to material levels of the additional vehicular traffic.

Period	AM Peak (07:45-08:45)			PM Peak (16:30 - 17:30)		
Vehicle Movement	Arr	Dep	Total	Arr	Dep	Total
Original Trip Rates	0.065	0.152	0.217	0.154	0.096	0.250
Adjusted Trip Rates	0.036	0.083	0.119	0.084	0.052	0.137

Table 12.3: Proposed Development Trip Trips

Based on the above trip rates, potential peak hour traffic generation is calculated, and the predicted peak hour AM and PM traffic generated by the proposed development are presented in **Table 12.4** below outline the potential peak hour vehicle trips for the 2027 Opening Year, that have been calculated based on the proposed development schedule.

Land Use	Quantity/GFA	AM Peak Hour (07:45-08:45)			PM Peak Hour (16:30 - 17:30)		
		Arr	Dep	Total	Arr	Dep	Total
Apartments	321	11	27	38	27	17	44

Table 12.4: Predicted Vehicle Trip Generation (Opening Year 2027 Onwards)

The trip generation exercise reveals that the proposed development when fully operational has the potential to generate a total of 38 two-way vehicle trips during AM peak hour and 44 two-way vehicle trips during PM peak hour period.

12.5.2.2 Traffic Growth

With the objective of quantifying the existing traffic movements across the local road network a local traffic survey data recorded on 08th February 2024 was obtained and used in this assessment.

Traffic Surveys (weekday classified junction turning counts) were conducted by IDASO between 07:00 AM and 19:00 PM. The surveys undertaken included Junction Turning Counts (JTC). JTCs were carried out at two junctions within close proximity to the proposed development site. The following two locations were included within the survey:

- **1** – R132 Swords Road / R104 Santry Avenue / Santry Villas Junction;
- **2** – R132 Swords Road / Santry Place Site Access
- **3** – R104 Santry Avenue / Chadwicks Site Access
- **4** – R104 Santry Avenue / Site Access (west of Chadwicks Entrance)

The traffic surveys established that the local AM and PM peak hours occur between 07:45-08:45 and 16:30-17:30 respectively. In order to analyse and assess the impact of the proposed development on the surrounding road network, a traffic generation and distribution model (Excel based) of the above key junctions was created and the following traffic scenarios were assessed:

- 2027 Opening Year without/with development;
- 2032 Interim Year without/with development
- 2042 Future Design Year without/with development.

To ensure a robust analysis of traffic upon the local road network, growth rates using the National Roads Authority (NRA) Project Appraisal Guideline projections were adopted. Table 6.1 within the TII Project Appraisal Guidelines (May 2019) provides Annual National Traffic Growth Factors for the different regions within Ireland. The subject site lies within '*Dublin Metropolitan Area'*.

Applying the annual factors (medium growth) for the adopted Opening Year of 2027 and Future Design Years of 2032

/ 2042, the following growth rates have been adopted to establish baseline network flows:

- 2024 to 2027 – 1.0494 (or 4.94%);
- 2024 to 2032 – 1.1125 (or 11.25%); and
- 2024 to 2042 – 1.1689 (or 16.89%).

12.5.2.3 Assessment Scenarios & Network Impact

It is anticipated that the scheme could be built and occupied would be by 2027. Accordingly, 2024, 2032 and 2042 (e.g. Opening Year plus 5 & 15 years) have been adopted as the Opening Year, Interim Year and Future Design Years respectively. Two different traffic scenarios have been assessed, namely (a) the 'Base' (Do-Nothing) traffic characteristics and (b) the 'Post Development' (Do-Something) traffic characteristics.

The 'Base' traffic scenario takes into account the existing flows travelling across the local road network. The proposed development traffic is then added to the network's 'Base' traffic flows to establish the 'Post Development' traffic flows. In summary, the following scenarios have been investigated:

Base Scenario	2024 - Base Traffic Flows
Do-Nothing	2027 – 'Do Nothing' Scenario
	2032 – 'Do Nothing' Scenario
	2042 – 'Do Nothing' Scenario
Do-Something	2027 – 'Do Something' Scenario
	2032 – 'Do Something' Scenario
	2042 – 'Do Something' Scenario

Table 12.5: Proposed Traffic Scenarios

Junction ID	Junction	Design Year	Percentage Impact	
			AM	PM
J1	R132 Swords Road / R104 Santry Avenue / Santry Villas Junction	2027	0.91%	0.90%
		2032	0.86%	0.85%
		2042	0.83%	0.81%
J2	R104 Santry Avenue Site Access (Entrance 1)	2027	2.64%	3.09%
		2032	2.51%	2.93%
		2042	2.40%	2.81%
J3	R132 Swords Road / Santry Place Site Access (Entrance 2)	2027	1.05%	1.18%
		2032	1.00%	1.12%
		2042	0.96%	1.07%

Table 12.6: Proposed Development Predicted Scale of Traffic Impact

The TII document '*Guidelines for Traffic Impact Assessments*' states that the impact of any specific development upon the local road network is considered material when the level of traffic it generates surpasses 10% and 5% on normal

and congested networks respectively. When such levels of impact are generated a more detailed assessment should be undertaken to ascertain the specific impact upon the networks operational performance. An assessment was therefore undertaken for the relevant links surrounding the site, to determine the percentage level of impact generated by the proposed development as presented in Table 12.6.

The impact predicted for all three junctions within all design years is considered to be insignificant and well below the 5% threshold for necessitating further more detailed analysis. However, for the purpose of robust analysis both site access junctions (predicted impact >1%) will be subject to further assessment in order to determine pre-development and post-development performance of the development's two site access junctions using the PICADY modelling software respectively.

The AM and PM Peak Hour PICADY based assessment undertaken at both proposed priority-controlled site access junction's (i.e. Santry Ave and Swords Rd) established that both junctions will continue to operate within acceptable operational parameters and with reserve capacity being recorded in all future design year scenarios.

12.5.3 Potential Cumulative Impacts

The analysis detailed above represents an appraisal in terms of potential cumulative impacts for a typical weekday as it is focussed upon the key two busiest periods of the day (e.g. AM and PM peak hours). During the other 22 hours of the day, traffic flows are predicted to be significantly lower resulting in the network operating with additional reserve capacity to that forecast for the peak hour periods.

The following local third party committed developments (which have been granted) have been included within this appraisal to investigate the cumulative impact of both the subject development proposals and local third party committed developments.

- **DCC Pl. Ref. 4549/22:** The Santry Place will consist of modifications to the development permitted on site under DCC Reg. Ref. 2713/17 and 2737/19. The proposal will include construction of an urban block comprising 3 no. 7 storey blocks (Blocks D, E, and F). Block D, and the ground floors of Blocks E and F will provide c.13,921 sqm office space (an increase of 2,454.7 sqm). Residential apartments are proposed on the upper floors of Blocks E and F providing 48 no. apartments (16 no. 1 beds, 24 no. 2 beds, and 8 no. 3 beds) to provide a new total of 253 no. residential units (in increase from 205 units). The development will also include communal open space at podium level, 95 no. car parking spaces and 269 no. cycle parking spaces at surface and undercroft level (an increase of 15 no. car parking space and 164 no. cycle parking spaces). The proposed development's predicted peak hour vehicle trips as outlined in the TTA submitted as part of the planning application are incorporated into the subject development assessment.

- **DCC Pl. Ref. 2876/21:** The proposed development will consist of a restaurant use on the ground floor (units 49/50/50A/76) and change of use on the 1sr floor (units 91, 92 & 92A) to office use. Removal of the existing brick and render façade (including timber shopfronts) to be replaced with a new stone and glazed façade (to match the existing adjoining building 95) with associated minor site works at Omni Park Shopping Centre. The proposed development predicted peak hour vehicle trips were analysed using TRICS.

- **DCC Pl. Ref. 3811/20:** The proposed new development will consist of a 3 storey multi-tenant commercial building c. 1992 sqm with full banking and financial service uses on ground level in unit 126-1 circa 390 sqm to include cashiers, self-service devices, offices, event space, external ATM and ancillary accommodation and unit 126-2 circa 109 sqm of retail use; associated illuminated corporate signage at corner entrances indicated on elevations, first floor office accommodation circa 558 sqm, second floor of media-associated use circa 558 sqm; 11 car parking spaces with bicycle stands, plant room and waste storage facility, including associated modifications to internal road and footpath layouts. The proposed development predicted peak hour vehicle trips were analysed using TRICS.

- **ABP-312202-21** (Omni Plaza SHD): Strategic Housing Development which comprises the demolition of the existing industrial / warehouse buildings northwest of Omni Park Shopping Centre, Santry, Dublin 9 and the construction of 457 no. apartments across 4 no. blocks, ranging in height from 4-12 storeys (over basement). The proposal includes 2 no. retail/café/restaurant units, 1 no. community building, 1 no. childcare facility, 1no. residential amenity space and 5 no. ESB substations. The development also provides for a basement carpark of 213 no. spaces and 7 no. motorcycle spaces with 7 no. creche drop-off parking spaces and 6 no. carshare parking spaces located in newly reconfigured surface carpark. The proposal provides for 768 no. bicycle parking spaces. The proposal includes the provision of a new public open space plaza, with consequential revisions to existing commercial car parking areas, to integrate the proposals with the wider District Centre. The proposal includes the provision of pedestrian and cycle connections and improvements through Omni Park Shopping Centre, including a plaza and cycle/pedestrian link substantially in the form permitted as part of the Omni Living Strategic Housing Development (Ref. ABP-307011-20). The proposed residential development's predicted vehicle trips have been included and were obtained from the third-party TTA as submitted part of the planning application.

- **ABP-307011-20** (Omni Living SHD): Construction of a mixed-use development generally ranging in height from 5 no. storeys to 12 no. storeys (over basement level) set out in 3 no. blocks (Block A, B and C). The development will comprise a total of 324 no. apartment units comprising 19 no. studios, 126 no. 1 bed units and 179 no. 2 bed units. Parking at basement level for 162 cars (152 no. residential (including 4 no. club car spaces) and 10 no. aparthotel spaces), 340 bicycles spaces and 6 motorcycles spaces. Vehicular access to the basement is from the existing private road to the north of the subject site. A total of 6 no. set down car parking spaces, 2 no. club car spaces and 40 no. visitor bicycle parking spaces will be provided at surface level. The proposed development's predicted vehicle trips have been included and were obtained from the third-party TTA as submitted part of the planning application.

Furthermore, if all of these adjacent zoned lands in the area were to be developed, this would have an effect on the local road network. In the interest of providing a worst case scenario, the assessment illustrates the scale of potential impact once these individual third-party developments are fully operational. Nevertheless, the utilisation of TII's growth rates does also take into account additional traffic that could potentially be generated by other third-party sites not included in this assessment. **Figure 12.11** illustrates cumulative impact of the proposed development.

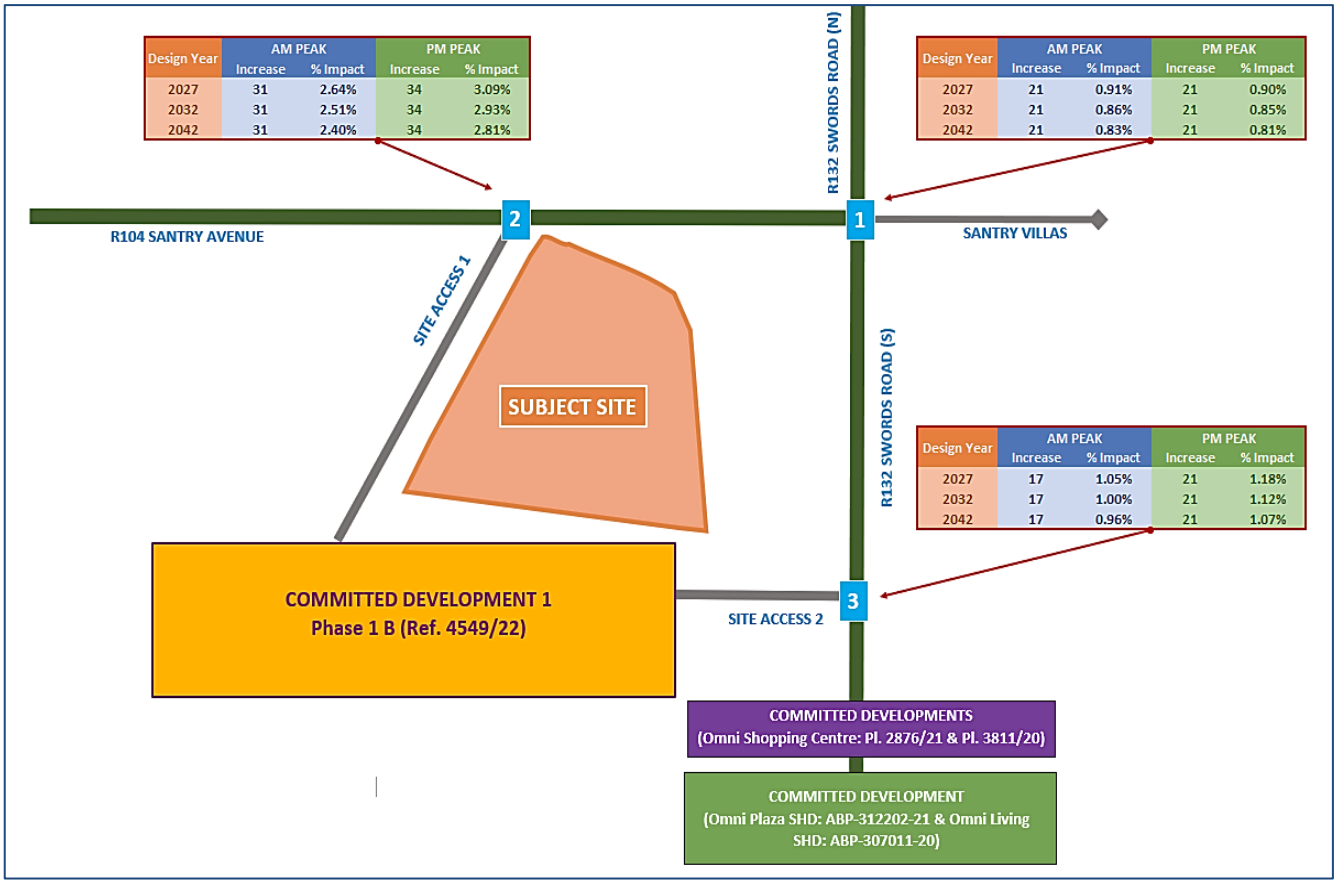


Figure 12.11: Cumulative Impact at Key Local Junctions

12.5.4 'Do Nothing' Impact

In the absence of the proposed development, the overall operational performance of the existing junctions on the surrounding road network will be affected by (i) the retention of the existing onsite `Chadwicks` generated traffic, (ii) committed developments and (iii) the impact caused by the forecast background network traffic growth (should that growth arise).

12.6 AVOIDANCE, REMEDIAL & MITIGATION MEASURES

12.6.1 Construction Phase

The Construction Management Plan will be prepared as part of the planning application with an associated Construction Traffic Management Plan (CTMP) which will incorporate a range of integrated control measures and associated management activities with the objective of minimising the construction activities associated with the development. The following initiatives will be implemented to avoid, minimise and/or mitigate against the anticipated

construction period impacts:

- The works will be undertaken across three phases thereby minimising the otherwise concentration of construction activities into a single defined period.
- During the pre-construction phase, the site will be securely fenced off from adjacent properties, public footpaths and roads;
- Appropriate on-site parking and compound area will be provided to prevent overflow onto the local network;
- It is likely that some numbers of the construction team will be brought to/from the site in vans/minibuses, which will serve to reduce the trip generation potential;
- Delivery vehicles to and from the site will be spread across the course of the working day, therefore, the number of HGVs travelling during the peak hours will be relatively low;
- Truck wheel washes will be installed at construction entrances and any specific recommendations with regard to construction traffic management made by Dublin City Council will be adhered to;
- Potential localised traffic disruptions during the construction phase will be mitigated through the implementation of industry standard traffic management measures. These traffic management measures shall be designed and implemented in accordance with the Department of Transport's Traffic Signs Manual "*Chapter 8 Temporary Traffic Measures and Signs for Roadworks*" and "*Guidance for the Control and Management of Traffic at Roads Works – 2nd Edition*" (2010); and
- Site entrance point/s from the public highway will be constructed with a bound, durable surface capable of withstanding heavy loads and with a sealed joint between the access and public highway. This durable bound surface will be constructed for a distance of 10m from the public highway.
- Material storage zone will be established in the compound area and will include material recycling areas and facilities;
- 'Way finding' signage will be provided to route staff / deliveries into the site and to designated compound / construction areas;
- Dedicated construction haul routes will be identified and agreed with Dublin City Council prior to commencement of activities on-site; and
- On completion of the works, all construction materials, debris, temporary hardstands etc. form the site compound will be removed off-site and the site compound area reinstated in full on completion of the works.

12.6.2 Operational Phase

A package of integrated mitigation measures has been identified to off-set the additional local demand that the proposed residential development at the subject site could potentially generate as a result of the forecast increase in vehicle movements by residents of the scheme. The identified measures and associated timescale for their implementation are summarised below.

- ***Management*** – A Mobility Management (MMP) has been compiled by DBFL with the aim of guiding the delivery and management of coordinated initiatives by the scheme promotor to be implemented upon occupation of the site. The MMP will ultimately seek to encourage sustainable travel practices for all journeys to and from the proposed development.

- ***Car Parking Management Strategy*** - A management regime will be implemented by the development's management company to control and actively manage the availability of on-site car parking for residents. The signing of a rental agreement for one of the proposed residential apartments will NOT include access to a designated on-site parking space. All potential residents (prior to signing rental agreement) will be notified that the proposed scheme is a 'low car allocation' development with no access (or guarantee thereof) to either (i) the limited on-site residents car parking provision or (ii) apply to Dublin City Council for a residents parking permit (to park on-street in one of the neighbouring streets). Nevertheless, all residents of the proposed residential apartment scheme will have the opportunity to apply to the on-site management company for both a (i) residents car parking permit (updated weekly, fortnightly, monthly, quarterly or annually) and subsequently access to a dedicated (assigned) on-site basement car parking space or (ii) a visitor's car parking permit for a short period of time. A charge will be applied to obtain a permit with the objective of covering the associated management costs and discouraging long term usage of the car parking space. All surface located parking bays will also be subject to parking management regime.

- ***Infrastructure*** – Infrastructure measures identified to reduce reliance of private vehicles include the provision of ample secure cycle parking on site and ensuring a design which promotes permeability for pedestrians and cyclists to, through and from the development. The level of parking provision for the development will also act as a powerful mobility management measure, ensuring against an overprovision of parking and a resultant over reliance on the private vehicle. Development also proposes dedicated pedestrian footpaths and cycle paths throughout the development site.

- ***Car Sharing –*** The provision of 4 no. dedicated car share (GoCar) spaces for the use of the scheme's residents. The availability of these on-site provide a viable alternative to residents owning private vehicles whilst still having access to a car as and when required.

12.6.3 'Worst Case' Scenario

As stated previously, the analysis carried out represents a worst-case appraisal of a typical weekday as (i) it is focused upon the two busiest periods of the day (i.e. AM and PM peak hours). During the remaining 22 hours of the day, traffic flows are predicted to be significantly lower resulting in the network operating with additional reserve capacity to that forecast for the peak hour periods. Similarly, over the weekend periods both the site generated traffic and the external road network traffic flows are generally lower compared to the weekday peak hour periods that have been assessed, (ii) considers local committed developments, and (iii) adopts TII growth rates.

12.7 RESIDUAL IMPACTS

12.7.1 Construction Phase

Provided the above mitigation measures and management procedures are incorporated during the construction phase, the residual impact on the local receiving environment will be temporary in nature and neutral in terms of quality and effect.
The significance of each of the projected impacts are detailed in **Table 121.7** for the following key junctions:

- R132 Swords Road / R104 Santry Avenue / Santry Villas Junction
- R104 Santry Avenue Site Access (Entrance 1)
- R132 Swords Road / Santry Place Site Access (Entrance 2)

The significance of the impacts has been determined in accordance with the classifications stipulated within the Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, May 2022). The residual impacts outline below are the impacts predicted post mitigation.

Junction		Quality of Effects	Impact Significance	Duration
J1	R132 Swords Road / R104 Santry Avenue / Santry Villas Junction	Negative - Low	Not Significant	Temporary
J2	R104 Santry Avenue Site Access (Entrance 1)	Negative - Low	Not Significant	Temporary
J3	R132 Swords Road / Santry Place Site Access (Entrance 2)	Neutral Effects	Not Significant	Temporary

Table 12.7: Impact Significance – Construction Phase

12.7.2 Operational Phase

The implementation of the mitigation measures outlined above, including the MMP, will ensure that the residual effect on the local receiving environment is both managed and minimised. In reference to **Table 12.6**, the analysis predicts the scale of residual impact, during the 2027, 2032 and 2042 design years, is largely being well below the TII thresholds of 5% on the surrounding links. As a result, the impact can be classified as sub threshold.

The significance of each of the projected impacts at each of the key links is detailed within the **Table 12.8** for the worst case (e.g. peak hours) 2042 Future Year scenarios.

Junction		Quality of Effects	Impact Significance	Duration
J1	R132 Swords Road / R104 Santry Avenue / Santry Villas Junction	Negative - Negligible	Not Significant	Long-Term
J2	R104 Santry Avenue Site Access (Entrance 1)	Negative - Negligible	Slight Effect	Long-Term
J3	R132 Swords Road / Santry Place Site Access (Entrance 2)	Negative - Negligible	Not Significant	Long-Term

Table 12.8: Impact Significance – 2042 Design Year (AM & PM)

12.8 MONITORING

12.8.1 Construction Phase

During the construction stage, the following monitoring exercises are proposed:

- Compliance with construction vehicle routing practices;
- Compliance with construction vehicle parking practices;
- Internal and external road conditions; and
- Timing of construction activities.

12.8.2 Operational Phase

As part of the MMP process, bi-annual post occupancy surveys are to be carried out in order to determine the success of the measures and initiatives as set out in the proposed MMP document. The information obtained from the monitoring surveys will be used to identify ways in which the MMP measures and initiatives should be taken forward in order to maintain and further encourage sustainable travel characteristics.

12.9 REINSTATEMENT

12.9.1 Construction Phase

The construction work areas will be reinstated following completion of development with landscaped areas provided where proposed. The works will be restricted to the footprint of the site for the proposed development. Excavated topsoil and subsoil will be reused in reinstatement and landscaping where appropriate or dealt with in the appropriate manner i.e. sent for soil recovery as appropriate.

12.9.2 Operational Phase

No reinstatement requirements have been identified in relation to the operational phase of the proposed development.

12.10 INTERACTIONS

No impact interactions have been identified and it is considered that any minor impacts will be avoided through the implementation of best working practices as stipulated within the Construction Traffic Management Plan and Mobility Management Plan prepared in support of the proposed development.

12.11 DIFFICULTIES ENCOUNTERED IN COMPILING

There were no material difficulties encountered in compiling and assessing the data for this EIAR sufficient to prevent modelling of the likely transport effects of the proposed development. The analysis reported within this chapter is based upon the traffic survey data recorded in February 2024 data.

12.12 REFERENCES

- The Institution of Highways and Transportation '*Guidelines for Traffic Impact Assessments*' (1994)
- Department of Transport's Traffic Signs Manual "*Chapter 8 Temporary Traffic Measures and Signs for Roadworks*"
- Department of Transport's "*Guidance for the Control and Management of Traffic at Roads Works – 2nd Edition*" (2010)
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, May 2022)
- NRA '*Traffic and Transport Assessment Guidelines*' (2014)
- Dublin City Council Development Plan (2022-2028)
- National Transport Authority; Greater Dublin Area Cycle Network Plan (2022)
- Ordnance Survey Ireland (www.osi.ie)
- Transport for Ireland (www.transportforireland.ie)
- Transport Infrastructure Ireland (www.tii.ie)
- Bus Eireann (https://www.buseireann.ie)
- Go-Ahead (https://www.goaheadireland.ie)
- Irish Rail (www.irishrail.ie)
- Bus Connects (www.busconnects.ie)

13.0. Material Assets: Resource and Waste Management

13.1. Introduction

Chonaill Bradley (Bsc ENV,PG Dip Circ Econ, AssocCIWM) of AWN Consulting. Chonaill Bradley is a Principal Environmental Consultant in the Environment Team at AWN. He holds a BSc in Environmental Science from Griffith University, Australia and a Postgraduate Diploma in Circular Economy Leadership for the Built Environment from the Atlantic Technological University, Galway. He is an Associate Member of the Institute of Waste Management (AssocCIWM). Chonaill has over eight years' experience in the environmental consultancy sector and specialises in sustainability, resource and waste management.

This chapter evaluates the likely impacts, if any, which the proposed development may have on Material Assets (related to waste management) as defined in the EIA Directive (Directive 2011/92/EU as amended by Directive 2014/52/EU) and the Environmental Protection Agency (EPA) Guidelines on the information to be contained in Environmental Impact Assessment Reports (2022).

This chapter has also been prepared to address the issues associated with waste management during the construction and operational phases of the proposed development as described in Chapter 3.

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 13.1. The RWMP was prepared in accordance with the 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 13.2 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.

13.2. Assessment Methodology

The assessment of the impacts of the proposed development, arising from the consumption of resources and the generation of waste materials, was carried out taking into account the methodology specified in relevant guidance documents, along with an extensive document review to assist in identifying current and

future requirements for waste management; including national and regional waste policy, waste strategies, management plans, legislative requirements and relevant reports. A summary of the documents reviewed, and the relevant legislation is provided in the C&D WMP and in the OWMP provided in Appendices 13.1 and 132.

This Chapter is based on the proposed development, as described in Chapter 3 (Description of the proposed development) and considers the following aspects:

- Legislative context;
- Construction phase (including demolition, site preparation and excavation); and
- Operational phase.

A desktop study was carried out which included the following:

- Review of applicable policy and legislation which creates the legal framework for resource and waste management in Ireland;
- Description of the typical waste materials that will be generated during the Construction and Operational phases; and
- Identification of mitigation measures to prevent waste generation and promote management of waste in accordance with the waste hierarchy.

Estimates of waste generation during the construction and operational phases of the proposed development have been calculated. The waste types and estimated quantities are based on published data by the EPA in the *National Waste Reports and National Waste Statistics*, data recorded from similar previous developments, Irish and US EPA waste generation research.

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 132.5.

A detailed review of the existing ground conditions on a regional, local and site-specific scale are presented in Chapter 6 of this EIAR (Land, Soils, Geology and Hydrogeology). Chapter 6 also discusses the environmental quality of any soils which will have to be excavated to facilitate construction of the proposed development.

13.2.1. Legislation and Guidance

Waste management in Ireland is subject to EU, national and regional waste legislation, 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 13.1).

Figure 13.1: Waste Hierarchy (Source: European Commission)

EU and Irish National waste policy also aims to contribute to the circular economy by extracting high-quality resources from waste as much as possible. Circular Economy (CE) is a sustainable alternative to the traditional linear (take-make-dispose) economic model, reducing waste to a minimum by reusing, repairing, refurbishing and recycling existing materials and products. (Figure 132.2).

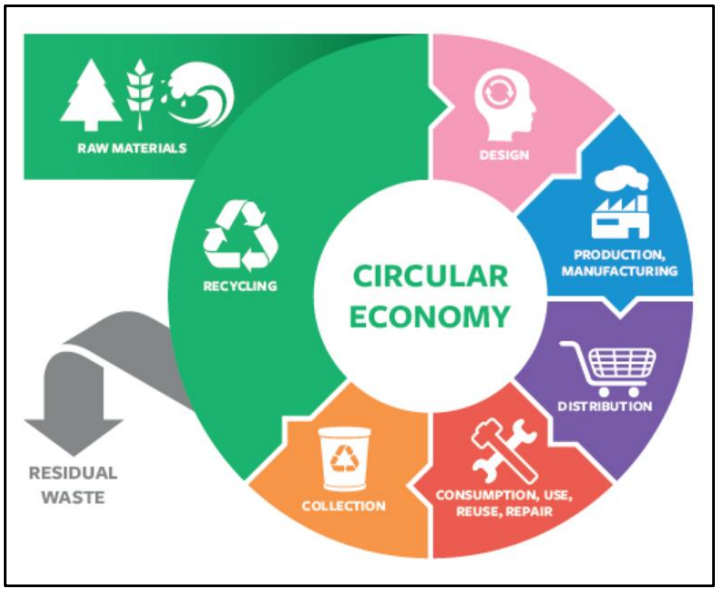


Figure 13.2 Circular Economy (Source: Repak).

The Irish government issues policy documents which outline measures to improve waste management practices in Ireland and help the country to achieve EU targets in respect of recycling and disposal of waste. The most recent policy document, Waste Action Plan for a Circular Economy – Waste Management Policy in Ireland, was published in 2020 and shifts focus away from waste disposal and moves it back up the production chain. The move away from targeting national waste targets is due to the Irish and international waste context changing in the years since the launch of the previous waste management plan, A Resource Opportunity, in 2012.

One of the first actions to be taken from the WAPCE was the development of the Whole of Government Circular Economy Strategy 2022-2023 'Living More, using Less' (2021) to set a course for Ireland to transition across all sectors and at all levels of Government toward circularity and was issued in December 2021.

The Circular Economy and Miscellaneous Provisions Act 2022 was signed into law in July 2022. The Act underpins Ireland's shift from a "take-make-waste" linear model to a more sustainable pattern of production and consumption, that retains the value of resources in our economy for as long as possible and that will to significantly reduce our greenhouse gas emissions. The Act defines Circular Economy for the first time in Irish law, incentivises the use of recycled and reusable alternatives to wasteful, single-use disposable packaging, introduces a mandatory segregation and incentivised charging regime for commercial waste, streamlines the national processes for End-of-Waste and By-Products decisions.

The strategy for the management of waste from the construction phase is in line with the requirements of the EPA's 'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021). The guidance documents, Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects and Construction and

Demolition Waste Management: A Handbook for Contractors and Site Managers (FÁS & Construction Industry Federation, 2002), were also consulted in the preparation of this assessment.

There are currently no Irish guidelines on the assessment of operational waste generation, and guidance is taken from industry guidelines, plans and reports including the Eastern-Midlands Region (EMR) Waste Management Plan 2015 – 2021 the Draft National Waste Management Plan for a Circular Economy (NWMPCE) (2023), BS 5906:2005 Waste Management in Buildings – Code of Practice, the Dublin City Council (DCC) Waste Management (Storage, Presentation and Segregation of Household and 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.

13.2.2 Terminology

Note that the terminology used herein is generally consistent with the definitions set out in Article 3 of the Waste Framework Directive. Key terms are defined as follows:

Waste - Any substance or object which the holder discards or intends or is required to discard.

Prevention - Measures taken before a substance, material or product has become waste, that reduce:

a) the quantity of waste, including through the re-use of products or the extension of the life span of products;
b) the adverse impacts of the generated waste on the environment and human health; or
c) the content of harmful substances in materials and products.

Reuse - Any operation by which products or components that are not waste are used again for the same purpose for which they were conceived.

Preparing for Reuse - Checking, cleaning or repairing recovery operations, by which products or components of products that have become waste are prepared so that they can be re-used without any other pre-processing.

Treatment - Recovery or disposal operations, including preparation prior to recovery or disposal.

Recovery - Any operation the principal result of which is waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function, in the plant or in the wider economy. Annex II of the Waste Framework Directive sets out a non-exhaustive list of recovery operations.

Recycling - Any recovery operation by which waste materials are reprocessed into products, materials or

substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations.

Disposal - Any operation which is not recovery even where the operation has as a secondary consequence the reclamation of substances or energy. Annex I sets out a non-exhaustive list of disposal operations.

13.2.3. Existing Receiving Environment (Baseline Scenario)

The development consists of the demolition of the existing building onsite and provides for 321 no. apartments, comprised of 104 no. 1 bed, 198 no. 2 bed, & 19 no. 3 bed dwellings, in 4 no. seven to thirteen storey buildings, over basement level, with 3 no. retail units, a medical suite / GP Practice unit and community/arts & culture space (total c.1,460sq.m), all located at ground floor level, as well as a one storey residential amenity unit, facing onto Santry Avenue, located between Blocks A & D..

In terms of waste management, the receiving environment is largely defined by DCC 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, the draft NWMPCE and the Waste Action Plan for a Circular Economy – Waste Management Policy in Ireland.

The waste management plans set out the following targets for waste management in the region:

- Achieve a recycling rate of 55% of managed municipal waste by 2025; and

- Reduce to 0% the direct disposal of unprocessed residual municipal waste to landfill (from 2016 onwards) in favour of higher value pre-treatment processes and indigenous recovery practices.

The Plan sets out the strategic targets for waste management in the region and sets a specific target for C&D waste of "70% preparing for reuse, recycling and other recovery of construction and demolition waste" (excluding natural soils and stones and hazardous wastes) to be achieved by 2020.

The Regional Waste Management Planning Offices have issued a new Draft National Waste Management Plan for a Circular Economy (NWMPCE) in June 2023, which is set to replace the EMR and the two other regional waste management plans. The Draft 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 Dublin City Development Plan 2022 – 2028 (2022) set out the policies and objectives for the DCC area which reflect those sets out in the regional waste management plan.

In terms of physical waste infrastructure, DCC 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.

13.4. Characteristics of the Proposed Development

A full description of the proposed development can be found in Chapter 3 (Description of the proposed development). The characteristics of the proposed development that are relevant in terms of waste management are summarised below.

13.4.1 Demolition Phase

There will be a quantity of waste materials generated from the demolition of the existing building and hardstanding areas on site, as well as from the excavation of the building foundations.

Further detail on the waste materials likely to be generated during the demolition works are presented in the project-specific RWMP in Appendix 12.1. The RWMP provides an estimate of the main waste types likely to be generated during the C&D phase of the proposed development. The reuse, recycling / recovery and disposal rates have been estimated using the EPA National Waste Reports and these are summarised in Table 13.1.

Waste Type	Tonnes	Reuse		Recycle / Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Glass	56.7	0	0.0	85	48.2	15	8.5
Concrete, Bricks, Tiles, Ceramics	513.0	30	153.9	65	333.5	5	25.7
Plasterboard	25.2	30	7.6	60	15.1	10	2.5
Asphalts	6.3	0	0.0	25	1.6	75	4.7
Metals	94.4	5	4.7	80	75.5	15	14.2
Timber	75.5	10	7.6	60	45.3	30	22.7
Total	**771.1**		173.7		519.2		78.2

Table 13.1: Estimated off-site Reuse, Recycle and Disposal Rates for Demolition Waste

13.4.2 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, clay and made ground will require excavation to facilitate site levelling, construction of foundations, along with the installation of underground services. The Project Engineers (DBFL) have estimated that c. 20,000 m^3 of material will require excavation. It is envisaged that all of this material will be removed off-site and none is expected to be kept for on-site reuse. These estimates will be refined prior to commencement of construction.

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 C&D WMP (Appendix 132.1).

In order to establish the appropriate reuse, recovery and / or disposal route for the soils and stones to be removed off-site, it will first need to be classified. Waste material will initially need to be classified as hazardous or non-hazardous in accordance with the EPA publication *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* (2019). Environmental soil analysis will be carried

out prior to removal of the material on a number of the soil samples in accordance with the requirements for acceptance of waste at landfills (Council Decision 2003/33/EC Waste Acceptance Criteria). This legislation sets limit values on landfills for acceptance of waste material based on properties of the waste, including potential pollutant concentrations and leachability. It is anticipated that the surplus material will be suitable for acceptance at either inert or non-hazardous soil recovery facilities / landfills in Ireland or, in the unlikely event of hazardous material being encountered, be transported for treatment / recovery or exported abroad for disposal in suitable facilities.

Waste will also be generated from construction phase workers e.g. organic / food waste, dry mixed recyclables (waste paper, newspaper, plastic bottles, packaging, aluminium cans, tins and Tetra Pak cartons), mixed non-recyclables and, potentially, sewage sludge from temporary welfare facilities provided on-site during the Construction phase. Waste printer / toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated in small volumes from site offices.

Further detail on the waste materials likely to be generated during the excavation and construction works are presented in the project-specific C&D WMP (Appendix 131). The C&D WMP 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 132.2 overleaf:

Waste Type	Tonnes	Reuse		Recycle / Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Mixed C&D	652.0	10	65.2	80	521.6	10	65.2
Timber	553.2	40	221.3	55	304.3	5	27.7
Plasterboard	197.6	30	59.3	60	118.5	10	19.8
Metals	158.1	5	7.9	90	142.3	5	7.9
Concrete	118.5	30	35.6	65	77.1	5	5.9
Other	296.4	20	59.3	60	177.8	20	59.3
Total	**1975.7**		**448.5**		**1341.5**		**185.7**

Table 13.2: Estimated off-site Reuse, Recycle and Disposal Rates for Construction Waste

13.4.3. Operational Phase

As noted in Section 13.1, an OWMP has been prepared for the proposed development and is included as Appendix 13.2. The OWMP provides a strategy for segregation (at source), storage and collection of all wastes generated within the building during the operational phase including dry mixed recyclables (DMR), organic waste and mixed non-recyclable waste (MNR), as well as providing a strategy for management of waste glass, batteries, WEEE, printer / toner cartridges, chemicals, 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 13.3, below, and is based on the uses and areas as advised by the Project Architects. Further unit breakdowns can be found in Appendix 13.2.

Waste Type	Waste Volume (m^3/week)	
	Residential Units (Combined)	Commercial Units (Combined)
Organic Waste	4.92	0.44
Dry Mixed Recyclables	33.60	8.89
Glass	0.95	0.20
Mixed Non-Recyclables	19.53	3.83
Medical Waste	N/A	0.17
Confidential Paper	N/A	0.07
Total	**59.00**	**14.47**

Table 13.3: Estimated Waste Generation During Operational Phase

The residents and commercial tenants will be required to provide and maintain appropriate waste receptacles within their units to facilitate segregation at source of these waste types. The location of the bins within the units will be at the discretion of the residents. As required, the residents and tenants will need to bring these segregated wastes from their units to their allocated Waste Storage Areas (WSAs). WSAs can be viewed on the plans submitted with the application under separate cover and in Appendix A of Appendix 13.2 OWMP.

The OWMP seeks to ensure that the proposed Development contributes to the targets outlined in the EMR Waste Management Plan 2015 – 2021, Waste Action Plan for a Circular Economy – Waste Management Policy in Ireland and the DCC (Storage, Presentation and Segregation of Household and Commercial Waste) Bye-Laws 2018.

Mitigation measures proposed to manage impacts arising from wastes generated during the operational phase of the proposed development are summarised below.

13.5. Construction Impacts, Mitigation and Monitoring Measures

13.5.1. Construction Impacts

The proposed development will generate a range of non-hazardous and hazardous waste materials during site demolition, excavation and construction (see Appendix 13.1 for further detail). General housekeeping and packaging will also generate waste materials, as well as typical municipal wastes generated by construction employees, including food waste. Waste materials will be required to be temporarily stored in the construction site compound or adjacent to it, on-site pending collection by a waste contractor. If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues at the development site and in adjacent areas. The indirect effect of litter issues is the presence of vermin in areas affected. In

the absence of mitigation, the effect on the local and regional environment is likely to be **indirect, short-term, significant and negative.**

The use of non-permitted waste contractors or unauthorised waste facilities could give rise to inappropriate management of waste, resulting in indirect negative environmental impacts, including pollution. It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices. In the absence of mitigation, the effect on the local and regional environment is likely to be **indirect, long-term, significant and negative.**

Wastes arising will need to be taken to suitably registered / permitted / licenced waste facilities for processing and segregation, reuse, recycling, recovery, and / or disposal, as appropriate. There are numerous licensed waste facilities in the EMR which can accept hazardous and non-hazardous waste materials, and acceptance of waste from the development site would be in line with daily activities at these facilities. At present, there is sufficient capacity for the acceptance of the likely C&D waste arisings at facilities in the region. The majority of construction materials are either recyclable or recoverable. However, in the absence of mitigation, the effect on the local and regional environment is likely to be **indirect, short-term, significant and negative.**

There is a quantity of 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 9. It is anticipated that c. 20,000 m^3 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 **indirect, short-term, significant** and **negative**.

13.5.2 Mitigation

This section outlines the measures that will be employed in order to reduce the amount of waste produced, manage the wastes generated responsibly and handle the waste in such a manner as to minimise the effects on the environment.

The concept of the 'waste hierarchy' is employed when considering all mitigation measures. The waste hierarchy states that the preferred option for waste management is prevention and minimisation of waste, followed by preparing for reuse and recycling / recovery, energy recovery (i.e. incineration) and, least favoured of all, disposal.

13.5.2.1 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 13.1. The mitigation measures outlined in the RWMP will be implemented in full and form part of mitigation strategy for the site. The mitigation measures presented in this RWMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the excavation and construction phases of the proposed development.

- Prior to commencement, the appointed Contractor(s) will be required to refine / update the RWMP (Appendix 13.1) in agreement with DCC and in compliance with any planning conditions, or submit an addendum to the RWMP to DCC, detailing specific measures to minimise waste generation and resource consumption, and provide details of the proposed waste contractors and destinations of each waste stream.

- The Contractor will be required to fully implement the RWMP throughout the duration of the proposed construction and demolition phases.

A quantity of topsoil, sub soil, clay and made ground which will need to be excavated to facilitate the proposed development. Project Engineers have estimated that c. 20,000 m^3 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, if required. If any of the material is to be reused on another site as by-product (and not as a waste), this will be done in accordance with Regulation 27 of the EC (Waste Directive) Regulations (2011-2020). EPA approval will be obtained prior to moving material as a by-product.

National End-of-Waste Decision EoW-N001/2023 (Regulation 28) establishes criteria determining when recycled aggregate resulting from a recovery operation ceases to be waste. Material from this proposed development will be investigated to see if it can cease to be a waste under the requirements of the National End of Waste Criteria for Aggregates.

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, the EMR Waste Management Plan 2015 – 2021 and the draft NWMPCE. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will promote more sustainable consumption of resources.

13.5.3 Monitoring Measures

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 / Buildings Manager to ensure effective implementation of the mitigation measures outlined in Section 13.5, Appendix 13.1 and 13.2 internally and by the nominated waste contractor(s).

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 operator / facilities management company
Litter Pollution	Waste storage areas will be monitored by the operator / facilities management company

Table 13.4: Monitoring Proposals

13.5.3.1.1 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.

13.5.3.1.2 Operational Phase

During the operational phase, waste generation volumes should be monitored by the residents, tenants operator / buildings Management. 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 contactor costs.

13.5.4 Interactions

This section discusses interactions between this Chapter and other specialist environmental topics considered in this EIAR.

13.5.4.1 Land, Soils, Geology & Hydrogeology

During the construction phase, excavated soil, stone, clay and made ground (c. 20,000 m^3) will be generated from the excavations required to facilitate site levelling, construction of the basement and construction of new foundations. It is estimated that c. 20,000 m^3 of excavated material will need to be removed off-site. Where material has to be taken off-site, it will be taken for reuse or recovery, where practical, with disposal as a last resort. Adherence to the mitigation measures in Chapter 19 and the requirements of the C&D WMP (Appendix 13.1), will ensure the effect is ***long-term, imperceptible*** and ***neutral.***

13.5.4.2 Traffic & Transportation

Local traffic and transportation will be impacted by the additional vehicle movements generated by removal of waste from the site during the construction and operational phases of the proposed development. The increase in vehicle movements as a result of waste generated during the construction phase will be *temporary* in duration. There will be an increase in vehicle movements in the area as a result of waste collections during the operational phase but these movement will be imperceptible in the context of the overall traffic and transportation increase. Traffic-related impacts during the construction and operational phases are addressed in Chapter 12 (Material Assets: Transportation). Provided the mitigation measures detailed in Chapter 18 and the requirements of the OWMP (included as Appendix 13.2) are adhered to, the predicted effects are ***short to long-term***, ***imperceptible*** and ***neutral.***

13.5.4.3 Population & Human Health

The potential impacts on human beings are in relation to incorrect management of waste during construction and / or operation, which could result in littering and presence of vermin – with associated potential for negative impacts on human health and residential amenity. A carefully planned approach to waste management and adherence to the project specific C&D WMP and OWMP (Appendices 13.1 and 13.2, respectively), will ensure appropriate management of waste and avoid any negative impacts on the local population. The effects should be ***long-term, imperceptible*** **and** ***neutral****.*

13.5.5 Cumulative Effects

As has been identified in the receiving environment section 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.

A review of the permitted and proposed developments has been undertaken to identify any substantial projects that are concurrent with the construction phase of the proposed development that may result in cumulative effects in respect of waste management.

13.5.5.1 Construction Phase

There are existing residential and commercial developments close by, along with the multiple permissions remaining in place in the area. 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 as provided from the National Waste Collection Permit Office and the Environmental Protection Agency 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.

Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will mitigate against any potential cumulative effects associated with waste generation and waste management. As such the effect will be **short-term, imperceptible and neutral.**

13.5.5.2.1 Operational Phase

There are existing residential and commercial developments close by, along with the multiple permissions remaining in place. All of the current and potential developments will generate similar waste types during their operational phases. Authorised waste contractors will be required to collect waste materials segregated, at a minimum, into recyclables, organic waste and non-recyclables. An increased density of development in the area is likely improve the efficiencies of waste collections in the area.

Other developments in the area, will be required to manage waste in compliance with national and local legislation, policies and plans which will minimise/mitigate any potential cumulative impacts associated with waste generation and waste management. As such the effect will be a **long-term, imperceptible and neutral.**

13.6. Operational Impacts, Mitigation and Monitoring Measures

13.6.1.1 Operational Impacts

The potential impacts on the environment of improper, or a lack of, waste management during the operational phase would be a diversion from the priorities of the waste hierarchy which would lead to small volumes of waste being sent unnecessarily to landfill. In the absence of mitigation, the effect on the local and regional environment is likely to be **indirect, long-term, significant and negative.**

The nature of the development means the generation of waste materials during the operational phase is unavoidable. Networks of waste collection, treatment, recovery and disposal infrastructure are in place in the region to manage waste efficiently from this type of development. Waste which is not suitable for recycling can be sent for energy recovery. There are also facilities in the region for segregation of municipal recyclables which is typically exported for conversion in recycled products (e.g. paper mills and glass recycling).

If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues at the development site and in adjacent areas. The knock-on effect of litter issues is the presence of vermin in affected areas. However, in the absence of mitigation, the effect on the local and regional environment is likely to be **indirect, short-term, significant and negative.**

Waste contractors will be required to service the proposed development on a scheduled basis to remove waste, further details can be found in Appendix 13.2. The use of non-permitted waste contractors or unauthorised facilities could give rise to inappropriate management of waste and result in negative environmental impacts or pollution. It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices. However, in the absence of mitigation, the effect on the local and regional environment is likely to be **indirect, long-term, significant and negative.**

13.6.2 Mitigation

13.6.2.1 Operational Phase

As previously stated, a project specific OWMP has been prepared and is included as Appendix 132.2. 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 EMR Waste

Management Plan 2015 – 2021, the draft NWMPCE, Waste Action Plan for a Circular Economy – Waste Management Policy in Ireland and the DCC waste bye-laws.

- The tenants / operators / facilities management company(s) of the 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 tenants / operators / facilities management company(s) 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 Operator 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;
  - Medical Waste;
  - Confidential Paper
  - 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 / tenants / operator / facilities management company will ensure that all waste materials will be stored in colour coded bins or other suitable receptacles in designated, easily accessible locations. Bins will be clearly identified with the approved waste type to ensure there is no cross contamination of waste materials;
- The residents / tenants / operator / facilities management company will ensure that all waste collected from the site of the Proposed Development will be reused, recycled, or recovered, where possible, with the exception of those waste streams where appropriate facilities are currently not available; and

- The residents / tenants / operator / facilities management company will ensure that all waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted, or licensed facilities.

These mitigation measures will ensure the waste arising from the Proposed Development during the operational phase is dealt with in compliance with the provisions of the Waste Management Act 1996 as amended, associated regulations, the Litter Pollution Act 1997, the EMR Waste Management Plan 2015 – 2021, the draft NWMPCE and the DCC Waste Bye-Laws. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved.

13.6.3 Monitoring Measures

The management of waste during the operational phase will be monitored by the Residents / Tenants / Operator / Buildings Manager to ensure effective implementation of the OWMP internally and by the nominated waste contractor(s).

13.6.5.2 Operational Phase

During the operational phase, waste generation volumes should be monitored by the Operator / Buildings Management. There may be opportunities to reduce the number of bins and equipment required in the WSA, where estimates have been too conservative. Reductions in bin and equipment requirements will improve efficiency and reduce waste contactor costs.

13.7 Residual Impacts

The implementation of the mitigation measures outlined in Section 13.5 and 13.6 will ensure that high rates of reuse, recovery and recycling are achieved at the site of the proposed development during the construction and operational phases. It will also ensure that European, National and Regional legislative waste requirements with regard to waste are met and that associated targets for the management of waste are achieved.

13.7.1 Construction Phase

A carefully planned approach to waste management as set out in Section 13.5 and adherence to the RWMP (which includes mitigation) (Appendix 13.1) during the construction phase will ensure that the predicted effect on the environment will be short-term, imperceptible and neutral..

13.7.2 Operational Phase

During the operational phase, a structured approach to waste management as set out in Section 13.6 and adherence to the OWMP (which includes mitigation) (Appendix 12.2) will promote resource efficiency and waste minimisation. When the mitigation measures are implemented and a high rate of reuse, recycling and recovery is achieved, the predicted impact of the operational phase on the environment will be **long-term, imperceptible and neutral.**

13.7.3 Conclusion

Assuming the full and proper implementation of the mitigation measures set out herein and in the RWMP (Appendix 13.1) and the OWMP (Appendix 13.2), no likely significant negative effects are predicted to occur as a result of the construction or operational of the proposed development.

13.8. '*Do Nothing'* Scenario

The resource and waste management impact assessment assumes that under the '*Do-Nothing Scenario'* the proposed development would not be undertaken. Consequently, there will be a neutral impact on resource and waste management.

13.9. Reference List

- 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
- Eastern Midlands Region Waste Management Plan 2015 – 2021 (2015).
- Regional Waste Management Planning Offices, Draft The National Waste Management Plan for a Circular Economy (2023)
- 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).
- Dublin City Council (DCC), Dublin City Development Plan (2022-2028)
- DCC, Dublin City Council (Storage, Presentation and Segregation of Household and 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.
- EPA, National Waste Database Reports 1998 – 2022.
- 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)

Appendix 13.1: Construction & Demolition Waste Management Plan

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RESOURCE & WASTE MANAGEMENT PLAN FOR A PROPOSED DEVELOPMENT

JUNCTION OF SANTRY AVENUE AND SWORDS ROAD, SANTRY, DUBLIN 9.

Report Prepared For

Dwyer Nolan Developments Ltd

Report Prepared By

Chonaill Bradley, Principal Environmental Consultant

Our Reference

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Contents **Page**

1.0 INTRODUCTION

AWN Consulting Ltd. (AWN) has prepared this Construction and Demolition (C&D) Resource & Waste Management Plan (RWMP) on behalf of Dwyer Nolan Developments Ltd. The proposed development provides for 321 no. apartments, comprised of 104 no. 1 bed, 198 no. 2 bed, & 19 no. 3 bed dwellings, in 4 no. seven to thirteen storey buildings, over basement level, with 3 no. retail units, a medical suite / GP Practice unit and community/arts & culture space (total c.1,483sq.m), all located at ground floor level, as well as a one storey residential amenity unit, facing onto Santry Avenue, located between Blocks A & D.

This plan provides information necessary to ensure that the management of C&D waste at the site is undertaken in accordance with the current legal and industry standards including the *Waste Management Act 1996* as amended and associated Regulations [1], *Environmental Protection Agency Act 1992* as amended [2], *Litter Pollution Act 1997* as amended [3] ,the *Eastern-Midlands Region (EMR) Waste Management Plan 2015 – 2021* [4] *and the* Draft *National Waste Management Plan for a Circular Economy* (NWMPCE) (2023) [5]. In particular, this plan aims to ensure maximum recycling, reuse and recovery of waste with diversion from landfill, wherever possible. It also provides appropriate measures in relation to the collection and transport of waste from the site to prevent issues associated with litter or more serious environmental pollution (e.g. contamination of soil and/or water).

This RWMP includes information on the legal and policy framework for C&D waste management in Ireland, estimates of the type and quantity of waste to be generated by the proposed development and prescribes measures for the management of different waste streams. The RWMP should be viewed as a live document and will be regularly revisited throughout the project's lifecycle so that opportunities to maximise waste reduction / efficiencies are exploited throughout, and that data is collected on an ongoing basis so that it is as accurate as possible.

2.0 C&D RESOURCE & WASTE MANAGEMENT IN IRELAND

2.1 National Level

The Irish Government issued a policy statement in September 1998 known as *'Changing Our Ways'* [6], which identified objectives for the prevention, minimisation, reuse, recycling, recovery and disposal of waste in Ireland. The target for C&D waste in this report was to recycle at least 50% of C&D waste within a five year period (by 2003), with a progressive increase to at least 85% over fifteen years (i.e. 2018).

In response to the *Changing Our Ways* report, a task force (Task Force B4) representing the waste sector of the already established Forum for the Construction Industry, released a report entitled '*Recycling of Construction and Demolition Waste'* [7] concerning the development and implementation of a voluntary construction industry programme to meet the Government's objectives for the recovery of C&D waste.

In September 2020, the Irish Government published a policy document outlining a new action plan for Ireland to cover the period of 2020-2025. This plan, *'A Waste Action Plan for a Circular Economy'* [8] (WAPCE), replaces the previous national waste management plan, *"A Resource Opportunity"* (2012), and was prepared in response to the 'European Green

Deal' which sets a roadmap for a transition to an altered economical model, where climate and environmental challenges are turned into opportunities.

The WAPCE sets the direction for waste planning and management in Ireland up to 2025. This reorientates policy from a focus on managing waste to a much greater focus on creating circular patterns of production and consumption. Other policy statements of a number of public bodies already acknowledge the circular economy as a national policy priority.

The policy document contains over 200 measures across various waste areas including circular economy, municipal waste, consumer protection and citizen engagement, plastics and packaging, construction and demolition, textiles, green public procurement and waste enforcement.

One of the first actions to be taken was the development of the Whole of Government Circular Economy Strategy 2022-2023 'Living More, Using Less' (2021) [8] 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. It is anticipated that the Strategy will be updated in full every 18 months to 2 years.

The Circular Economy and Miscellaneous Provisions Act 2022 [9] 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, tackling the delays which can be encountered by industry, and supporting the availability of recycled secondary raw materials in the Irish market, and tackles illegal fly-tipping and littering.

The Environmental Protection Agency (EPA) of Ireland issued '*Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects' in November 2021* [10]. These guidelines replace the previous 2006 guidelines issued by The National Construction and Demolition Waste Council (NCDWC) and the Department of the Environment, Heritage and Local Government (DoEHLG) in 2006 [11]. The guidelines provide a practical approach which is informed by best practice in the prevention and management of C&D wastes and resources from design to construction of a project, including consideration of the deconstruction of a project. These guidelines have been followed in the preparation of this document and include the following elements:

- Predicted C&D wastes and procedures to prevent, minimise, recycle and reuse wastes;
- Design teams roles and approach;
- Relevant EU, national and local waste policy, legislation and guidelines;
- Waste disposal/recycling of C&D wastes at the site;
- Provision of training for Resource Manager (RM) and site crew;
- Details of proposed record keeping system;
- Details of waste audit procedures and plan; and

- Details of consultation with relevant bodies i.e. waste recycling companies, Local Authority, etc.

Section 3 of the Guidelines identifies thresholds above which there is a requirement for the preparation of a RWMP for developments. The new guidance classifies developments on a two-tieredsystem. Developments which do not exceed any of the following thresholds may be classed as Tier 1 development:

- New residential development of less than 10 dwellings.
- Retrofit of 20 dwellings or less.
- New commercial, industrial, infrastructural, institutional, educational, health and other developments with an aggregate floor area less than 1,250m^2.
- Retrofit of commercial, industrial, infrastructural, institutional, educational, health and other developments with an aggregate floor area less than 2,000m^2; and
- Demolition projects generating in total less than 100m^3 in volume of C&D waste.

A development which exceeds one or more of these thresholds is classed as Tier-2 projects.

This development requires a RWMP as a Tier 2 development as it is above following criterion:

- New residential development of less than 10 dwellings.
- Demolition projects generating in total less than 100m^3 in volume of C&D waste; and
- New commercial, industrial, infrastructural, institutional, educational, health and other developments with an aggregate floor area less than 1,250m^2.

Other guidelines followed in the preparation of this report include *'Construction and Demolition Waste Management – a handbook for Contractors and Site Managers'* [12], published by FÁS and the Construction Industry Federation in 2002 and the previous guildines, *'Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects'* (2006).

These guidance documents are considered to define best practice for C&D projects in Ireland and describe how C&D projects are to be undertaken such that environmental impacts and risks are minimised and maximum levels of waste recycling are achieved.

2.2 Regional Level

The proposed development is located in the Local Authority area of Dublin City Council (DCC). The EMR Waste Management Plan 2015 – 2021 has been superseded as of March 2024 by the NWMPCE 2024 - 2030.

The NWMPCE does not 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.

This Plan seeks to influence sustainable consumption and prevent the generation of waste, improve the capture of materials to optimise circularity and enable compliance with policy and legislation.

The national plan sets out the following strategic targets for waste management in the country that are relevant to the development:

Proposed National Targets

1B. (Construction Materials) 12% Reduction in Construction & Demolition Waste Generated by 2030.

3B. (Reuse Facilities) Provide for reuse at 10 Civic Amenity Sites, minimum

Municipal landfill charges in Ireland are based on the weight of waste disposed. In the Leinster Region, charges are approximately €140 - €160 per tonne of waste which includes an €85 per tonne landfill levy introduced under the *Waste Management (Landfill Levy) (Amendment) Regulations 2015 (as amended).*

The *Dublin City Development Plan 2022 – 2028* [13] sets out a number of policies and objectives for Dublin City in line with the objectives of the National climate action policy and emphasises the need to take action to address climate action across all sectors of society and the economy. In the waste sector, policy on climate action is focused on a shift towards a 'circular economy' encompassing three core principles: designing out waste and pollution; keeping products and material in use; and regenerating natural systems. Further policies and objectives can be found within the development plan.

Policies:

- *CA8 F: minimising the generation of site and construction waste and maximising reuse or recycling.*
- *CA8 G: (New development should generally demonstrate/ provide for:) the use of construction materials that have low to zero embodied energy and CO^2 emissions.*
- *CA22: The Circular economy: To support the shift towards the circular economy approach as set out in 'a Waste Action Plan for a Circular Economy 2020 to 2025, Ireland's National Waste Policy, or as updated.*
- *CA23: To have regard to existing Best Practice Guidance on Waste Management Plans for Construction and Demolition Projects as well as any future updates to these guidelines in order to ensure the consistent application of planning requirements.*
- *SI27: Sustainable Waste Management: To support the principles of the circular economy, good waste management and the implementation of best practice in relation to waste management in order for Dublin City and the Region to become self-sufficient in terms of resource and waste management and to provide a waste management infrastructure that supports this objective.*
- *SI29: Segregated Storage and Collection of Waste Streams: To require new commercial and residential developments, to include adequate and easily accessible storage space that supports the separate collection of as many waste and recycling streams as possible, but at a minimum general domestic waste, dry recyclables and food waste as appropriate.*

- *SI30: To require that the storage and collection of mixed dry recyclables, organic and residual waste materials within proposed apartment schemes have regard to the Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities 2018 (or and any future updated versions of these guidelines produced during the lifetime of this plan).*

Objectives:

- *SIO14 Local Recycling Infrastructure: To provide for a citywide network of municipal civic amenity facilities/ multi-material public recycling and reuse facilities in accessible locations throughout the city in line with the objectives of the circular economy and 15 minute city.*
- *SIO16 Eastern-Midlands Region Waste Management Plan: To support the implementation of the Eastern-Midlands Regional Waste Management Plan 2015–2021 and any subsequent plans in order to facilitate the transition from a waste management economy towards a circular economy.*

15.7.1 Re-use of Existing Buildings

Where development proposal comprises of existing buildings on the site, applicants are encouraged to reuse and repurpose the buildings for integration within the scheme, where possible in accordance with Policy CA5, CA6 and CA7. Where demolition is proposed, the applicant must submit a demolition justification report to set out the rational for the demolition having regard to the 'embodied carbon' of existing structures as well as the additional use of resources and energy arising from new construction relative to the reuse of existing structures.

Existing building materials should be incorporated and utilised in the new design proposals where feasible and a clear strategy for the reuse and disposal of the materials should be included where demolition is proposed.

2.3 Legislative Requirements

The primary legislative instruments that govern waste management in Ireland and applicable to the project are:

- Waste Management Act 1996 as amended.
- Environmental Protection Act 1992 as amended.
- Litter Pollution Act 1997 as amended.
- Planning and Development Act 2000 as amended [14], and
- Circular Economy and Miscellaneous Provisions Act 2022.

One of the guiding principles of European waste legislation, which has in turn been incorporated into the *Waste Management Act 1996* as amended and subsequent Irish legislation, is the principle of *"Duty of Care"*. This implies that the waste producer is responsible for waste from the time it is generated through until its legal recycling, recovery or disposal (including its method of disposal). As it is not practical in most cases for the waste producer to physically transfer all waste from where it is produced to the final destination, waste contractors will be employed to physically transport waste to the final destination. Following on from this is the concept of *"Polluter Pays"* whereby the waste producer is liable to be prosecuted for pollution incidents, which may arise from the incorrect

management of waste produced, including the actions of any contractors engaged (e.g. for transportation and disposal/recovery/recycling of waste).

It is therefore imperative that the developer ensures that the waste contractors engaged by construction contractors are legally compliant with respect to waste transportation, recycling, recovery and disposal. This includes the requirement that a contractor handle, transport and recycle/recover/dispose of waste in a manner that ensures that no adverse environmental impacts occur as a result of any of these activities.

A collection permit to transport waste must be held by each waste contractor which is issued by the National Waste Collection Permit Office (NWCPO). Waste receiving facilities must also be appropriately permitted or licensed. Operators of such facilities cannot receive any waste, unless in possession of a Certificate of Registration (COR) or waste permit granted by the relevant Local Authority under the *Waste Management (Facility Permit & Registration) Regulations 2007 and Amendments* or a waste licence granted by the EPA. The COR/permit/licence held will specify the type and quantity of waste able to be received, stored, sorted, recycled, recovered and/or disposed of at the specified site.

3.0 Design Approach

The client and the design team have integrated the *'Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects'* into the design workshops, to help review processes, identify and evaluate resource reduction measures and investigate the impact on cost, time, quality, buildability, second life and management post construction. Further details on these design principals can be found within the aforementioned guidance document.

The design team have undertaken the design process in line with the international best practice principles to firstly prevent wastes, reuse where possible and thereafter sustainably reduce and recover materials. The below sections have been the focal point of the design process and material selections and will continued to be analysed and investigated throughout the design process and when selecting material.

As noted in the EPA guidelines, the approaches presented are based on international principles of optimising resources and reducing waste on construction projects through:

- Prevention;
- Reuse;
- Recycling;
- Green Procurement Principles;
- Off-Site Construction;
- Materials Optimisation; and
- Flexibility and Deconstruction.

3.1 Designing For Prevention, Reuse and Recycling

Undertaken at the outset and during project feasibility and evaluation the Client and Design Team considered:

- Establishing the potential for any reusable site assets (buildings, structures, equipment, materials, soils, etc.);

- The potential for refurbishment and refit of existing structures or buildings rather than demolition and new build;
- Assessing any existing buildings on the site that can be refurbished either in part or wholly to meet the Client requirements; and
- Enabling the optimum recovery of assets on site.

3.2 Designing for Green Procurement

Waste prevention and minimisation pre-procurement have been discussed and will be further discussed in this section. The Design Team will discuss proposed design solutions, encourage innovation in tenders and incentivise competitions to recognise sustainable approaches. They should also discuss options for packaging reduction with the main Contractor and subcontractors/suppliers using measures such as 'Just-in-Time' delivery and use ordering procedures that avoid excessive waste. The Green procurement extends from the planning stage into the detailed design and tender stage and will be an ongoing part of the long-term design and selection process for this development.

3.3 Designing for Off-Site Construction

Use of off-site manufacturing has been shown to reduce residual wastes by up to 90% (volumetric building versus traditional). The decision to use offsite construction is typically cost led but there are significant benefits for resource management. Some further considerations for procurement which are being investigated as part of the planning stage design process are listed as follows:

- Modular buildings as these can displace the use of concrete and the resource losses associated with concrete blocks such as broken blocks, mortars, etc.;
  - Modular buildings are typically pre-fitted with fixed plasterboard and installed insulation, eliminating these residual streams from site.
- Use of pre-cast structural concrete panels which can reduce the residual volumes of concrete blocks, mortars, plasters, etc.;
- The use of prefabricated composite panels for walls and roofing to reduce residual volumes of insulation and plasterboards;
- Using pre-cast hollow-core flooring instead of in-situ ready mix flooring or timber flooring to reduce the residual volumes of concrete/formwork and wood/packaging, respectively; and
- Designing for the preferential use of offsite modular units.

3.4 Designing for Materials Optimisation During Construction

To ensure manufacturers and construction companies adopt lean production models, including maximising the reuse of materials onsite as outlined in section 3.1, structures should be designed with the intent of designing out waste. This helps to reduce the environmental impacts associated with transportation of materials and from waste management activities. This includes investigating the use of standardised sizes for certain materials to help reduce the amount of offcuts produced on site, focusing on promotion and development of off-site manufacture.

3.5 Designing for Flexibility and Deconstruction

Design flexibility has and will be investigated throughout the design process to ensure that where possible products (including buildings) only contain materials that can be recycled and are designed to be easily disassembled. Material efficiency is being considered for the

duration and end of life of a building project to produce; flexible, adaptable spaces that enable a resource-efficient, low-waste future change of use; durability of materials and how they can be recovered effectively when maintenance and refurbishment are undertaken and during disassembly/deconstruction.

4.0 DESCRIPTION OF THE DEVELOPMENT

4.1 Location, Size and Scale of the Development

Dwyer Nolan Developments Ltd. wishes to apply for permission for a Large-Scale Residential Development (LRD) on this site, c. 1.5 hectares, located at the junction of Santry Avenue and Swords Road, Santry, Dublin 9. The development site is bounded to the north by Santry Avenue, to the east by Swords Road, to the west by Santry Avenue Industrial Estate, and to the south by the permitted Santry Place development (granted under Dublin City Council Ref.s. 2713/17 (as extended under Ref. 2713/17/X1), 2737/19 & 4549/22).

The proposed development provides for 321 no. apartments, comprised of 104 no. 1 bed, 198 no. 2 bed, & 19 no. 3 bed dwellings, in 4 no. seven to thirteen storey buildings, over basement level, with 3 no. retail units, a medical suite / GP Practice unit and community/arts & culture space (total c.1,483sq.m), all located at ground floor level, as well as a one storey residential amenity unit, facing onto Santry Avenue, located between Blocks A & D.

The proposed development consists of the following:

(1) Demolition of the existing building on site i.e. the existing Chadwicks Builders Merchants (c. 4,196.8m^2).

(2) Construction of 321 no. 1, 2, & 3 bed apartments, retail units, medical suite / GP Practice, community/arts & culture space, and a one storey residential amenity unit in 4 no. buildings that are subdivided into Blocks A-G as follows:

- Block A is a 7-13 storey block consisting of 52 no. apartments comprised of 22 no. 1 bed, 24 no. 2 beds & 6 no. 3 bed dwellings, with 2 no. retail units located on the ground floor (c. 132sq.m & c.172sq.m respectively). Adjoining same is Block B, which is a 7 storey block consisting of 44 no. apartments comprised of 22 no. 1 bed, 15 no. 2 bed, & 7 no. 3 bed dwellings, with 1 no. retail unit (c.164sq.m) and 1 no. medical suite / GP Practice unit located on the ground floor (c. 130sq.m). Refuse storage areas are also provided for at ground floor level.
- Block C is a 7 storey block consisting of 53 no. apartments comprised of 14 no. 1 bed & 39 no. 2 bed dwellings. Adjoining same is Block D which is an 8 storey block consisting of 44 no. apartments comprised of 22 no. 1 bed, 15 no. 2 bed, & 7 no. 3 bed dwellings. Ground floor, community/arts & culture space (c,606sq.m) is proposed in Blocks C & D, with refuse storage area also provided for at ground floor level.
- Block E is an 8 storey block consisting of 49 no. apartments comprised of 7 no. 1 bed & 42 no. 2 bed dwellings. A refuse storage area, substation, & switchroom are also provided for at ground floor level. Adjoining same is Block F which is a 7 storey

block consisting of 52 no. apartments comprised of 13 no. 1 bed & 39 no. 2 bed dwellings. Ground floor, community/arts & culture space (c.877sq.m) is proposed in Blocks E & F. A refuse storage area, bicycle storage area, substation, & switchroom are also provided for at ground floor level of Blocks E & F.

- Block G is a 7 storey block consisting of 34 no. apartments comprised of 20 no. 1 bed & 14 no. 2 bed dwellings. A refuse storage area & bicycle storage area are also provided for at ground floor level.

(3) Construction of a 1 storey residential amenity unit (c. 166.1sq.m) located between Blocks A & D.

(4) Construction of basement level car park (c.5,470.8sq.m), accommodating 161 no. car parking spaces, 10 no. motorbike parking spaces & 664 no. bicycle parking spaces. Internal access to the basement level is provided from the cores of Blocks A, B, C, D, E, & F. External vehicular access to the basement level is from the south, between Blocks B & C. 33 no. car parking spaces & 58 no. bicycle parking spaces are also provided for within the site at surface level.

(5) Public open space of c. 1,791sq.m is provided for between Blocks C-D & E-F. Communal open space is also proposed, located between (i) Blocks E-F & G, (ii) Blocks A-B & C-D, and (iii) in the form of roof gardens located on Blocks A, C, & F and the proposed residential amenity use unit, totalling c.3,116sq.m. The development includes for hard and soft landscaping & boundary treatments. Private open spaces are provided as terraces at ground floor level of each block and balconies at all upper levels.

(6) Vehicular access to the development will be via 2 no. existing / permitted access points: (i) on Santry Avenue in the north-west of the site (ii) off Swords Road in the south-east of the site, as permitted under the adjoining Santry Place development (Ref. 2713/17).

(7) The development includes for all associated site development works above and below ground, bin & bicycle storage, plant (M&E), sub-stations, public lighting, servicing, signage, surface water attenuation facilities etc.

Figure 4.1 *Proposed Site Layout*

4.2 Details of the Non-Hazardous Wastes to be Produced

There will be waste materials generated from the demolition of the existing building and hardstanding areas on site, as well as from the further excavation of the building foundations. The volume of waste generated from demolition will be more difficult to segregate than waste generated from the construction phase, as many of the building materials will be bonded together or integrated i.e. plasterboard on timber ceiling joists, steel embedded in concrete, etc.

There will be soil, stones, clay and made ground excavated to facilitate construction of the basement, new foundations, underground services, and the installation of the proposed basement. The development engineers (DBFL) have estimated that 20,000m^3 of material will need to be excavated to do so. It is currently envisaged that there will be limited opportunity for reuse of excavated material on site and all excavated material will need to be removed offsite. When excavated material is required to be removed offsite it will be taken for appropriate offsite reuse, recovery, recycling and / or disposal.

During the construction phase there may be a surplus of building materials, such as timber off-cuts, broken concrete blocks, cladding, plastics, metals and tiles generated. There may also be excess concrete during construction which will need to be disposed of. Plastic and cardboard waste from packaging and supply of materials will also be generated. The contractor will be required to ensure that oversupply of materials is kept to a minimum and opportunities for reuse of suitable materials is maximised.

Waste will also be generated from construction 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 infrequently from site offices.

4.3 Potential Hazardous Wastes Arising

4.3.1 Contaminated Soil

Site investigations and environmental soil testing have not yet been undertaken for this site as the site is currently occupied and operating. Prior to any material being removed offsite, site investigations and appropriate environmental soil testing will be undertaken to classify the material for appropriate reuse, recycling or disposal.

A ground investigation was carried out on the neighbouring development (Planning Ref: 2713/17 & 2737/19 by GII, in January 2019. The site investigation report has been included as part of this planning application under separate cover.

If any potentially contaminated material is encountered, it will need to be segregated from clean / inert material, tested and classified as either non-hazardous or hazardous in accordance with the EPA publication entitled *'Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous'* [15] using the *HazWasteOnline* application (or similar approved classification method). The material will then need to be classified as clean, inert, non-hazardous or hazardous in accordance with the *EC Council Decision 2003/33/EC* [16], which establishes the criteria for the acceptance of waste at landfills.

In the event that Asbestos Containing Materials (ACMs) are found within the excavated material, the removal will only be carried out by a suitably permitted waste contractor, in accordance with *S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010.* All asbestos will be taken to a suitably licensed or permitted facility.

In the event that hazardous soil, or historically deposited waste is encountered during the construction phase, the contractor will notify DCC and provide a Hazardous / Contaminated Soil Management Plan, to include estimated tonnages, description of location, any relevant mitigation, destination for disposal / treatment, in addition to information on the authorised waste collector(s).

4.3.2 Fuel/Oils

Fuels and oils are classed as hazardous materials; any on-site storage of fuel / oil, and all storage tanks and all draw-off points will be bunded and located in a dedicated, secure area of the site. Provided that these requirements are adhered to and the site crew are trained in the appropriate refuelling techniques, it is not expected that there will be any fuel / oil waste generated at the site.

4.3.3 Invasive Plant Species

An invasive species survey was undertaken by Enviroguide Consulting in May 2021 for the purpose of identifying and managing any schedule 3 (*Regulations SI No. 355/2015)*

invasive species such as Japanese Knotweed (*Fallopia japonica)*. There were no invasive species found on the site.

4.3.4 Asbestos

An asbestos refurbishment / demolition survey will be undertaken prior to the demolition of the existing structures on site to determine the presence of asbestos or asbestos containing materials (ACMs).

Removal of asbestos or ACMs will be carried out by a suitably qualified contractor and ACMs will only be removed from site by a suitably permitted / licenced waste contractor, in accordance with *S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010.* All material will be taken to a suitably licensed or permitted facility.

4.3.5 Other Known Hazardous Substances

Paints, glues, adhesives and other known hazardous substances will be stored in designated areas. They will generally be present in small volumes only and associated waste volumes generated will be kept to a minimum. Wastes will be stored in appropriate receptacles pending collection by an authorised waste contractor.

In addition, WEEE (containing hazardous components), printer toner / cartridges, batteries (Lead, Ni-Cd or Mercury) and / or fluorescent tubes and other mercury containing waste may be generated from during C&D activities or temporary site offices. These wastes, if generated, will be stored in appropriate receptacles in designated areas of the site pending collection by an authorised waste contractor.

5.0 ROLES AND RESPONSIBILITIES

The *Best Practice Guidelines on the Preparation of Resource Waste Management Plans for Construction and Demolition Projects* promotes that a RM should be appointed. The RM may be performed by number of different individuals over the life-cycle of the Project, however it is intended to be a reliable person chosen from within the Planning/Design/Contracting Team, who is technically competent and appropriately trained, who takes the responsibility to ensure that the objectives and measures within the Project RWMP are complied with. The RM is assigned the requisite authority to meet the objective and obligations of the RWMP. The role will include the important activities of conducting waste checks/audits and adopting construction methodology that is designed to facilitate maximum reuse and/or recycling of waste.

5.1 Role of the Client

The Client is the body establishing the aims and the performance targets for the project.

- The Client has commissioned the preparation and submission of a preliminary RWMP as part of the design and planning submission;
- The Client is to commission the preparation and submission of an updated RWMP as part of the construction tendering process;
- The Client will ensure that the RWMP is agreed on and submitted to the local authority prior to commencement of works on site;

- The Client is to request the end-of-project RWMP from the Contractor.

5.2 Role of the Client Advisory Team

The Client Advisory Team or Design Team is formed of architects, consultants, quantity surveyors and engineers and is responsible for:

- Drafting and maintaining the RWMP through the design, planning and procurement phases of the project;
- Appointing a RM to track and document the design process, inform the Design Team and prepare the RWMP.
- Including details and estimated quantities of all projected waste streams with the support of environmental consultants/scientists. This should also include data on waste types (e.g. waste characterisation data, contaminated land assessments, site investigation information) and prevention mechanisms (such as by-products) to illustrate the positive circular economy principles applied by the Design Team;
- Handing over of the RWMP to the selected Contractor upon commencement of construction of the development, in a similar fashion to how the safety file is handed over to the Contractor;
- Working with the Contractor as required to meet the performance targets for the project.

5.3 Future Role of the Contractor

The future construction Contractors have not yet been decided upon for this RWMP. However, once select they will have major roles to fulfil. They will be responsible for:

- Preparing, implementing and reviewing the RWMP throughout the construction phases (including the management of all suppliers and sub-contractors) as per the requirements of these guidelines;
- Identifying a designated and suitably qualified RM who will be responsible for implementing the RWMP;
- Identifying all hauliers to be engaged to transport each of the resources / wastes off-site;
- Implementing waste management policies whereby waste materials generated on site are to be segregated as far as practicable;
- Renting and operating a mobile-crusher to crush concrete for temporary reuse onsite during construction and reduce the amount of HGV loads required to remove material from site;
- Applying for the appropriate waste permit to crush concrete onsite;
- Identifying all destinations for resources taken off-site. As above, any resource that is legally classified as a 'waste' must only be transported to an authorised waste facility;
- End-of-waste and by-product notifications addressed with the EPA where required;
- Clarification of any other statutory waste management obligations, which could include on-site processing;
- Full records of all resources (both wastes and other resources) should be maintained for the duration of the project; and
- Preparing a RWMP Implementation Review Report at project handover.

6.0 KEY MATERIALS & QUANTITIES

6.1 Project Resource Targets

Project specific resource and waste management targets for the site have not yet been set and this information will be updated for these targets once these targets have been confirmed by the client. However, it is expected for projects of this nature that a minimum of 70% of waste is fully re-used, recycled or recovered. Target setting will inform the setting of project-specific benchmarks to track target progress. Typical Key Performance Indicators (KPIs) that will be used to set targets include (as per guidelines):

- Weight (tonnes) or Volume (m^3) of waste generated per construction value;
- Weight (tonnes) or Volume (m^3) of waste generated per construction floor area (m^2);
- Fraction of resource reused on site;
- Fraction of resource notified as by-product;
- Fraction of waste segregated at source before being sent off-site for recycling/recovery; and
- Fraction of waste recovered, fraction of waste recycled, or fraction of waste disposed.

6.2 Main Construction and Demolition Waste Categories

The main non-hazardous and hazardous waste streams that could be generated by the construction activities at a typical site are shown in Table 6.1. The List of Waste (LoW) code for each waste stream is also shown.

Table 6.1 *Typical waste types generated and LoW codes (individual waste types may contain hazardous substances)*

Waste Material	LoW Code
Concrete, bricks, tiles, ceramics	17 01 01-03 & 07
Wood, glass and plastic	17 02 01-03
Treated wood, glass, plastic, containing hazardous substances	17-02-04*
Bituminous mixtures, coal tar and tarred products	17 03 01*, 02 & 03*
Metals (including their alloys) and cable	17 04 01-11
Soil and stones	17 05 03* & 04
Gypsum-based construction material	17 08 01* & 02
Paper and cardboard	20 01 01
Mixed C&D waste	17 09 04
Green waste	20 02 01
Electrical and electronic components	20 01 35 & 36
Batteries and accumulators	20 01 33 & 34
Liquid fuels	13 07 01-10
Chemicals (solvents, pesticides, paints, adhesives, detergents etc.)	20 01 13, 19, 27-30
Insulation materials	17 06 04
Organic (food) waste	20 01 08

Waste Material	LoW Code
Mixed Municipal Waste	20 03 01

** Individual waste type may contain hazardous substances*

7.0 WASTE MANAGEMENT

7.1 Demolition Waste Generation

The demolition stage will involve the demolition of the existing warehouse style building with attached office and hard standing. 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 7.1, below.

Table 7.1 *Estimated off-site reuse, recycle and disposal rates for demolition waste*

Waste Type	Tonnes	Reuse		Recycle / Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Glass	56.7	0	0.0	85	48.2	15	8.5
Concrete, Bricks, Tiles, Ceramics	513.0	30	153.9	65	333.5	5	25.7
Plasterboard	25.2	30	7.6	60	15.1	10	2.5
Asphalts	6.3	0	0.0	25	1.6	75	4.7
Metals	94.4	5	4.7	80	75.5	15	14.2
Timber	75.5	10	7.6	60	45.3	30	22.7
Total	**771.1**		**173.7**		**519.2**		**78.2**

7.2 Construction Waste Generation

Table 7.2 shows the breakdown of C&D waste types produced on a typical site based on data from the EPA *National Waste Reports* [14] *and the joint EPA & GMIT study* [15].

Table 7.2: *Waste materials generated on a typical Irish construction site*

Waste Types	%
Mixed C&D	33
Timber	28
Plasterboard	10
Metals	8
Concrete	6
Other	15
Total	**100**

Table 7.3, below, shows the estimated construction waste generation for the proposed Project based on the gross floor area of construction and other information available to date, along with indicative targets for management of the waste streams. The estimated

amounts for the main waste types (with the exception of soils and stones) are based on an average large-scale development waste generation rate per m^2, using the waste breakdown rates shown in Table 7.2. These have been calculated from the schedule of development areas provided by the architect.

Table 7.3: *Predicted on and off-site reuse, recycle and disposal rates for construction waste*

Waste Type	Tonnes	Reuse		Recycle / Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Mixed C&D	652.3	10	65.2	80	521.9	10	65.2
Timber	553.5	40	221.4	55	304.4	5	27.7
Plasterboard	197.7	30	59.3	60	118.6	10	19.8
Metals	158.1	5	7.9	90	142.3	5	7.9
Concrete	118.6	30	35.6	65	77.1	5	5.9
Other	296.5	20	59.3	60	177.9	20	59.3
Total	**1976.8**		**448.7**		**1342.2**		**185.8**

In addition to the waste streams in Table 4.3, there will be c. 20,000 m^3 of soil, stones, clay and made ground excavated to facilitate construction of new foundations, underground services, and the installation of the proposed basements. Any suitable excavated material will be temporarily stockpiled for reuse as fill, where possible, but reuse on site is expected to be limited and all of the excavated material is expected to be removed off- site for appropriate reuse, recovery and / or disposal.

It should be noted that 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.

7.3 Proposed Resource & Waste Management Options

Waste materials generated will be segregated on site, where it is practical. Where the on-site segregation of certain waste types is not practical, off-site segregation will be carried out. There will be skips and receptacles provided to facilitate segregation at source where feasible. All waste receptacles leaving site will be covered or enclosed. The appointed waste contractor will collect and transfer the wastes as receptacles are filled. There are numerous waste contractors in the Dublin Region that provide this service.

All waste arising's will be handled by an approved waste contractor holding a current waste collection permit. All waste arising's requiring disposal off-site will be reused, recycled, recovered or disposed of at a facility holding the appropriate registration, permit or licence, as required.

National End-of-Waste Decision EoW-N001/2023 (Regulation 28) establishes criteria determining when recycled aggregate resulting from a recovery operation ceases to be waste. Material from this proposed development will be investigated to see if it can cease to be a waste under the requirements of the National End of Waste Criteria for Aggregates.

During construction some of the sub-contractors on site will generate waste in relatively low quantities. The transportation of non-hazardous waste by persons who are not directly involved with the waste business, at weights less than or equal to 2 tonnes, and in vehicles not designed for the carriage of waste, are exempt from the requirement to have a waste collection permit (Ref. Article 30 (1) (b) of the Waste Collection Permit Regulations 2007 as amended). Any sub-contractors engaged that do not generate more than 2 tonnes of waste at any one time can transport this waste offsite in their work vehicles (which are not design for the carriage of waste). However, they are required to ensure that the receiving facility has the appropriate COR / permit / licence.

Written records will be maintained by the contractor(s) detailing the waste arising throughout the C&D phases, the classification of each waste type, waste collection permits for all waste contactors who collect waste from the site and COR/permit or licence for the receiving waste facility for all waste removed off site for appropriate reuse, recycling, recovery and/or disposal.

Dedicated bunded storage containers will be provided for hazardous wastes which may arise such as batteries, paints, oils, chemicals etc, if required.

The anticipated management of the main waste streams is outlined as follows:

Soil, Stone, Clay & Made Ground

The waste hierarchy states that the preferred option for waste management is prevention and minimisation of waste, followed by preparing for reuse and recycling / recovery, energy recovery (i.e. incineration) and, least favoured of all, disposal. The excavations are required to facilitate construction works so the preferred option (prevention and minimisation) cannot be accommodated for the excavation phase.

When material is removed off-site it could be reused as a by-product (and not as a waste). If this is done, it will be done in accordance with Regulation 27 of the European Communities (Waste Directive) Regulations 2011, as amended, which requires that certain conditions are met and that by-product notifications are made to the EPA via their online notification form. Excavated material should not be removed from site until approval from the EPA has been received. The potential to reuse material as a by-product will be confirmed during the course of the excavation works, with the objective of eliminating any unnecessary disposal of material.

The next option (beneficial reuse) may be appropriate for the excavated material, pending environmental testing to classify the material as hazardous or non-hazardous in accordance with the EPA *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* publication. Clean inert material may be used as fill material in other construction projects or engineering fill for waste licensed sites. Beneficial reuse of surplus excavation material as engineering fill may be subject to further testing to determine if materials meet the specific engineering standards for their proposed end use.

Any nearby sites requiring clean fill/capping material will be contacted to investigate reuse opportunities for clean and inert material. If any of the material is to be reused on another site as a by-product (and not as a waste), this will be done in accordance with Regulation 27. Similarly, if any soils/stones are imported onto the site from another construction site as a by-product, this will also be done in accordance with Regulation 27. Regulation 27 will be

investigated to see if the material can be imported onto this site for beneficial reuse instead of using virgin materials.

If the material is deemed to be a waste, then removal and reuse / 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. Once all available beneficial reuse options have been exhausted, the options of recycling and recovery at waste permitted and licensed sites will be considered.

In the event that contaminated material is encountered and subsequently classified as hazardous, this material will be stored separately to any non-hazardous material. It will require off-site treatment at a suitable facility or disposal abroad via Transfrontier Shipment of Wastes (TFS).

Bedrock

While it is not envisaged that bedrock will be encountered, if bedrock is encountered, it is anticipated that it will not be crushed on site. Any excavated rock is expected to be removed off- site for appropriate reuse, recovery and / or disposal. If bedrock is to be crushed on-site, the appropriate mobile waste facility permit will be obtained from DCC.

Silt & Sludge

During the construction phase, silt and petrochemical interception will be carried out on run-off and pumped water from site works, where required. Sludge and silt will then be collected by a suitably licensed contractor and removed off- site.

Concrete Blocks, Bricks, Tiles & Ceramics

The majority of concrete blocks, bricks, tiles and ceramics generated as part of the construction works are expected to be clean, inert material and should be recycled, where possible. If concrete is to be crushed on- site, the appropriate mobile waste facility permit will be obtained from DCC.

Hard Plastic

As hard plastic is a highly recyclable material, much of the plastic generated will be primarily from material off-cuts. All recyclable plastic will be segregated and recycled, where possible.

Timber

Timber that is uncontaminated, i.e. free from paints, preservatives, glues, etc., will be disposed of in a separate skip and recycled off- site.

Metal

Metals will be segregated, where practical, and stored in skips. Metal is highly recyclable and there are numerous companies that will accept these materials.

Plasterboard

There are currently a number of recycling services for plasterboard in Ireland. Plasterboard from the construction phases will be stored in a separate skip, pending collection for recycling. The site Manager will ensure that oversupply of new plasterboard is carefully monitored to minimise waste.

Glass

Glass materials will be segregated for recycling, where possible.

Waste Electrical & Electronic Equipment (WEEE)

Any WEEE will be stored in dedicated covered cages / receptacles / pallets pending collection for recycling.

Other Recyclables

Where any other recyclable wastes, such as cardboard and soft plastic, are generated, these will be segregated at source into dedicated skips and removed off- site.

Non-Recyclable Waste

C&D waste which is not suitable for reuse or recovery, such as polystyrene, some plastics and some cardboards, will be placed in separate skips or other receptacles. Prior to removal from site, the non-recyclable waste skip / receptacle will be examined by a member of the waste team (see Section 10.0) to determine if recyclable materials have been placed in there by mistake. If this is the case, efforts will be made to determine the cause of the waste not being segregated correctly and recyclable waste will be removed and placed into the appropriate receptacle.

Asbestos Containing Materials

Any asbestos or ACM found on- site should be removed by a suitably competent contractor and disposed of as asbestos waste before the demolition works begin. All asbestos removal work or encapsulation work must be carried out in accordance with *S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010.*

Other Hazardous Wastes

On-site storage of any hazardous wastes produced (i.e. contaminated soil if encountered and / or waste fuels) will be kept to a minimum, with removal off-site organised on a regular basis. Storage of all hazardous wastes on-site will be undertaken so as to minimise exposure to on-site personnel and the public and to also minimise potential for environmental impacts. Hazardous wastes will be recovered, wherever possible, and failing this, disposed of appropriately.

On-Site Crushing

It is currently not envisaged that the crushing of waste materials will occur on-site. However, if the crushing of material is to be undertaken, a mobile waste facility permit will first be obtained from DCC and the destination of the accepting waste facility or if an application under regulation 28 will be made using National End-of-Waste Decision EoW-N001/2023, will be supplied to the DCC waste unit.

7.4 Tracking and Documentation Procedures for Off-Site Waste

All waste will be documented prior to leaving the site. Waste will be weighed by the contractor, either by weighing mechanism on the truck or at the receiving facility. These waste records will be maintained on site by the nominated project RM (see Section 10.0).

All movement of waste and the use of waste contractors will be undertaken in accordance with the *Waste Management Act 1996* as amended, *Waste Management (Collection Permit) Regulations 2007* as amended and *Waste Management (Facility Permit & Registration) Regulations 2007* and amended. This includes the requirement for all waste contractors to have a waste collection permit issued by the NWCPO. The nominated project RM (see Section 10.0) will maintain a copy of all waste collection permits on-site.

If the waste is being transported to another site, a copy of the Local Authority waste COR/permit or EPA Waste Licence for that site will be provided to the nominated project RM (see Section 10.0). If the waste is being shipped abroad, a copy of the Transfrontier Shipping (TFS) notification document will be obtained from DCC (as the relevant authority on behalf of all local authorities in Ireland) and kept on-site along with details of the final destination (COR, permits, licences etc.). A receipt from the final destination of the material will be kept as part of the on-site waste management records.

All information will be entered in a waste management recording system to be maintained on site.

8.0 ESTIMATED COST OF WASTE MANAGEMENT

An outline of the costs associated with different aspects of waste management is outlined below. The total cost of C&D waste management will be measured and will take into account handling costs, storage costs, transportation costs, revenue from rebates and disposal costs.

8.1 Reuse

By reusing materials on site, there will be a reduction in the transport and recycle / recovery / disposal costs associated with the requirement for a waste contractor to take the material off-Site. Clean and inert soils, gravel, stones, etc., which cannot be reused on-Site may be used as access roads or capping material for landfill sites, etc. This material is often taken free of charge or at a reduced fee for such purposes, reducing final waste disposal costs.

8.2 Recycling

Salvageable metals will earn a rebate, which can be offset against the costs of collection and transportation of the skips. Clean, uncontaminated cardboard and certain hard plastics can also be recycled. Waste contractors will charge considerably less to take segregated wastes, such as recyclable waste, from a site than mixed waste. Timber can be recycled as chipboard. Again, waste contractors will charge considerably less to take segregated wastes, such as timber, from a site than mixed waste.

8.3 Disposal

Landfill charges are currently at around €140 - €160 per tonne which includes a €85 per tonne landfill levy specified in the *Waste Management (Landfill Levy) Regulations 2015*. In addition to disposal costs, waste contractors will also charge a collection fee for skips.

Collection of segregated C&D waste usually costs less than municipal waste. Specific C&D waste contractors take the waste off-site to a licensed or permitted facility and, where possible, remove salvageable items from the waste stream before disposing of the remainder to landfill. Clean soil, rubble, etc., is also used as fill / capping material, wherever possible.

9.0 DEMOLITION PROCEDURES

There will be waste materials generated from the demolition of the existing building and hardstanding areas on site, as well as from the further excavation of the building foundations. The demolition areas are identified in the planning drawings submitted as part of this application. A formal demolition plan including safety procedures will be prepared by the demolition contractor. However, in general, the following sequence of works should be followed during the demolition stage:

Check for Hazards

Prior to commencing works, buildings and structures to be demolished will be checked for any likely hazards including asbestos, ACMs, electrical power lines or cables, gas reticulation systems, telecommunications, unsafe structures and fire / explosion hazards, e.g. combustible dust, chemical hazards, oil, fuels and contamination.

Removal of Components

All hazardous materials will be removed first. All components from within the buildings that can be salvaged will be removed next. This will primarily be comprised of metal; however, may also include timbers, doors, windows, wiring and metal ducting, etc.

Removal of Roofing

Steel roof supports, beams, etc., will be dismantled and taken away for recycling / salvage.

Excavation of Services, Demolition of Walls and Concrete

Services will be removed from the ground and the breakdown of walls will be carried out once all salvageable or reusable materials have been taken from the buildings. Finally, any existing foundations and hard standing areas will be excavated.

10.0 TRAINING PROVISIONS

10.1 Resource Manager Training and Responsibilities

The nominated RM will be given responsibility and authority to select a waste team if required, i.e. members of the site crew that will aid them in the organisation,

operation and recording of the waste management system implemented on site. The RM will have overall responsibility to oversee, record and provide feedback to the client on everyday waste management at the site. Authority will be given to the RM to delegate responsibility to sub-contractors, where necessary, and to coordinate with suppliers, service providers and sub-contractors to prioritise waste prevention and material salvage.

The RM will be trained in how to set up and maintain a record keeping system, how to perform an audit and how to establish targets for waste management on site. The RM will also be trained in the best methods for segregation and storage of recyclable materials, have information on the materials that can be reused on site and be knowledgeable in how to implement this RWMP.

10.2 Site Crew Training

Training of site crew is the responsibility of the RM and, as such, a waste training program should be organised. A basic awareness course will be held for all site crew to outline the RWMP and to detail the segregation of waste materials at source. This may be incorporated with other site training needs such as general site induction, health and safety awareness and manual handling.

This basic course will describe the materials to be segregated, the storage methods and the location of the Waste Storage Areas (WSAs). A sub-section on hazardous wastes will be incorporated into the training program and the particular dangers of each hazardous waste will be explained.

11.0 TRACKING AND TRACING / RECORD KEEPING

Records should be kept for all waste material which leaves the site, either for reuse on another site, recycling or disposal. A recording system will be put in place to record the waste arising's on site.

A waste tracking log should be used to track each waste movement from the site. On exit from the site the waste collection vehicle driver should stop at the site office and sign out as a visitor and provide the security personnel or RM with a waste docket (or WTF for hazardous waste) for the waste load collected. At this time, the security personnel should complete and sign the Waste Tracking Register with the following information:

- Date
- Time
- Quantity
- Waste Contractor
- Company waste contractor appointed by e.g. Contractor or subcontractor name
- Collection Permit No.
- Vehicle Reg.
- Driver Name
- Docket No.
- Waste Type
- Quantity
- LoW code

The waste vehicle will be checked by security personal or the RM to ensure it has the waste collection permit no. displayed and a copy of the waste collection permit in the vehicle before they are allowed to remove the waste from the site.

The waste transfer dockets will be transferred to the RM on a weekly basis and can be placed in the Waste Tracking Log file. This information will be forwarded onto the DCC Waste Regulation Unit when requested.

Each subcontractor that has engaged their own waste contractor will be required to maintain a similar waste tracking log with the waste dockets / WTF maintained on file and available for inspection on site by the main contractor as required. These subcontractor logs will be merged with the main waste log.

Waste receipts from the receiving waste facility will also be obtained by the site contractor(s) and retained. A copy of the Waste Collection Permits, CORs, Waste Facility Permits and Waste Licences will be maintained on site at all times and will be periodically reviewed by the RM. Subcontractors who have engaged their own waste contractors, should provide the main contractor with a copy of the waste collection permits and COR / permit / licence for the receiving waste facilities and maintain a copy on file, available for inspection on site as required.

12.0 OUTLINE WASTE AUDIT PROCEDURE

12.1 Responsibility for Waste Audit

The appointed RM will be responsible for conducting a waste audit at the site during the C&D phase of the development. Contact details for the nominated RM will be provided to the DCC Waste Regulation Unit after the main contractor is appointed and prior to any material being removed from site.

12.2 Review of Records and Identification of Corrective Actions

A review of all waste management costs and the records for the waste generated and transported off-site should be undertaken mid-way through the project.

If waste movements are not accounted for, the reasons for this should be established in order to see if and why the record keeping system has not been maintained. The waste records will be compared with the established recovery/reuse/recycling targets for the site. Each material type will be examined, in order to see where the largest percentage waste generation is occurring. The waste management methods for each material type will be reviewed in order to highlight how the targets can be achieved.

Upon completion of the C&D phase, a final report will be prepared, summarising the outcomes of waste management processes adopted and the total recycling/reuse/recovery figures for the development.

13.0 CONSULTATION WITH RELEVANT BODIES

13.1 Local Authority

Once construction contractors have been appointed, have appointed waste contractors and prior to removal of any C&D waste materials offsite, details of the proposed destination of each waste stream will be provided to the DCC Waste Regulation Unit.

DCC will also be consulted, as required, throughout the excavation and construction phases in order to ensure that all available waste reduction, reuse and recycling opportunities are identified and utilised and that compliant waste management practices are carried out.

13.2 Recycling/Salvage Companies

The appointed waste contractor for the main waste streams managed by the construction contractors will be audited in order to ensure that relevant and up-to-date waste collection permits and facility registrations/permits/licences are held. In addition, information will be obtained regarding the feasibility of recycling each material, the costs of recycling/reclamation, the means by which the wastes will be collected and transported off-site, and the recycling/reclamation process each material will undergo off site.

13.3 Pest Management

A pest control operator will be appointed as required to manage pest onsite during the construction phase of the project. Organic and food wastes generated by staff will not be stored in open skips, but in closed waste receptacles. Any waste receptacles will be carefully managed to prevent leaks, odours and pest problems.

14.0 CONCLUSION

Adherence to this plan will also ensure that waste management during the construction phase, at the development is carried out in accordance with the requirements in the EPA's Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects and the DCC Waste Bye-Laws.

15.0 REFERENCES

1. Waste Management Act 1996 (No. 10 of 1996) as amended.
2. Environmental Protection Agency Act 1992, (No. 7 of 1992) as amended.
3. Litter Pollution Act 1997 (No. 12 of 1997) as amended
4. Regional Waste Management Planning Offices, *The National Waste Management Plan for a Circular Economy 2024 – 2030 (2024).*
5. Department of Environment and Local Government (DoELG) *Waste Management – Changing Our Ways, A Policy Statement* (1998).
6. Forum for the Construction Industry – *Recycling of Construction and Demolition Waste.*
7. Department of Communications, Climate Action and Environment (DCCAE), *Waste Action Plan for the Circular Economy - Ireland's National Waste Policy 2020-2025* (2020).
8. DCCAE, *Whole of Government Circular Economy Strategy 2022-2023 'Living More, Using Less'* (2021)
9. The Circular Economy and Miscellaneous Provisions Act 2022
10. Environmental Protection Agency (EPA) *'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021)*
11. Department of Environment, Heritage and Local Government, *Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects* (2006).
12. FÁS and the Construction Industry Federation (CIF), *Construction and Demolition Waste Management – a handbook for Contractors and Site Managers* (2002).
13. Dublin City Council (DCC), Dublin City Council Development Plan 2022-2028 (2021)
14. Planning and Development Act 2000 (S.I. No. 30 of 2000) as amended
15. EPA, *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* (2018)
16. 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.
17. Environmental Protection Agency (EPA), *National Waste Database Reports 1998 – 2020.* and the Circular Economy and National Waste Database Report 2021 -
18. 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).

Appendix 13.2: Operational Waste Management Plan

OPERATIONAL WASTE MANAGEMENT PLAN FOR A PROPOSED DEVELOPMENT

JUNCTION OF SANTRY AVENUE AND SWORDS ROAD, SANTRY, DUBLIN 9.

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Report Prepared For

Dwyer Nolan Developments Ltd

Report Prepared By

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Title	Principal Environmental Consultant	Director
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CONTENTS

1.0 INTRODUCTION

AWN Consulting Ltd. (AWN) has prepared this Operational Waste Management Plan (OWMP) on behalf of Dwyer Nolan Developments Ltd. The proposed development provides for 321 no. apartments, comprised of 104 no. 1 bed, 198 no. 2 bed, & 19 no. 3 bed dwellings, in 4 no. seven to thirteen storey buildings, over basement level, with 3 no. retail units, a medical suite / GP Practice unit and community/arts & culture space (total c.1,483sq.m), all located at ground floor level, as well as a one storey residential amenity unit, facing onto Santry Avenue, located between Blocks A & D.

This OWMP has been prepared to ensure that the management of waste during the operational phase of the proposed Development is undertaken in accordance with the current legal and industry standards including, the Waste Management Act 1996 as amended and associated Regulations [1], Environmental Protection Agency Act 1992 as amended [2], Litter Pollution Act 1997 as amended [3], *the* National Waste Management Plan for a Circular Economy 2024 – 2030 (NWMPCE) (2024) [4] and Dublin City Council (DCC) 'Dublin City Council (Storage, Presentation and Segregation of Household and Commercial Waste) Bye-Laws' 2018 [5]. In particular, this OWMP aims to provide a robust strategy for the storage, handling, collection and transport of the wastes generated at Site.

In addition, the following guidelines were consulted for healthcare specific waste management practice:

- Health Service Executive (HSE), *Waste Policy* (2016) [6],
- HSE, *Waste Management Awareness Handbook* (2011) [7];
- HSE, and Department of Health and Children (DOHC), *Healthcare Risk Waste Management: Segregation, Packaging and Storage Guidelines for Healthcare Risk Waste, 4th Edition* (2010) [8]; and
- Environmental Protection Agency (EPA) Green Healthcare, best practice guides for the reduction and segregation of hospital waste [9].

This OWMP aims to ensure maximum recycling, reuse and recovery of waste with diversion from landfill, wherever possible. The OWMP also seeks to provide guidance on the appropriate collection and transport of waste to prevent issues associated with litter or more serious environmental pollution (e.g. contamination of soil or water resources). The plan estimates the type and quantity of waste to be generated from the proposed development during the operational phase and provides a strategy for managing the different waste streams.

At present, there are no specific national guidelines in Ireland for the preparation of OWMPs. Therefore, in preparing this document, consideration has been given to the requirements of national and regional waste policy, legislation and other guidelines.

2.0 OVERVIEW OF WASTE MANAGEMENT IN IRELAND

2.1 National Level

The Irish Government issued a policy statement in September 1998 titled as *'Changing Our Ways'* [10] which identified objectives for the prevention, minimisation, reuse, recycling, recovery and disposal of waste in Ireland. A heavy emphasis was placed on reducing reliance on landfill and finding alternative methods for managing waste. Amongst other things, Changing Our Ways stated a target of at least 35% recycling of municipal (i.e. household, commercial and non-process industrial) waste.

A further policy document *'Preventing and Recycling Waste – Delivering Change'* was published in 2002 [11]. This document proposed a number of programmes to increase

recycling of waste and allow diversion from landfill. The need for waste minimisation at source was considered a priority.

This view was also supported by a review of sustainable development policy in Ireland and achievements to date, which was conducted in 2002, entitled *'Making Irelands Development Sustainable – Review, Assessment and Future Action'* [12]. This document also stressed the need to break the link between economic growth and waste generation, again through waste minimisation and reuse of discarded material.

In order to establish the progress of the Government policy document *Changing Our Ways*, a review document was published in April 2004 entitled *'Taking Stock and Moving Forward'* [13]. Covering the period 1998 – 2003, the aim of this document was to assess progress to date with regard to waste management in Ireland, to consider developments since the policy framework and the local authority waste management plans were put in place, and to identify measures that could be undertaken to further support progress towards the objectives outlined in *Changing Our Ways*.

In particular, *Taking Stock and Moving Forward* noted a significant increase in the amount of waste being brought to local authority landfills. The report noted that one of the significant challenges in the coming years was the extension of the dry recyclable collection services.

In September 2020, the Irish Government published a policy document outlining a new action plan for Ireland to cover the period of 2020-2025. This plan 'A Waste Action Plan for a Circular Economy' [14] (WAPCE), was prepared in response to the 'European Green Deal' which sets a roadmap for a transition to a new economy, where climate and environmental challenges are turned into opportunities, replacing the previous national waste management plan "A Resource Opportunity" (2012).

The WAPCE sets the direction for waste planning and management in Ireland up to 2025. This reorientates policy from a focus on managing waste to a much greater focus on creating circular patterns of production and consumption. Other policy statements of a number of public bodies already acknowledge the circular economy as a national policy priority.

The policy document contains over 200 measures across various waste areas including circular economy, municipal waste, consumer protection and citizen engagement, plastics and packaging, construction and demolition, textiles, green public procurement and waste enforcement.

One of the first actions to be taken was the development of the Whole of Government Circular Economy Strategy 2022-2023 'Living More, Using Less' (2021) [15] 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. It is anticipated that the Strategy will be updated in full every 18 months to 2 years.

The Circular Economy and Miscellaneous Provisions Act 2022 [16] 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, tackling the delays which can be encountered by industry, and supporting the availability of recycled secondary raw materials in the Irish market, and tackles illegal fly-tipping and littering.

Since 1998, the Environmental Protection Agency (EPA) has produced periodic *'National Waste (Database) Reports'* which as of 2023 have been renamed *Circular Economy and Waste Statistics Highlight Reports* [17] detailing, among other things, estimates for household and commercial (municipal) waste generation in Ireland and the level of recycling, recovery and disposal of these materials. The 2021 National Circular Economy and Waste Statistics web resource, which is the most recent study published, along with the national waste statistics web resource (November 2023) reported the following key statistics for 2020:

- **Generated** – Ireland produced 3,170,000 t of municipal waste in 2021. This is a 1% decrease since 2020. This means that the average person living in Ireland generated 630 kg of municipal waste in 2021.
- **Managed** – Waste collected and treated by the waste industry. In 2020, a total of 3,137,000 t of municipal waste was managed and treated.
- **Unmanaged** – An estimated 33,000 tonnes of this was unmanaged waste i.e., not disposed of in the correct manner in 2021.
- **Recovered** – The amount of waste recycled, used as a fuel in incinerators, or used to cover landfilled waste. In Ireland 42% of Municipal waste was treated by energy recovery through incineration in 2021.
- **Recycled** – Just over 1.3 million tonnes of municipal waste generated in Ireland was recycled in 2021, resulting in a recycling rate of 41 per cent. The recycling rate remains unchanged from 2020 and indicates that we face significant challenges to meet the upcoming EU recycling targets of 55% by 2025 and 65% by 2035.
- **Disposed** – The proportion of municipal waste sent to landfill also remains unchanged at 16% the same as 2020.
- **Reuse** – 54,800 tonnes of second-hand products we estimated by the EPA to have been reused in Ireland in 2021. The average annual Reuse rate per person in Ireland is 10.6 kg per person.

2.2 Regional Level

The proposed Development is located in the Local Authority administrative area of Dublin City Council (DCC). The EMR Waste Management Plan 2015 – 2021 has been superseded as of March 2024 by the NWMPCE 2024 - 2030.

The NWMPCE does not 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.

This Plan seeks to influence sustainable consumption and prevent the generation of waste, improve the capture of materials to optimise circularity and enable compliance with policy and legislation.

The national plan sets out the following strategic targets for waste management in the country that are relevant to the development:

Proposed National Targets

1A. (Residual Municipal Waste) 6% Reduction in Residual Municipal Waste per person by 2030

2A. (Contamination of Materials) 90% of Material in Compliance in the Dry Recycling Bin

2B. (Material Compliance Residual) 10% per annum increase in Material Compliance in the residual bin. (90% by the end of 2030)

3A. (Reuse of Materials) 20kg Per person / year – Reuse of materials like cloths or furniture to prevent waste.

Municipal landfill charges in Ireland are based on the weight of waste disposed. In the Leinster Region, charges are approximately €140-160 per tonne of waste, which includes a €85 per tonne landfill levy introduced under the Waste Management (Landfill Levy) (Amendment) Regulations 2015.

The *Dublin City Development Plan 2022 – 2028* [18] sets out a number of policies and objectives for Dublin City in line with the objectives of the National climate action policy and emphasises the need to take action to address climate action across all sectors of society and the economy. In the waste sector, policy on climate action is focused on a shift towards a 'circular economy' encompassing three core principles: designing out waste and pollution; keeping products and material in use; and regenerating natural systems. Further policies and objectives can be found within the development plan.

Policies:

- *CA8 F: minimising the generation of site and construction waste and maximising reuse or recycling.*
- *CA23: The Circular economy: To support the shift towards the circular economy approach as set out in 'a Waste Action Plan for a Circular Economy 2020 to 2025, Ireland's National Waste Policy, or as updated.*
- *CA24: To have regard to existing Best Practice Guidance on Waste Management Plans for Construction and Demolition Projects as well as any future updates to these guidelines in order to ensure the consistent application of planning requirements.*
- *SI27: Sustainable Waste Management: To support the principles of the circular economy, good waste management and the implementation of best practice in relation to waste management in order for Dublin City and the Region to become self-sufficient in terms of resource and waste management and to provide a waste management infrastructure that supports this objective.*
- *SI28: To prevent and minimise waste generation and disposal, and to prioritise prevention, recycling, preparation for reuse and recovery in order to develop Dublin as a circular city and safeguard against environmental pollution.*
- *SI29: Segregated Storage and Collection of Waste Streams: To require new commercial and residential developments, to include adequate and easily accessible storage space that supports the separate collection of as many waste and recycling streams as possible, but at a minimum general domestic waste, dry recyclables and food waste as appropriate.*
- *SI30: To require that the storage and collection of mixed dry recyclables, organic and residual waste materials within proposed apartment schemes have regard to the Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities 2018 (or and any future updated versions of these guidelines produced during the lifetime of this plan).*

Objectives:

- *SIO14 Local Recycling Infrastructure: To provide for a citywide network of municipal civic amenity facilities/ multi-material public recycling and reuse facilities in accessible locations throughout the city in line with the objectives of the circular economy and 15 minute city.*
- *SIO16 Eastern-Midlands Region Waste Management Plan: To support the implementation of the Eastern-Midlands Regional Waste Management Plan 2015–2021 and any subsequent plans in order to facilitate the transition from a waste management economy towards a circular economy.*

2.3 Legislative Requirements

The primary legislative instruments that govern waste management in Ireland and applicable to the proposed Development are:

- Waste Management Act 1996 (No. 10 of 1996) as amended
- Environmental Protection Act 1992 (S.I. No. 7 of 1992) as amended;
- Litter Pollution Act 1997 (Act No. 12 of 1997) as amended and
- Planning and Development Act 2000 (S.I. No. 30 of 2000) as amended [19]

These Acts and subordinate Regulations transpose the relevant European Union Policy and Directives into Irish law.

One of the guiding principles of European waste legislation, which has in turn been incorporated into the Waste Management Act 1996 - 2011 and subsequent Irish legislation, is the principle of "Duty of Care". This implies that the waste producer is responsible for waste from the time it is generated through until its legal disposal (including its method of disposal.) As it is not practical in most cases for the waste producer to physically transfer all waste from where it is produced to the final disposal area, waste contractors will be employed to physically transport waste to the final waste disposal site.

It is, therefore, imperative that the residents, commercial tenants and the proposed building management company undertake on-Site management of waste in accordance with all legal requirements and that the facilities management company employ suitably permitted / licenced contractors to undertake off-Site management of their waste in accordance with all legal requirements. This includes the requirement that a waste contactor handle, transport and reuse / recover / recycle / dispose of waste in a manner that ensures that no adverse environmental impacts occur as a result of any of these activities.

A collection permit to transport waste must be held by each waste contractor which is issued by the National Waste Collection Permit Office (NWCPO). Waste receiving facilities must also be appropriately permitted or licensed. Operators of such facilities cannot receive any waste, unless in possession of a Certificate of Registration (COR) or waste permit granted by the relevant Local Authority under the Waste Management (Facility Permit & Registration) Regulations 2007, as amended, or a Waste or Industrial Emissions (IE) Licence granted by the EPA. The COR / permit / licence held will specify the type and quantity of waste able to be received, stored, sorted, recycled, recovered and / or disposed of at the specified site.

2.3.1 Dublin City Council Waste Management Bye-Laws

The DCC "Dublin City Council (Storage, Presentation and Segregation of Household and Commercial Waste) Bye-Laws (2018)" were bought into force in May 2019. These bye-laws repeal the previous Bye-Laws for the Storage, Presentation and Collection of Household and Commercial Waste. The bye-laws set a number of enforceable requirements on waste holders with regard to storage, separation and presentation of waste within the DCC administrative area. Key requirements under these bye-laws of relevance to the operational phase of the proposed Development include the following:

- Kerbside waste presented for collection shall not be presented for collection earlier than 5.00 pm on the day immediately preceding the designated waste collection day;
- All containers used for the presentation of kerbside waste and any uncollected waste shall be removed from any roadway, footway, footpath or any other public place no later than 10:00 am on the day following the designated waste

collection day, unless an alternative arrangement has been approved in accordance with bye-law 2.3;

- Documentation, including receipts, is obtained and retained for a period of no less than one year to provide proof that any waste removed from the premises has been managed in a manner that conforms to these bye-laws, to the Waste Management Act and, where such legislation is applicable to that person, to the European Union (Household Food Waste and Bio-Waste) Regulations 2015; and
- Adequate access and egress onto and from the premises by waste collection vehicles is maintained.

The full text of the bye-laws is available from the DCC website.

2.4 Health Service Executive Waste Policy

The Health Service Executive (HSE) has stipulated within its *Waste Policy* that Waste Management Plans (WMPs) for healthcare facilities should include:

- Strategies to minimise the quantities of healthcare waste generated.
- Methods of segregating, packaging, labelling, storing, and transporting each waste type, both on-site and off-site.

These guidelines will be used to complete this OWMP.

2.5 Regional Waste Management Service Providers and Facilities

Various contractors offer waste collection services for the residential sector in the DCC region. Details of waste collection permits (granted, pending and withdrawn) for the region are available from the NWCPO.

As outlined in the regional waste management plan, there is a decreasing number of landfills available in the region. Only three municipal solid waste landfills remain operational and all are operated by the private sector. There are a number of other licensed and permitted facilities in operation in the region including waste transfer stations, hazardous waste facilities and integrated waste management facilities. There are two existing thermal treatment facilities, one in Duleek, Co. Meath and a second in Poolbeg in Dublin.

There is a DCC Recycling Centre at the Collins Avenue Bring Centre, Whitehall, located c.970m to the south of the Development Site, which can be utilised by the residents of the proposed Development for other household waste streams while a bottle bank can be found c. 265 m to the south at the Supervalue Santry Carpark.

A copy of all CORs and waste permits issued by the Local Authorities are available from the NWCPO website and all Waste / Industrial Emissions Licenses issued are available from the EPA.

3.0 DESCRIPTION OF THE DEVELOPMENT

3.1 Location, Size and Scale of the Development

Dwyer Nolan Developments Ltd. wishes to apply for permission for a Large-Scale Residential Development (LRD) on this site, c. 1.5 hectares, located at the junction of Santry Avenue and Swords Road, Santry, Dublin 9. The development site is bounded to the north by Santry Avenue, to the east by Swords Road, to the west by Santry Avenue Industrial Estate, and to the south by the permitted Santry Place development (granted under Dublin City Council Ref.s. 2713/17 (as extended under Ref. 2713/17/X1), 2737/19 & 4549/22).

The proposed development provides for 321 no. apartments, comprised of 104 no. 1 bed, 198 no. 2 bed, & 19 no. 3 bed dwellings, in 4 no. seven to thirteen storey buildings, over basement level, with 3 no. retail units, a medical suite / GP Practice unit and community/arts & culture space (total c.1,483sq.m), all located at ground floor level, as well as a one storey residential amenity unit, facing onto Santry Avenue, located between Blocks A & D.

The proposed development consists of the following:

(1) Demolition of the existing building on site i.e. the existing Chadwicks Builders Merchants (c. 4,196.8m^2).

(2) Construction of 321 no. 1, 2, & 3 bed apartments, retail units, medical suite / GP Practice, community/arts & culture space, and a one storey residential amenity unit in 4 no. buildings that are subdivided into Blocks A-G as follows:

- Block A is a 7-13 storey block consisting of 52 no. apartments comprised of 22 no. 1 bed, 24 no. 2 beds & 6 no. 3 bed dwellings, with 2 no. retail units located on the ground floor (c. 132sq.m & c.172sq.m respectively). Adjoining same is Block B, which is a 7 storey block consisting of 44 no. apartments comprised of 22 no. 1 bed, 15 no. 2 bed, & 7 no. 3 bed dwellings, with 1 no. retail unit (c.164sq.m) and 1 no. medical suite / GP Practice unit located on the ground floor (c. 130sq.m). Refuse storage areas are also provided for at ground floor level.

- Block C is a 7 storey block consisting of 53 no. apartments comprised of 14 no. 1 bed & 39 no. 2 bed dwellings. Adjoining same is Block D which is an 8 storey block consisting of 44 no. apartments comprised of 22 no. 1 bed, 15 no. 2 bed, & 7 no. 3 bed dwellings. Ground floor, community/arts & culture space (c,606sq.m) is proposed in Blocks C & D, with refuse storage area also provided for at ground floor level.

- Block E is an 8 storey block consisting of 49 no. apartments comprised of 7 no. 1 bed & 42 no. 2 bed dwellings. A refuse storage area, substation, & switchroom are also provided for at ground floor level. Adjoining same is Block F which is a 7 storey block consisting of 52 no. apartments comprised of 13 no. 1 bed & 39 no. 2 bed dwellings. Ground floor, community/arts & culture space (c.877sq.m) is proposed in Blocks E & F. A refuse storage area, bicycle storage area, substation, & switchroom are also provided for at ground floor level of Blocks E & F.

- Block G is a 7 storey block consisting of 34 no. apartments comprised of 20 no. 1 bed & 14 no. 2 bed dwellings. A refuse storage area & bicycle storage area are also provided for at ground floor level.

(3) Construction of a 1 storey residential amenity unit (c. 166.1sq.m) located between Blocks A & D.

(4) Construction of basement level car park (c.5,470.8sq.m), accommodating 161 no. car parking spaces, 10 no. motorbike parking spaces & 664 no. bicycle parking spaces. Internal access to the basement level is provided from the cores of Blocks A, B, C, D, E, & F. External vehicular access to the basement level is from the south, between Blocks B & C. 33 no. car parking spaces & 58 no. bicycle parking spaces are also provided for within the site at surface level.

(5) Public open space of c. 1,791sq.m is provided for between Blocks C-D & E-F. Communal open space is also proposed, located between (i) Blocks E-F & G, (ii) Blocks A-B & C-D, and (iii) in the form of roof gardens located on Blocks A, C, & F and the proposed residential amenity use unit, totalling c.3,116sq.m. The development includes for hard and soft landscaping & boundary treatments. Private open spaces are provided as terraces at ground floor level of each block and balconies at all upper levels.

(6) Vehicular access to the development will be via 2 no. existing / permitted access points: (i) on Santry Avenue in the north-west of the site (ii) off Swords Road in the south-east of the site, as permitted under the adjoining Santry Place development (Ref. 2713/17).

(7) The development includes for all associated site development works above and below ground, bin & bicycle storage, plant (M&E), sub-stations, public lighting, servicing, signage, surface water attenuation facilities etc.

3.2 Typical Waste Categories

The typical non-hazardous and hazardous wastes that will be generated at the proposed Development will include the following:

- Dry Mixed Recyclables (DMR) - includes waste paper (including newspapers, magazines, brochures, catalogues, leaflets), cardboard and plastic packaging, metal cans, plastic bottles, aluminium cans, tins and Tetra Pak cartons;
- Organic waste – food waste and green waste generated from internal plants / flowers;
- Glass; and
- Mixed Non-Recyclable (MNR)/General Waste.

In addition to the typical waste materials that will be generated at the development on a daily basis, there will be some additional waste types generated less frequently / in smaller quantities which will need to be managed separately including:

- Green / garden waste may be generated from external landscaping;
- Batteries (both hazardous and non-hazardous);
- Waste electrical and electronic equipment (WEEE) (both hazardous and non-hazardous);
- Printer cartridges / toners;
- Chemicals (paints, adhesives, resins, detergents, etc.);
- Light bulbs;
- Textiles;
- Waste cooking oil (if any generated by the residents or commercial tenants);
- Furniture (and, from time to time, other bulky wastes); and
- Abandoned bicycles.

Wastes should be segregated into the above waste types to ensure compliance with waste legislation and guidance while maximising the re-use, recycling and recovery of waste with diversion from landfill wherever possible.

3.3 Typical Waste Categories and Waste Minimisation/Segregation

The proposed development will give rise to a wide variety of waste streams during operations. Healthcare waste is defined in the HSE and DOHC *Healthcare Risk Waste Management* publication as *"solid or liquid waste arising from healthcare"*. Waste materials generated will fall into two main categories, namely healthcare non-risk

waste (i.e. non-clinical healthcare waste) and HCRW (hazardous) as illustrated in Figure 3.1. Hazardous waste has been further subdivided in this plan into non-clinical hazardous waste and clinical/risk waste.

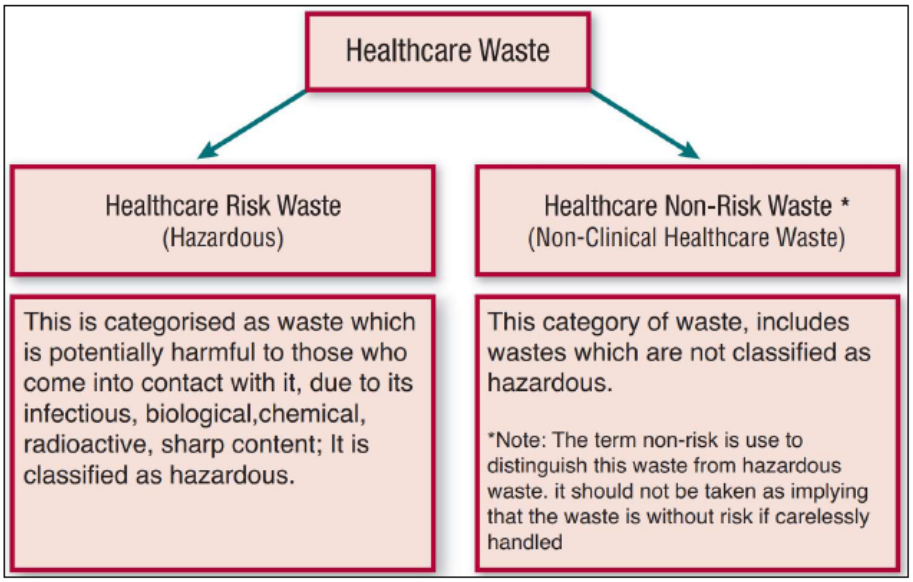

Figure 3.1 Healthcare Waste Categories (Source: HSE, *Waste Management Awareness Handbook* (2010)

3.3.1 Healthcare Non-Risk Waste

The typical non-risk/non clinical non-hazardous waste streams that will be generated at the proposed development will include the following:

- Dry Mixed Recyclables (DMR) – includes cardboard, non-confidential paper, newspaper, leaflets plastic packaging and bottles, aluminium cans, tins and Tetra Pak cartons;
- Confidential paper;
- Mixed Non-Recyclable /General Waste (MNR);
- Organic (food/catering) waste; and
- Glass.

In addition to the typical non-risk/non-clinical non-hazardous waste materials that will be generated at the development on a daily basis, there will be some additional waste types generated less frequently / in smaller quantities which will need to be managed separately including:

- Green / garden waste may be generated from external landscaping;
- Batteries (non-hazardous) *note: hazardous batteries may also be generated which are referred to in Section 3.2.2*;
- Waste electrical and electronic equipment (WEEE) including computers, printers and other ICT equipment (non-hazardous) *note: WEEE containing hazardous components may also be generated which are referred to in Section 3.2.2*;
- Metals, timber and mixed C&D waste generated from operational maintenance activities;
- Polystyrene;
- Textiles;
- Waste cooking oil (if any generated by the commercial tenant); and

- Furniture (and, from time to time, other bulky wastes).

Wastes should be segregated into the above waste types to ensure compliance with waste legislation and guidance while maximising the re-use, recycling and recovery of waste with diversion from landfill wherever possible.

3.3.1.1 Reducing and Segregating Healthcare Non-Risk Waste

The following steps have been outlined to contribute towards the minimisation and segregation within this waste stream:

- Review your current recycling policy and system
- Make it clear what can be placed in the recycling bags
- Ensure recycling bags are placed in the right location
- Make the recycling bins easy to use
- Use different colour bins for each type of waste
- Prevent contamination with liquid and food

For full details on how to minimise and segregation healthcare non-risk waste, please see *Best Practice Guide Maximise Recycling and Reduce Landfill Waste*[9].

3.3.2 Non-Clinical Hazardous Waste

The typical non-clinical hazardous waste streams that will be generated will include the following:

- Printer/toner cartridges;
- Batteries (hazardous) *note: non-hazardous batteries may also be generated which are referred to in Section 3.2.1*;
- Waste electrical and electronic equipment (WEEE) including computers, printers and other ICT equipment (containing hazardous components) *note: WEEE not containing hazardous components may also be generated which are referred to in Section 3.2.1*;
- Cleaning chemicals (solvents, pesticides, paints, adhesives, resins, detergents, etc.); and
- Fluorescent bulb tubes and other mercury containing waste.

3.3.3 Healthcare Risk Waste (Hazardous)

HCRW will be generated from any clinical treatment and consultation rooms. Figure 3.2 over shows the classification and colour coding of HCRW as presented in the HSE guidance document.

The HCRW generated at the medical use/ healthcare facility will comprise waste disposed of in yellow bags (such as dressings, swabs, bandages, gloves etc.) and yellow sharps buckets (for waste such as surgical kits, needles, syringes, razors, stitch cutters etc.).

Figure 3.2 Segregation of HCRW (Source: HSE and DOHC, *Healthcare Risk Waste Management* (2010) and HSE, *Waste Management Awareness Handbook* (2011))

3.3.3.1 Reducing Healthcare Risk Waste

The following steps can be taken to reduce the quantity of non-risk waste incorrectly placed in the HCRW bins:

- Review your facility's HCRW classification policy.
- Ensure staff know what is and is not HCRW
- Remove HCRW bins from public access areas e.g. multi-bed wards

On average, 20% of risk waste generated in healthcare facilities is generated in operating theatres. To reduce the amount of risk waste generated these steps have been outlined:

- Prevent the generation of waste – by reviewing what materials and instruments are often not used in a surgical kit during specific treatments, etc.
- Review the HCRW classification policy
- Increase the segregation of recyclables and minimise the non-risk waste content in the healthcare risk waste

For full detail on methods to minimise HCRW please see *Best Practice Guide Healthcare Risk Waste Reduction* and *Best Practice Guide Healthcare Risk Waste Reduction in the Theatre.*

3.4 European Waste Codes

In 1994, the *European Waste Catalogue* [20] and *Hazardous Waste List* [21] were published by the European Commission. In 2002, the EPA published a document titled the *European Waste Catalogue and Hazardous Waste List* [22], which was a condensed version of the original two documents and their subsequent amendments. This document has recently been replaced by the EPA '*Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous'* [23], applicable since the 1st June 2015. This waste classification system applies across the EU and is the basis for all national and international waste reporting, such as those associated with waste collection permits, CORs, permits and licences and the EPA National Waste Database.

Under the classification system, different types of wastes are fully defined by a code. The List of Waste (LoW) code (also referred to as European Waste Code (EWC)) for typical waste materials expected to be generated during the operation of the proposed development are provided in Table 3.1, below.

Table 3.1 Typical Waste Types Generated and LoW Codes

Waste Material	LoW/EWC Code
Paper and Cardboard	20 01 01
Plastics	20 01 39
Metals	20 01 40
Mixed Non-Recyclable Waste	20 03 01
Glass	20 01 02
Biodegradable Kitchen Waste	20 01 08
Oils and Fats	20 01 25
Textiles	20 01 11
Batteries and Accumulators*	20 01 33* - 34
Printer Toner/Cartridges*	20 01 27* - 28
Green Waste	20 02 01
WEEE*	20 01 35*-36
Chemicals (solvents, pesticides, paints & adhesives, detergents, etc.) *	20 01 13*/19*/27*/28/29*30
Fluorescent tubes and other mercury containing waste*	20 01 21*
Bulky Wastes	20 03 07

** Individual waste type may contain hazardous materials*

4.0 ESTIMATED WASTE ARISINGS

A waste generation model (WGM) developed by AWN has been used to predict waste types, weights and volumes expected to arise from operations within the proposed Development. The WGM incorporates building area and use and combines these with other data, including Irish and US EPA waste generation rates.

The estimated quantum / volume of waste that will be generated from the residential units has been determined based on the predicted occupancy of the units. While the floor area usage (m^2) has been used to estimate the waste arising from the healthcare, cultural and retail units.

The estimated waste generation for the proposed Development for the main waste types is presented in Tables 4.1 – 4.2.

Table 4.1 *Estimated Waste Generation for Residential Blocks A – D*

Waste Type	Waste Volume (m^3 / week)			
	Block A (Residential)	Block B (Residential)	Block C (Residential)	Block D (Residential)
Organic Waste	0.78	0.60	0.82	0.65
Dry Mixed Recyclables	5.32	4.13	5.60	4.42
Glass	0.15	0.12	0.16	0.12
Mixed Non-Recyclables	3.09	2.40	3.26	2.57
Total	**9.33**	**7.26**	**9.84**	**7.75**

Table 4.2 *Estimated Waste Generation for Residential Block E – G and Commercial Units*

Waste Type	Waste Volume (m^3 / week)			
	Block E (Residential)	Block F (Residential)	Block G (Residential)	Commercial (Combined)
Organic Waste	0.79	0.81	0.47	0.44
Dry Mixed Recyclables	5.38	5.52	3.34	8.89
Glass	0.15	0.16	0.09	0.20
Mixed Non-Recyclables	3.13	3.21	1.76	3.83
Medical Waste	-	-	-	0.17
Confidential Paper	-	-	-	0.07
Total	**9.45**	**9.70**	**5.66**	**14.47**

BS5906:2005 Waste Management in Buildings – Code of Practice [24] has been considered in the calculations of waste estimates. AWN's modelling methodology is based on recently published data and data from numerous other similar developments in Ireland and is based on AWN's experience, it provides a more representative estimate of the likely waste arisings from the proposed Development.

5.0 WASTE STORAGE AND COLLECTION

This section provides information on how waste generated within the Site will be stored and collected. This has been prepared with due consideration of the proposed Site layout as well as best practice standards, local and national waste management requirements, including those of DCC. In particular, consideration has been given to the following documents:

- BS 5906:2005 Waste Management in Buildings – Code of Practice;
- Dublin City Council Development Plan 2022 – 2028 (Appendix 10);
- DCC Dublin City Council (Storage, Presentation and Segregation of Household and Commercial Waste) Bye-Laws (2018);
- DoHLGH, Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities (section 4.8-4.9) (2023) [25]; and
- DoHLGH, Design Manual for Urban Roads and Streets (2019) [26]

Waste Storage Areas

Locations of all Waste Storage Areas (WSAs) can be viewed on the drawings submitted with the planning application under separate cover.

Residential Block A

One (1 no.) shared communal WSA has been allocated within the development design for this residential apartment block. The WSA has been strategically located on the basement level, in close proximity to the core.

Residential Block B

One (1 no.) shared communal WSA has been allocated within the development design for this residential apartment blocks. The bin store is located at the southern end of Block B. The WSA has been strategically located on the ground floor level, in close proximity to the core.

Residential Block C

One (1 no.) shared communal WSA has been allocated within the development design for the residential apartment block. The WSA has been strategically located on the ground floor level, in close proximity to the core.

Residential Block D

One (1 no.) shared communal WSAs has been allocated within the development design for this residential apartment block. These have been strategically located on the basement floor level, in close proximity to the core.

Residential Block E

One (1 no.) shared communal WSAs has been allocated within the development design for this residential apartment block. These have been strategically located on the basement floor level, in close proximity to the core.

Residential Block F

One (1 no.) shared communal WSAs has been allocated within the development design for this residential apartment block. These have been strategically located on the basement floor level, in close proximity to the core.

Residential Block G

One (1 no.) shared communal WSA has been allocated within the development design for this residential apartment block. These have been strategically located on the ground floor level, in close proximity to the core.

Retail and Medical Units Block A & B

The retail and medical units (Commercial) in these blocks have been allocated a shared commercial WSA on the ground floor level of Block B.

Community/Cultural Units Blocks C & D

The Community / Cultural units (Commercial) in these blocks have been allocated a shared commercial WSA on the ground floor level of Block D.

Community/Cultural Units Blocks E & F

The Community / Cultural units (Commercial) in these blocks have been allocated a shared commercial WSA on the ground floor level of Block E.

Medical Unit

The medical unit will be required to allocate its own individual hazardous waste WSA for the storage of general and medical waste at ground floor level within it's own unit.

Waste Storage Requirements

Using the estimated waste generation volumes in Tables 4.1 – 4.2, above, the waste receptacle requirements for MNR, DMR, organic waste and glass have been established for the WSA. It is envisaged that MNR, DMR, organic waste and glass will be collected on a weekly basis for both residential and commercial WSAs.

Estimated waste storage requirements for the operational phase of the proposed Development are detailed in Table 5.1, below.

Table 5.1 *Waste storage requirements for the proposed development*

Area/Use	Bins Required			
	MNR[1]	DMR[2]	Glass	Organic
Residential Block A	3 no. 1100 L	5 no. 1100 L	1 no. 240 L	4 no. 240 L
Residential Block B	2 no. 1100 L	4 no. 1100 L	1 no. 240 L	4 no. 240 L
Residential Block C	3 no. 1100 L	5 no. 1100 L	1 no. 240 L	4 no. 240 L
Residential Block D	3 no. 1100 L	4 no. 1100 L	1 no. 240 L	3 no. 240 L
Residential Block E	3 no. 1100 L	5 no. 1100 L	1 no. 240 L	4 no. 240 L
Residential Block F	3 no. 1100 L	5 no. 1100 L	1 no. 240 L	4 no. 240 L
Residential Block G	2 no. 1100 L	3 no. 1100 L	1 no. 240 L	2 no. 240 L
Commercial Block A & B	2 no. 1100 L	4 no. 1100 L	1 no. 240 L	2 no. 240 L
Cultural/ Communal Block C & D	1 no. 1100 L	1 no. 1100 L 1 no. 240L	1 no. 120 L	1 no. 120 L
Cultural/ Communal Block E & F	1 no. 1100 L	2 no. 1100 L	1 no. 120 L	1 no. 120 L

Note: 1 = Mixed Non-Recyclables
2 = Dry Mixed Recyclables

The waste receptacle requirements have been established from distribution of the total weekly waste generation estimate into the holding capacity of each receptacle type. Waste storage receptacles as per Table 5.1, above, (or similar appropriate approved containers) will be provided by the building management company in the residential WSA.

The types of bins used will vary in size, design and colour dependent on the appointed waste contractor. However, examples of typical receptacles to be provided in the WSA are shown in Figure 5.1. All waste receptacles used will comply with the SIST EN 840-1:2020 and SIST EN 840-2:2020 as the standards for performance requirements of mobile waste containers, where appropriate.

Figure 5.1 *Typical waste receptacles of varying size (240 L and 1100 L)*

Receptacles for organic, mixed dry recyclable, glass and mixed non-recyclable waste will be provided in the WSA's prior to first occupation of the development i.e. prior to the first residential or commercial unit being occupied.

This plan will be provided to each resident and commercial tenant from first occupation of the development i.e. once the first residential or commercial unit is occupied. This Plan will be supplemented, as required, by the property management company with any new information on waste segregation, storage, reuse and recycling initiatives that are subsequently introduced.

5.1 Waste Storage – Residential Units

Residents will be required to segregate waste into the following main waste streams:

- DMR;
- MNR;
- Glass; and
- Organic waste.

Residents will be required to take their segregated waste materials to their designated WSA and deposit their segregated waste into the appropriate bins. The location of the WSAs are illustrated in the drawings submitted with the planning application under separate cover.

Provision will be made in all residential units to accommodate 3 no. bin types to facilitate waste segregation at source. An example of a potential 3 bin storage system is provided in figure 5.2 below.

Figure 5.2 Example three bin storage system to be provided within the unit design

Each bin / container in the WSAs will be clearly labelled and colour coded to avoid cross contamination of the different waste streams. Signage will be posted above or on the bins to show exactly which waste types can be placed in each bin.

Access to the apartment block WSAs will be restricted to authorised residents, facilities management and waste contractors by means of a key or electronic fob access.

Other waste materials such as textiles, batteries, printer toner / cartridges, light bulbs and WEEE may be generated infrequently by the residents. Residents will be required to identify suitable temporary storage areas for these waste items within their own units and dispose of them appropriately. Further details on additional waste types can be found in Section 5.5.

5.2 Waste Storage –Retail and Cultural/Community Units (Commercial)

The commercial tenants will be required to segregate waste within their own units into the following main waste types:

- DMR;
- MNR;
- Glass; and
- Organic waste.

As required, the staff will need to bring segregated waste materials to their designated WSA and deposit their segregated waste into the appropriate bins. The location of the WSAs are illustrated in the drawings submitted with the planning application under separate cover.

Suppliers for the commercial tenants should be requested by the tenants to make deliveries in reusable containers, minimize packaging or remove any packaging after delivery, where possible, to reduce waste generated by the proposed development.

If any kitchens are allocated in unit areas, this will contribute a significant portion of the volume of waste generated on a daily basis, and as such it is important that adequate provision is made for the storage and transfer of waste from these areas to the WSA.

If kitchens are required it is anticipated that waste will be generated in kitchens throughout the day, primarily at the following locations:

- Food Storage Areas (i.e. cold stores, dry store, freezer stores and stores for decanting of deliveries);
- Meat Preparation Area;
- Vegetable Preparation Area;
- Cooking Area;
- Dish-wash and Glass-wash Area; and
- Bar Area.

Small bins will be placed adjacent to each of these areas for temporary storage of waste generated during the day. Waste will then be transferred from each of these areas to the appropriate waste store within their unit.

All bins / containers in the commercial tenants' areas as well as in the WSA will be clearly labelled and colour coded to avoid cross contamination of the different waste streams. Signage will be posted above or on the bins to show exactly which wastes can be put in each.

Other waste materials such as textiles, batteries, lightbulbs, WEEE, cooking oil and printer toner / cartridges will be generated less frequently. The tenant will be required to store these waste types within their own unit and arrange collection with an appropriately licensed waste contractor. Facilties management may arrange collection, depending on the agreement. Further details on additional waste types can be found in Section 5.5.

5.3 Waste Storage – Medical Unit (Commercial)

Waste will be generated from a wide variety of activities throughout the proposed medical centre. Healthcare risk wastes will typically be generated in the doctor surgeries, consulting rooms and treatment rooms. DMR and MNR waste will be generated throughout the building. Confidential and non-confidential paper waste will mainly be generated in offices and staff workstations.

Organic (food) waste will be generated from staff lunches, micro kitchen areas and food brought into the building.

Appropriate colour coded, labelled and secured receptacles will be required for healthcare risk waste generated in the building as set out in the HSE, *Waste Management Awareness Handbook* (and illustrated in Figure 3.2). The required healthcare risk waste receptacles will be:

- Yellow bags (stored in rigid bins e.g. 60L pedal bin)
- Yellow rigid buckets with yellow lid

These waste receptacles will be stored in designated treatment rooms, doctor surgeries, consulting rooms and treatment rooms areas. Facilities or cleaning staff will transfer the risk waste bags/buckets on a regular basis to a dedicated clinical waste room in a segregated area of the medical WSA. This area will have at least 1 no. 240L litre yellow clinical waste bin and 1 no. sharps container.

In addition, clinical waste bags and sharps buckets may be temporarily transferred to utility stores located across the unit during the day prior to transfer to the clinical waste room. Where required, these temporary storage locations should have 60/80 litre pedal bins for yellow risk waste bags and shelf storage for sharps buckets. Facilities or cleaning staff will transfer this waste to the dedicated Clinical Waste Room on a daily basis.

Non-risk waste receptacles for DMR and MNR will be strategically positioned in the treatment rooms, consulting rooms and offices as necessary.

Where suitable, it is proposed that office and work station areas will utilise area waste stations (AWSs) for non-risk waste streams as opposed to using individual receptacles at desks. AWSs should be conveniently located within 10-15m of workstations, where possible, and would typically include:

- 1 no. 60/80 litre receptacle for dry mixed recyclables;
- 1 no. 60/80 litre receptacle for mixed non-recyclables; and
- 1 no. 60/80 litre receptacle for confidential paper.

In addition, smaller bins or caddies for organic and glass waste should be located in the micro kitchen areas.

Other waste materials such as batteries, WEEE, lightbulbs and printer toner/cartridges will be generated less frequently. The tenant will be required to store these waste types within their own unit and arrange collection with an appropriately licensed waste contractor. Facilties management may arrange collection depending on the agreement. Further details on additional waste types can be found in Section 5.5.

5.4 Waste Collection

There are numerous private contractors that provide waste collection services in the Dublin City area. All waste contractors servicing the proposed development must hold a valid waste collection permit for the specific waste types collected. All waste collected must be transported to registered / permitted / licensed facilities only.

Bins from the proposed Development will be brought to 1 of 3 no. staging/collection points by the waste contractor or facilities management, immediately prior to collection. The staging/collection points will minimise the time the waste collection vehicles will spend at the development.

HCRW from the Healthcare unit will be collected directly from the healthcare risk WSA by a waste contractor appointed directly by the HSE.

The confidential waste paper bin(s) will be collected/emptied directly from the medical unit by an appointed waste contractor.

A trolley / tug or suitable vehicle may be required to convey the bins to and from the staging/collection areas. The building management or waste contractor will ensure that empty bins are promptly returned to the WSAs after collection / emptying.

Suitable access and egress has been provided to enable the bins to be moved easily from the WSA to the waste collection vehicles on the appropriate days. Waste will be collected at agreed days and times by the nominated waste contractors.

All waste receptacles should be clearly identified as required by waste legislation and the requirements of the DCC *Waste Bye-Laws*. Waste will be presented for collection in a manner that will not endanger health, create a risk to traffic, harm the environment or create a nuisance through odours or litter.

It is recommended that bin collection times are staggered to reduce the number of bins required to be emptied at once and the time the waste vehicle is on-Site. This will be determined during the process of appointment of a waste contractor.

5.5 Additional Waste Materials

In addition to the typical waste materials that are generated on a daily basis, there will be some additional waste types generated from time to time that will need to be managed separately. A non-exhaustive list is presented below.

Green Waste

Green waste may be generated from gardens, external landscaping and internal plants / flowers. Green waste generated from landscaping of external areas will be removed by external landscape contractors. Green waste generated from gardens internal plants / flowers can be placed in the organic waste bins.

Batteries

A take-back service for waste batteries and accumulators (e.g. rechargeable batteries) is in place in order to comply with the Waste Management Batteries and Accumulators Regulations 2014, as amended. In accordance with these regulations, consumers are able to bring their waste batteries to their local civic amenity centre or can return them free of charge to retailers which supply the equivalent type of battery, regardless of whether or not the batteries were purchased at the retail outlet and regardless of whether or not the person depositing the waste battery purchases any product or products from the retail outlet.

The commercial tenants cannot use the civic amenity centre. They must segregate their waste batteries and either avail of the take-back service provided by retailers or arrange for recycling / recovery of their waste batteries by a suitably permited / licenced contractor. Facilties management may arrange collection, depending on the agreement.

Waste Electrical and Electronic Equipment (WEEE)

The WEEE Directive (Directive 2002/96/EC) and associated Waste Management (WEEE) Regulations have been enacted to ensure a high level of recycling of electronic and electrical equipment. In accordance with the regulations, consumers can bring their waste electrical and electronic equipment to their local recycling centre. In addition, consumers can bring back WEEE within 15 days to retailers when they purchase new equipment on a like for like basis. Retailers are also obliged to collect WEEE within 15 days of delivery of a new item, provided the item is disconnected from all mains, does not pose a health and safety risk and is readily available for collection.

As noted above, the commercial tenants cannot use the civic amenity centre. They must segregate their WEEE and either avail of the take-back / collection service provided by retailers or arrange for recycling / recovery of their WEEE by a suitably permited / licenced contractor. Facilties management may arrange collection, depending on the agreement.

Printer Cartridge / Toners

It is recommended that a printer cartridge / toner bin is provided in the commercial unit, where appropriate. The commercial tenant will be required to store this waste within their unit and arrange for return to retailers or collection by an authorised waste contractor, as required.

Waste printer cartridge / toners generated by residents can usually be returned to the supplier free of charge or can be brought to a civic amenity centre.

Chemicals

Chemicals (such as solvents, paints, adhesives, resins, detergents, etc) are largely generated from building maintenance works. Such works are usually completed by external contractors who are responsible for the off-site removal and appropriate recovery / recycling / disposal of any waste materials generated.

Any waste cleaning products or waste packaging from cleaning products generated in the commercial units that is classed as hazardous (if they arise) will be appropriately stored within the tenants' own space. Facilties management may arrange collection, depending on the agreement.

Any waste cleaning products or waste packaging from cleaning products that are classed as hazardous (if they arise) generated by the residents should be brought to a civic amenity centre.

Light Bulbs
Waste light bulbs (fluorescent, incandescent and LED) may be generated by lighting at the commercial units. It is anticipated that commercial tenants will be responsible for the off-site removal and appropriate recovery / disposal of these wastes. Facilties management may arrange collection, depending on the agreement.

Light bulbs generated by residents should be taken to the nearest civic amenity centre for appropriate storage and recovery / disposal.

Textiles
Where possible, waste textiles should be recycled or donated to a charity organisation for reuse. Commercial and residential tenants will be responsible for disposing of waste textiles appropriately.

Waste Cooking Oil
If the commerial tenants use cooking oil, waste cooking oil will need to be stored within the unit on a bunded area or spill pallet and regular collections by a dedicated waste contractor will need to be organised as required. Under sink grease traps will be installed in any cooking space.

If the residents generate waste cooking oil, this can be brought to a civic amenity centre or placed in the organic waste bins.

Furniture & Other Bulky Waste Items
Furniture and other bulky waste items (such as carpet, etc.) may occasionally be generated by the commercial tenant. The collection of bulky waste will be arranged, as required by the tenant. If residents wish to dispose of furniture, this can be brought a civic amenity centre.

Abandoned Bicycles
Bicycle parking areas are planned for the development. As happens in other developments, residents sometimes abandon faulty or unused bicycles, and it can be difficult to determine their ownership. Abandoned bicycles should be donated to charity if they arise or Facilties management willmay arrange collection by a licensed waste contractor.

5.6 Waste Storage Area Design

The WSAs should be designed and fitted-out to meet the requirements of relevant design Standards, including:

- Be fitted with a non-slip floor surface;
- Provide ventilation to reduce the potential for generation of odours with a recommended 6-10 air changes per hour for a mechanical system for internal WSAs;
- Provide suitable lighting – a minimum Lux rating of 220 is recommended;
- Be easily accessible for people with limited mobility;
- Be restricted to access by nominated personnel only;
- Be supplied with hot or cold water for disinfection and washing of bins;
- Be fitted with suitable power supply for power washers;
- Have a sloped floor to a central foul drain for bins washing run-off;
- Have appropriate signage placed above and on bins indicating correct use;
- Have access for potential control of vermin, if required; and

- Be fitted with CCTV for monitoring.

The building management company, tenants and residents will be required to maintain the resident bins and storage areas in good condition as required by the DCC Waste Bye-Laws.

Access to the Healthcare Risk WSA at ground level should be restricted to authorised staff, be sufficient to allow a 240 litre bin to pass easily into and out of the room for transfer via the service walkway to the waste collection zone. 240 litre bins used in the healthcare waste industry are typically 450mm wide.

In accordance with the HSE publication *National Hospital Office – National Cleaning Manual Appendices*, the following specifications are also required:

- The waste receptacle including all component parts should be clean and well-maintained with no blood or body substances, rust, dust, dirt, debris and spillages.
- Bins should be emptied as appropriate, with fresh liners fitted in accordance with local and national policy. Bags should be removed and labelled/tagged when no more than ¾ full and stored appropriately in a secure location.
- There should be an agreed schedule in operation for replacement of sani-bins in place.
- The sani-bin/nappy bin, including all component parts should be clean and well-maintained with no blood or body substances, rust, dust, dirt, debris and spillages.

The project Architects site layout plan indicates the indicative site and building layout, including waste storage areas for planning purposes, more detailed layouts will be produced as part of the detailed design process. The waste storage areas identified on the plans are sufficiently sized to accommodate the waste which will be generated within the development and are appropriately located to allow for collection of this waste.

6.0 CONCLUSIONS

In summary, this OWMP presents a waste strategy that addresses all legal requirements, waste policies and best practice guidelines and demonstrates that the required storage areas have been incorporated into the design of the proposed Development.

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 contributing to the targets set out in the *NWMPCE 2024 - 2030*.

Adherence to this plan will also ensure that waste management at the development is carried out in accordance with the requirements of the *DCC Waste Bye-Laws*.

The waste strategy presented in this document will provide sufficient storage capacity for the estimated quantity of segregated waste. The designated areas for waste storage will provide sufficient room for the required receptacles in accordance with the details of this strategy.

7.0 REFERENCES

1. Waste Management Act 1996 (Act No. 10 of 1996) as amended
2. Environmental Protection Act 1992 (Act No. 7 of 1992) as amended;
2. Litter Pollution Act 1997 (Act No. 12 of 1997) as amended;
4. DCC *Dublin City Council (Storage, Presentation and Segregation of Household and Commercial Waste) Bye-Laws (2018)*
5. Regional Waste Management Planning Offices, *The National Waste Management Plan for a Circular Economy 2024 - 2030 (2024).*
6. Department of Environment and Local Government (DoELG) *Waste Management – Changing Our Ways, A Policy Statement* (1998)
7. Health Service Executive (HSE), *Waste Policy* (2016)
8. Health Service Executive (HSE), *Waste Management Awareness Handbook* (2011)
9. HSE and Department of Health and Children (DOHC), *Healthcare Risk Waste Management: Segregation, Packaging and Storage Guidelines for Healthcare Risk Waste, 4th Edition* (2010)
10. Environmental Protection Agency (EPA) Green Healthcare, best practice guides for the reduction of hospital waste:
    - EPA Green Healthcare, *Best practice Guide on Healthcare Risk Waste Reduction*
    - EPA Green Healthcare, *Best Practice Guide on healthcare Risk Waste Reduction in Theatres*
    - EPA Green Healthcare, Best Practice Guide Maximise Recycling And Reduce Landfill Waste
11. Department of Environment, Heritage and Local Government (DoEHLG) *Preventing and Recycling Waste - Delivering Change* (2002)
12. DoELG, *Making Ireland's Development Sustainable – Review, Assessment and Future Action (World Summit on Sustainable Development)* (2002)
13. DoEHLG, *Taking Stock and Moving Forward* (2004)
14. Department of Communications, Climate Action and Environment (DCCAE), *Waste Action Plan for the Circular Economy - Ireland's National Waste Policy 2020-2025* (2020).
15. DCCAE, *Whole of Government Circular Economy Strategy 2022-2023 'Living More, Using Less'* (2021)
16. Environmental Protection Agency (EPA), *National Waste Database Reports 1998 – 2020* and the Circular Economy and National Waste Database Report 2021 -
17. DCC, *Dublin City Development Plan 2022-2028.*
18. Planning and Development Act 2000 (S.I. No. 30 of 2000) as amended 2010 (S.I. No. 30 of 2010) and 2015 (S.I. No. 310 of 2015).
19. European Waste Catalogue - Council Decision 94/3/EC (as per Council Directive 75/442/EC).
20. Hazardous Waste List - Council Decision 94/904/EC (as per Council Directive 91/689/EEC).
21. EPA, *European Waste Catalogue and Hazardous Waste List* (2002)
22. EPA, *Waste Classification – List of Waste & Determining if Waste is Hazardous or*

25. DoHLGH, *Design Manual for Urban Roads and Streets* (2019)

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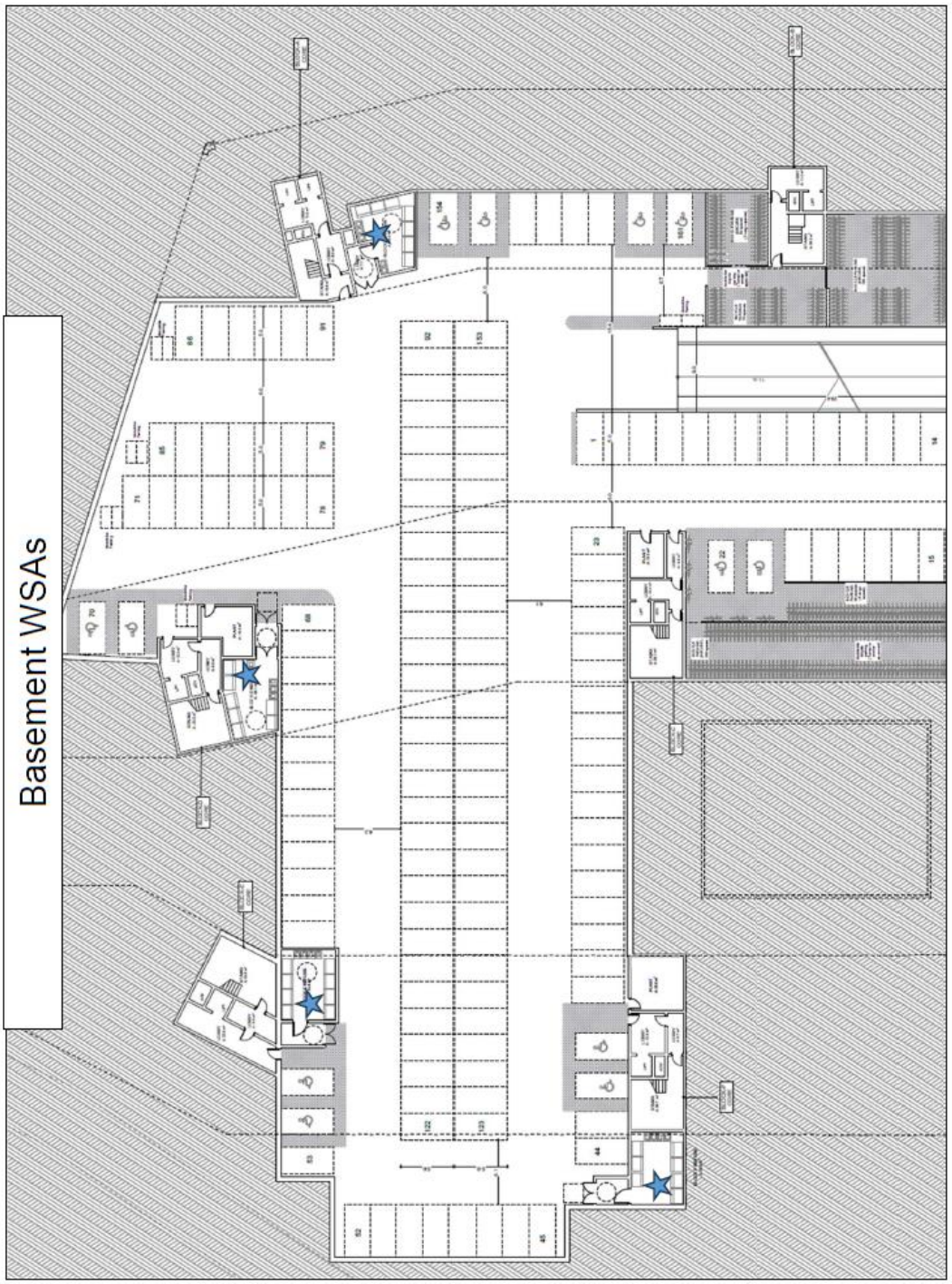
8.0 APPENDIX A – PROPOSED WASTE STORAGE AREA LOCATIONS



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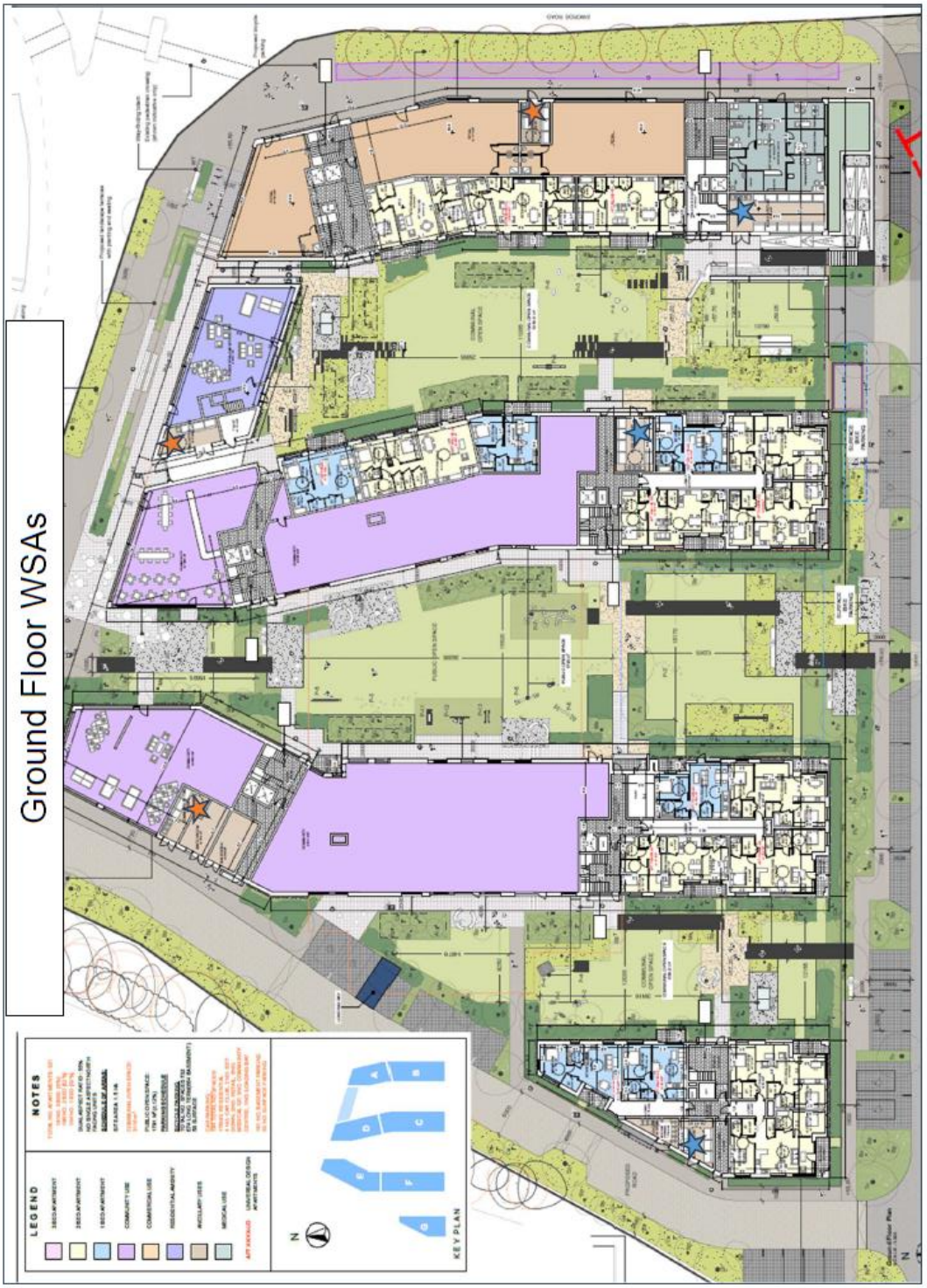

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14.0. Archaeology and Cultural Heritage

14.1. Introduction

It is proposed to develop a residential development and associated works at on lands at the junction of Santry Avenue and Swords Road, Santry, Dublin 9.

This section of the EIAR assesses the impact of the development on the Cultural Heritage of the site and its environs. The report includes a desktop assessment and a site inspection, and assesses the potential significance and likely impact of the proposed development, and of the cumulative development, on cultural heritage, including archaeological and architectural heritage.

Field walking and archaeological testing was undertaken by Steven McGlade, BA, MIAI of Archaeology Plan Heritage Solutions undertook this chapter and archaeological testing at the site.

14.2. Assessment Methodology

This chapter of the EIAR document has been prepared with reference to the specific criteria set out in the Guidelines check 2017 EIAR legislation. For the purposes of the chapter on Cultural Heritage, the Proposed Development and the Cumulative Development are collectively referred to as the Study Area.

14.2.1 Archaeology

Archaeology is defined as the study of the past through the examination and analysis of material cultural remains. These include buildings, structures, features, artefacts and the landscape itself.

Thus, for developments which involve earth-moving or disturbance in areas of known archaeological remains or in areas of high archaeological potential, mitigation of impacts and of possible impacts will be required.

All archaeological sites and monuments are protected under the National Monuments Act 1930 and subsequent Amendment Acts, 1954, 1987, 1994, 2004 and the Heritage Act, 1995 and *'The Valletta Convention'*.

The European Convention on the Protection of the Archaeological Heritage (revised), dated 16/1/1992, (commonly referred to as the *'The Valletta Convention'*), European Treaty Series no. 143 entered into force for Ireland on 19/09/97.

The study is based on an examination of Ordnance Survey maps, records and publications of the Archaeological Survey of Ireland, documentation and archive material from various institutions including:

- National Monuments Service, Customs House, Dublin 1.
- Map Library, University of Dublin, Trinity College, Dublin 2
- National Museum of Ireland, Kildare Street, Dublin 2.
- National Library of Ireland, Kildare Street, Dublin 2.
- Ordnance Survey of Ireland, Phoenix Park, Dublin 8.

The standard publications that relate to the area under consideration have been consulted.

In addition, the results of archaeological investigations in the wider vicinity of the Study Area have been incorporated into this chapter.

14.2.2 Record of Monuments and Places (RMP)

The Archaeological Constraint Maps, in conjunction with the County Record of Monuments and Places, provide an initial database for Planning Authorities, State Agencies and other bodies involved in environmental change.

The Record of Monuments and Places (RMP) comprise the following elements: (i) Letter or Letters indicating County (KD = Kildare, ME=Meath); (ii) A three-digit number indicating the relevant Ordnance Survey Sheet Number (e.g. 049); (iii) A three-, four- or five-digit number indicating the dedicated number of the individual site or monument.

The proximity of the development area to known and identifiable archaeological monuments has also been considered.

14.2.3 The Topographic Files

The files held in the National Museum of Ireland have been consulted. Collectively known as the Topographic Files, they provide information on artefacts, their find spots, and any field monuments that have been notified to the National Museum.

14.2.4 Field Inspection

In addition to documentary and archival research and analysis, a detailed surface-based inspection of the area of the Proposed Development was undertaken by a qualified archaeologist.

14.2.5 Aerial Photographic Analysis

A series of aerial photographs from Google Earth were analysed for this study.

14.2.6 Abbreviations Used:

- DCHG – Department of Culture, Heritage and the Gaeltacht
- NIAH - National Inventory of Architectural Heritage
- NMI - National Museum of Ireland
- OS - Ordnance Survey
- RMP - Record of Monuments and Places
- RPS – Record of Protected Structures

14.3. Receiving Environment

The EIA Directive requires:

"A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the project as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge" (EPA 2017, 43).

In describing the receiving environment, the context, character, significance and sensitivity of the baseline receiving environment, into which the proposed development will fit, is assessed. This takes account of any other proposed developments that are also likely to proceed.

14.3.1 The Study Area

For the purposes of the description of the receiving environment in relation to cultural heritage, including archaeological and architectural heritage, the area of the Proposed Development will be referred to as 'the study area'.

14.3.1.1 Location of the Study Area

The study area is located at the junction of The Swords Road and Santry Avenue within the limits of Dublin City and the historical townland of Santry, centered on ITM 716646E, 739980N. The Swords Road and Santry Avenue form the eastern and northern boundaries of the site respectively, modern fencing forms the western and southern boundaries of the site. The site is currently in use as the premises of Heiton Buckley Builders Providers.

14.3.1.2 Planning Context in Relation to Cultural Heritage

The proposed development provides for 321 no. apartments, comprised of 104 no. 1 bed, 198 no. 2 bed, and 19 no. 3 bed dwellings, in 4 no. seven to thirteen storey buildings, over basement level, with 3 no. retail units, a medical suite / GP Practice unit and community/arts & culture space (total c.1,460sq.m), all located at ground floor level, as well as a one storey residential amenity unit, facing onto Santry Avenue, located between Blocks A and D. The present building of Heiton Buckley Builders Providers, covering an area of 4196.8m², will be demolished as part of the development.

14.3.1.3 Dublin City Development Plan 2022-2028

The Study Area lies within the boundary of Dublin City Council, with Santry Avenue forming the northern boundary of the lands under DCC control. The most recent County Development Plan (2022-2028) has zoned the entire of the Heiton Buckley site as Z3, which has an aim to provide and improve neighbourhood facilities.

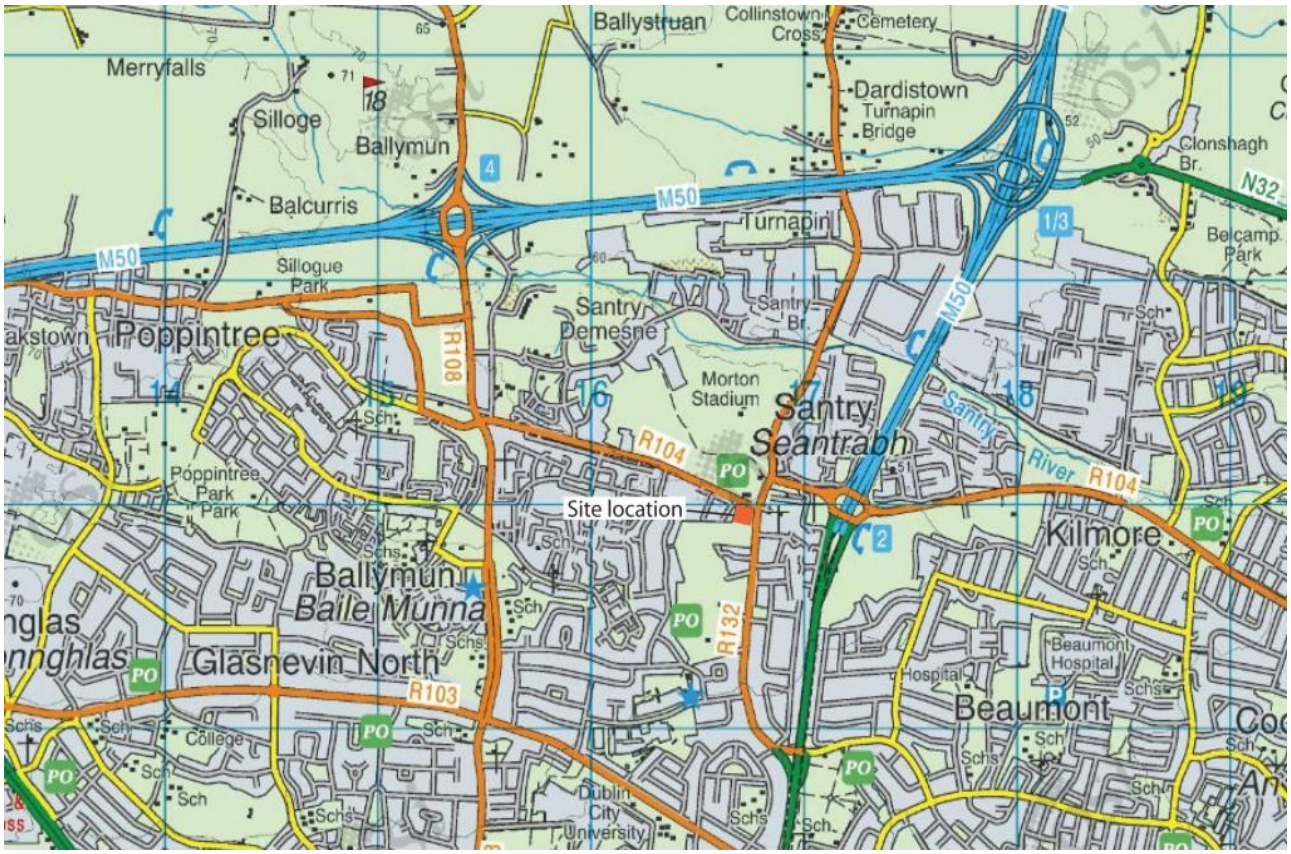

Fig. 14.1 Site location shown on the Ordnance Survey Discovery Series map

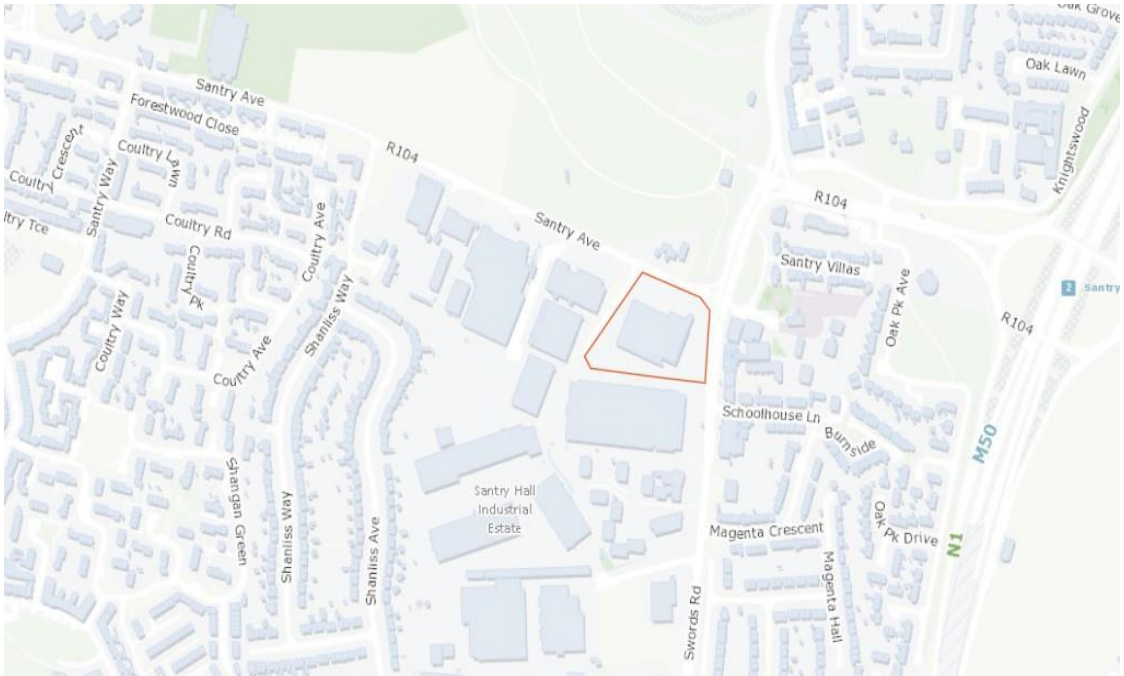

Fig 14.2 Site location on the streetviewer application map

14.3.1.4 Archaeological provisions within the Dublin City Development Plan 2022 – 2028

1. To protect and preserve Monuments and Places listed on the statutory Record of Monuments and Places (RMP) as established under Section 12 of the National Monuments (Amendment) Act 1994 which have been identified in the Record of Monuments and Places and the Historic Environment Viewer (www.archaeology.ie) and all wrecks over 100 years old including those in the Shipwreck Inventory of Ireland.

2. To protect archaeological material in situ by ensuring that only minimal impact on archaeological layers is allowed, by way of re-use of standing buildings, the construction of light buildings, low impact foundation design, or the omission of basements (except in exceptional circumstances) in the Monuments and Places listed on the statutory Record of Monuments and Places (RMP) as established under Section 12 of the National Monuments (Amendment) Act 1994.

3. To seek the preservation in situ (or where this is not possible or appropriate, as a minimum, preservation by record) of all archaeological monuments included in the Record of Monuments and Places; all wrecks and associated objects over 100 years old and of previously unknown sites, features and objects of archaeological interest that become revealed through development activity. In respect of decision making on development proposals affecting sites listed in the Record of Monuments and Places, the council will have regard to the advice and/or recommendations of the Department of Housing, Heritage and Local Government.

4. Development proposals within the Record of Monuments and Places (RMP) as established under Section 12 of the National Monuments (Amendment) Act 1994, notification of sites over 0.5 hectares size with potential underwater impacts and of sites listed in the Dublin City Industrial Heritage Record, will be subject to consultation with the City Archaeologist and archaeological assessment prior to a planning application being lodged.

5. To preserve known burial grounds and disused historic graveyards. Where disturbance of ancient or historic human remains is unavoidable, they will be excavated according to best archaeological practice and reburied or permanently curated.

6. Preserve the character, setting, and amenity of upstanding and below ground town wall defences.

7. Development proposals in marine, lacustrine and riverine environments and areas of reclaimed land, shall have regard to the Shipwreck Inventory maintained by the Department of Housing, Local Government and Heritage and be subject to an appropriate level of archaeological assessment.

8. To have regard to national policy documents and guidelines relating to archaeology and to best practice guidance published by the Heritage Council, the Institute of Archaeologists of Ireland and Transport Infrastructure Ireland.

Fig.14.3 Plan of the proposed development

Fig. 14.4 Plan of the basement layout for the proposed development

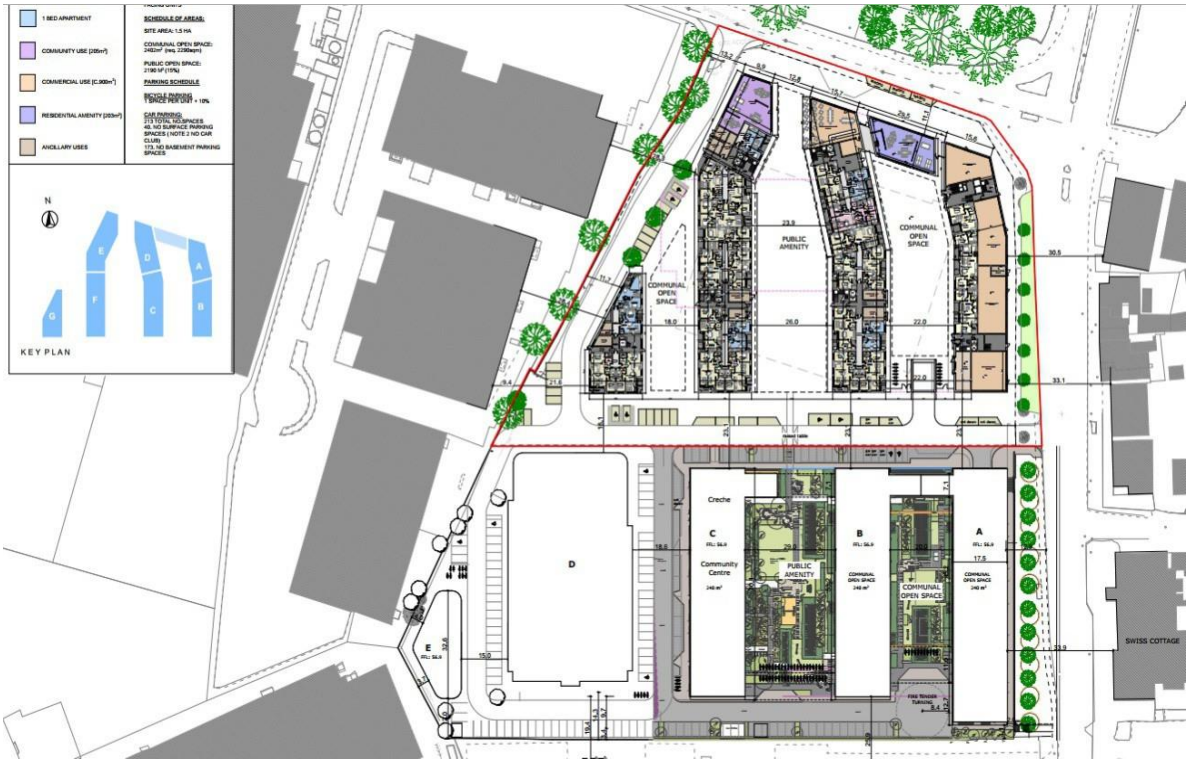

Fig.14.5 Plan of the overall development including the southern section which is under construction

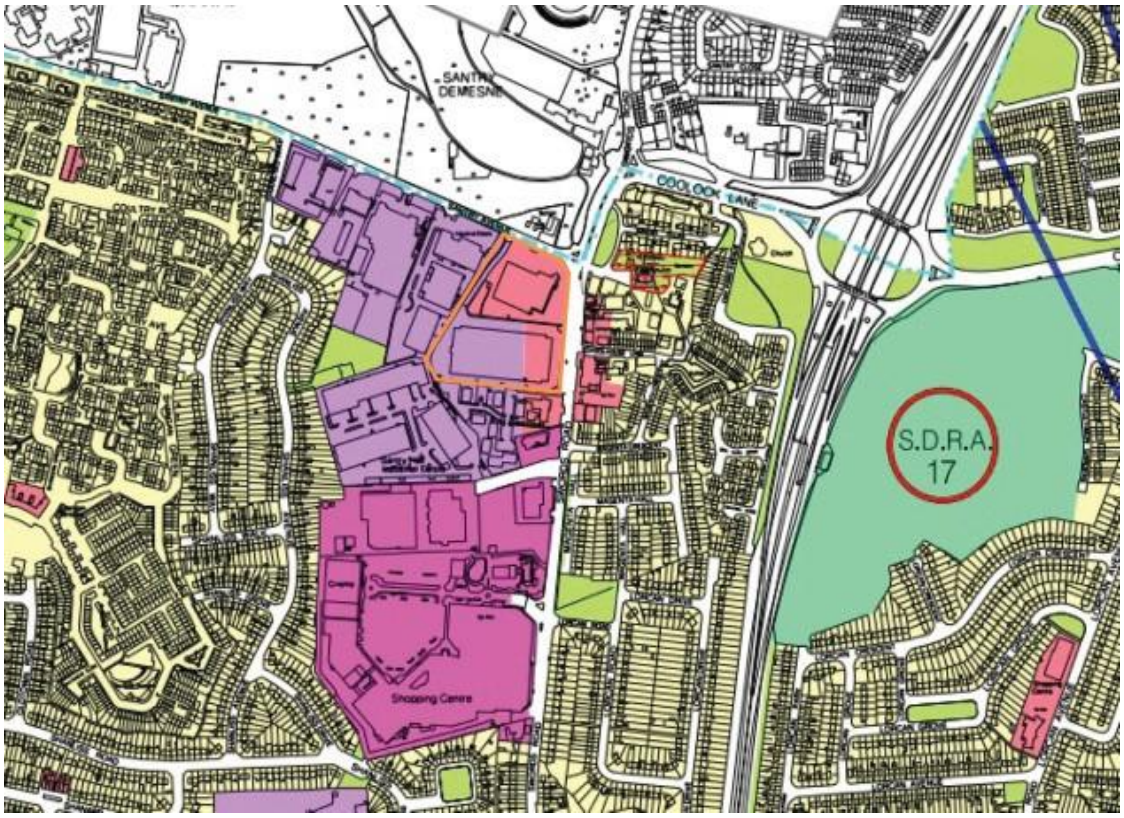

Fig.14.6 Dublin City Council zoning in the vicinity of the proposed development

14.4 Historical background

14.4.1 Historical context

14.4.1.1 Prehistoric Period

Prehistoric activity in the area around Santry is evidenced by a polished stone axe, flint tools, and copper objects found in the 1940s and 1960s and recorded in the topographical files. There are no known monuments in the area dating from the prehistoric period.

14.4.1.2 Early Medieval period

The early ecclesiastical establishment at Santry was reputedly founded by St. Pappan in the 6th century (Adams 1884). While it is impossible to prove who founded the church, the remains of the oval ecclesiastical enclosure on the First Edition Ordnance Survey map are typical of early medieval monastic sites and it is likely that the village of Santry later developed around the ecclesiastic site. The development site would have been situated in this medieval village of Santy.

During the first phase of the Scandinavian longphort of Dublin, Santry was part of an extensive rural area that was mostly under the political and economic control of the Vikings until their expulsion in 902 AD (Bradley 1988).

Following their return and the re-founding of Hiberno-Norse Dublin in 917, the hinterland took on an increasingly defined status and began to be referred to as fine gall ('place of the foreigner') by the Irish, and Dyflinarskiri by the Scandinavians. This area stretched as far north as the town as Skerries, west to Leixlip and south to Dalkey. Much of the area was subject to periodic control by local and provincial Irish kings and the situation changed constantly. Despite this, the town continued to exert control over the region up to the 12th century. (Murphy and Potterton 2010, 61-63).

The growing population of Dublin would have been dependent on the produce of an extensive agricultural hinterland for food and raw materials for industry and building (Murphy and Potterton 2010, 64-65). Santry and the lands around it were very likely dedicated to the production of cereal crops, cattle or managed hazel coppice during this time. Debate continues as to the ethnicity of the population of this hinterland, but it seems likely that it contained some Scandinavians, some Irish and many of mixed ethnicity. Place-name evidence is particularly convincing of the Scandinavian influence in many parts of what was then rural Dublin. Glasnevin and Finglas, for example, both of which are close to Santry, take their modern names from Scandinavian roots. Despite the place name evidence, however, the archaeological evidence for Scandinavian rural settlement in north Dublin is sparse. This contrasts with the situation in south Dublin, where archaeological evidence has demonstrated extensive Scandinavian influence, for example Cherrywood in south Co. Dublin (Ó Néill 2006). Overall, it is difficult to separate Irish settlement from Scandinavian settlement when the rural nature of each was probably quite similar (Murphy and Potterton 2010, 63-71).

14.4.1.3 Later Medieval Period

Following the arrival of the Anglo-Normans in 1170, Scandinavian influence on Dublin and its hinterland ended abruptly. A considerable amount of land changed hands in the subsequent years, and under the terms of his 1172 grant from Henry II, Hugh de Lacy was permitted to make grants around Dublin. Santry was granted to one of his barons, Adam de Feypo (Murphy and Potterton 2010, 93). De Feypo set about imposing the Anglo-Norman manorial system of landholding, whereby the lord's residence and associated buildings were but a component of the medieval settlement and most of the manorial lands were populated and farmed by tenants (Murphy and Potterton 2010, 207).

The medieval manor of Santry consisted of a hall, chambers, stables, a bakery, 200 apple trees, 100 pear trees, 30,000 great ash trees and 1000 large alder trees (Calendar of the justiciary rolls, 1295-1303, no. 386). De Feypo allegedly built the 12th century church on the site of St. Pappan's 6th century church and granted it to St. Mary's Abbey (Adams 1881). All that remains today of de Feypo's church is the medieval font (RMP DU014-057003).

14.4.1.4 Early Modern period

The lands at Santry changed hands several times from the dissolution of the monasteries in the 1530s until c. 1620, when the Barry family took control of the 1160 acre estate (Smyth 1992).

The Civil Survey (1654-6) makes note of a dwelling house of stone with a barn and stable within the demesne. The influence of the Barry's, and their descendants the Domvilles, on Santry was immense. In c. 1703 they built Santry Court on the site of de Feypo's manorial home and the new Protestant church, that still stands today, at the ruins of St. Pappan's in 1709 (Somerville-Woodward 2002, 8-9). The development site lies outside Santry Court Demense, but it would have been part of the earlier manor, as it faces Santry Avenue which led to the entrance to the demesne.

Lewis (1837) described the house as 'a stately mansion of brick, containing many spacious apartments, ornamented with numerous family portraits, a valuable collection of historical and scriptural paintings by the best masters and many items of fine arts.' The demesne comprised more than 140 acres and was 'tastefully laid out in gardens and pleasure- grounds, richly embellished with timber, and commanding some beautiful scenery and some extensive mountain and sea views' (Lewis 1837).

Fig.14.7 Photograph of Santry Court pre 1941, from the Patrick Healy Collection, courtesy of South Dublin County Library

Sir Charles Compton William Domville embarked on a transformation of Santry Court in 1857; the 130 rooms were redecorated, the gardens and out offices restored, a water supply was laid on to the house from the river and ornamental gas lamps lit the avenue to a replica of the Phoenix monument erected in the grounds. (Stout, RMP file).

The Domvilles left Ireland following independence and the house and gardens eventually passed down to the Free State. It was occupied by the Irish air force during the 'Emergency' and was destroyed by accidental fire in 1941. It lay derelict until its demolition in 1959. All that now remains of the house are the front steps and a walled garden. Plaster friezes survive in the rear walls of the entrance piers (Stout, RMP file).

Much like in medieval times, Santry's development since the mid-20th century has very much been a product of its proximity to Dublin city centre. St. Pappan's ecclesiastical site, the manor which was incorporated into Santry Demesne, Santry Avenue and the Swords Road are all that remain from the medieval period, as the once rural area has been replaced by housing, shopping complexes, industry and airport car parking.

14.4.2 Cartographic background

The Down Survey Barony map of Coolock Barony, (surveyed 1650s) does not show any detail in the vicinity of the Study Area. It is located within a parcel of land labelled 'Hooly- wood'. The parish map for Santry parish shows the Study Area in a parcel of land labelled 'Holly- wood land with Loghill'. The accompanying terrier lists Nicholas Hollywood of Artane and Thomas Fleming, an Irish papist, as the proprietors of the lands at this time. The name at this time presumably derived from the Holly- woods, an Anglo-Norman family who were in possession of Artane Castle from c. 1360.

Hiberniae Delineato (Petty's Atlas) 1685 William Petty, the Surveyor General responsible for the Down Survey, published the first atlas of Ireland in 1685 although it is believed that the engravings for the publication were created over a decade earlier, c. 1671. 'Holliwood Santry' is shown at the southern end of Santry parish (right)

Rocque's maps in the mid-18th century show a lot more detail in the vicinity of the Study Area. The linear settlement along the Swords Road is labelled Santry, though the housing is mainly depicted to the east. The Study Area is depicted as agricultural fields west of the Swords Road and south of the tree- lined Santry Avenue. The church is depicted and labelled to the east set back from the road, while Santry House is depicted in substantial gardens to the northwest. A turn-pike is depicted and labelled along the Swords Road just north of the junction with Santry Avenue.

The First Edition Ordnance Survey map, c. 1837-42, show the Study Area as being part of a large agricultural field southwest of the junction of Santry Avenue and Swords Road. The section of Swords Road east of the Study Area is depicted as being tree-lined, as is Santry Avenue to the north. A horseshoe symbol indicting a smithy or forge is depicted on the corner across from the Study Area to the east. A dispensary, parochial school, glebe house and the church are also labelled to the east, while Santry House is labelled to the northwest.

The 1910s edition of the Ordnance Survey map (bottom) shows no change within the Study Area, though a pump, labelled with a 'P.' symbol, is depicted directly to the southeast. A smithy, rectory, school and St Pappan's Church are labelled to the east of the Study Area and to the northwest Santry House has been renamed Santry Court.

The Cassini maps are so called because they used a system for surveying developed by the Cassini family of cartographers in the eighteenth century in France. The Study Area is again depicted as undeveloped agricultural land. Further development has taken place to the east of the Swords Road, with a G.P., post office and rectory labelled along with St Pappan's Church. The wooded grounds of Santry Court are depicted to the northwest.

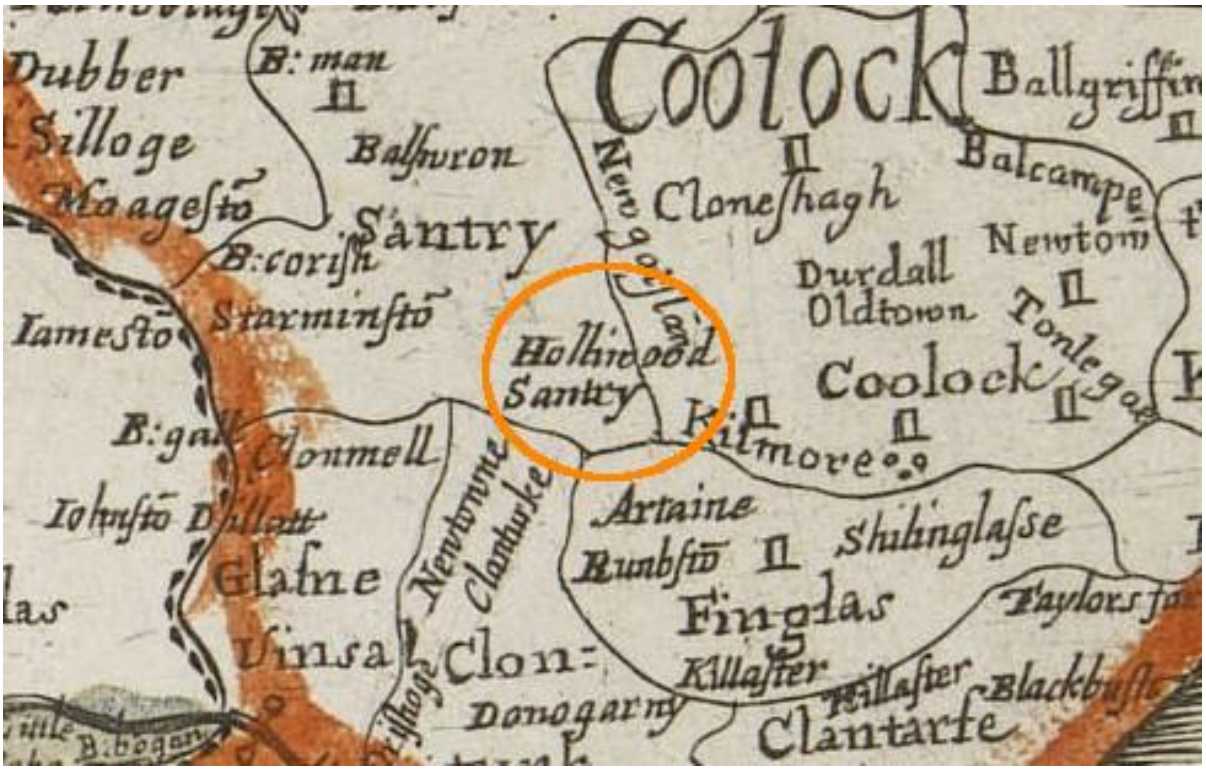

Fig.14.8 Extract from Petty's 1685 Hiberniae Delineato showing 'Holliwood Santry'

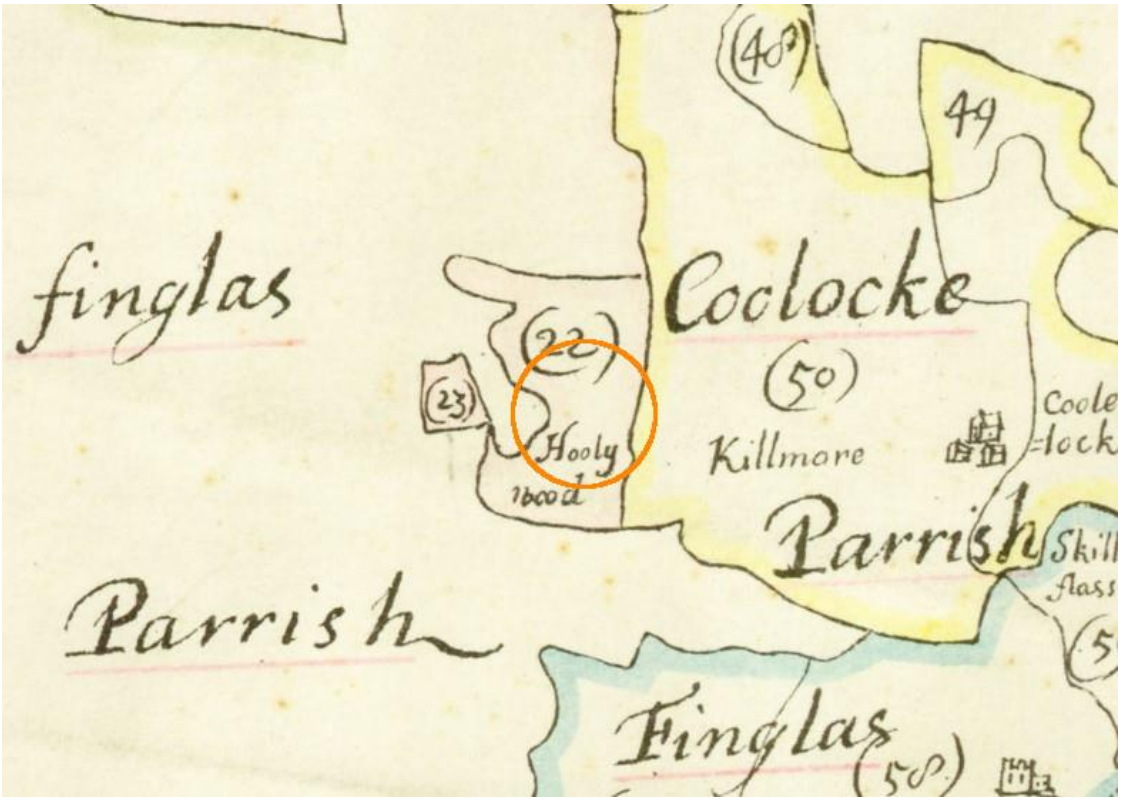

Fig.14.9 Closeup of the Down survey baronial map of Coolock with 'Hooly wood' townland circled

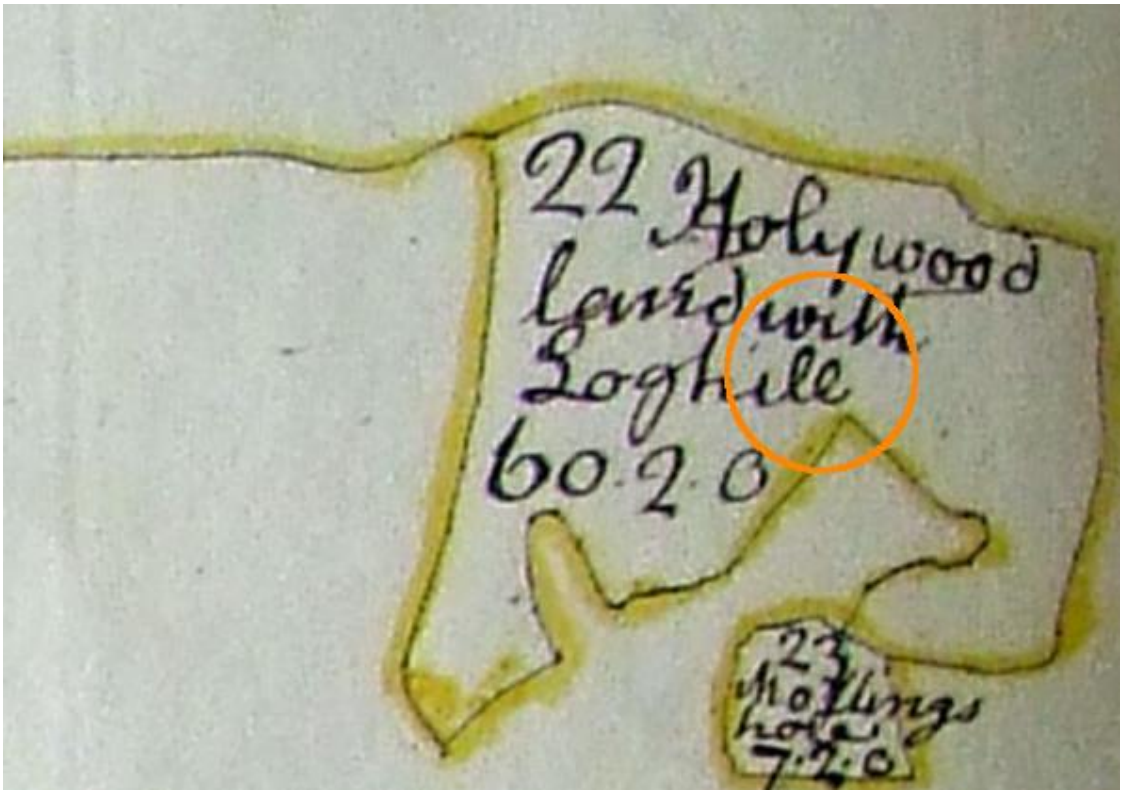

Fig.14.10 Down survey map of the townland of Holywood with the approximate location of the study area circled

Fig.14.11 Extract from John Rocque's 1757 map of Dublin and its environs

Fig.14.12 The First Edition Ordnance Survey map, c. 1837, shows the Study Area as being part of a larger agricultural field southwest of the junction of Santry Avenue and Swords Road. The section of Swords Road east of the Study Area is depicted as being tree-lined, as is Santry Avenue to the north. A horseshoe symbol indicting a smithy or forge is depicted on the corner across from the Study Area to the east. A dispensary, parochial school, glebe house and the church are also labelled to the east, while Santry House is labelled to the northwest.

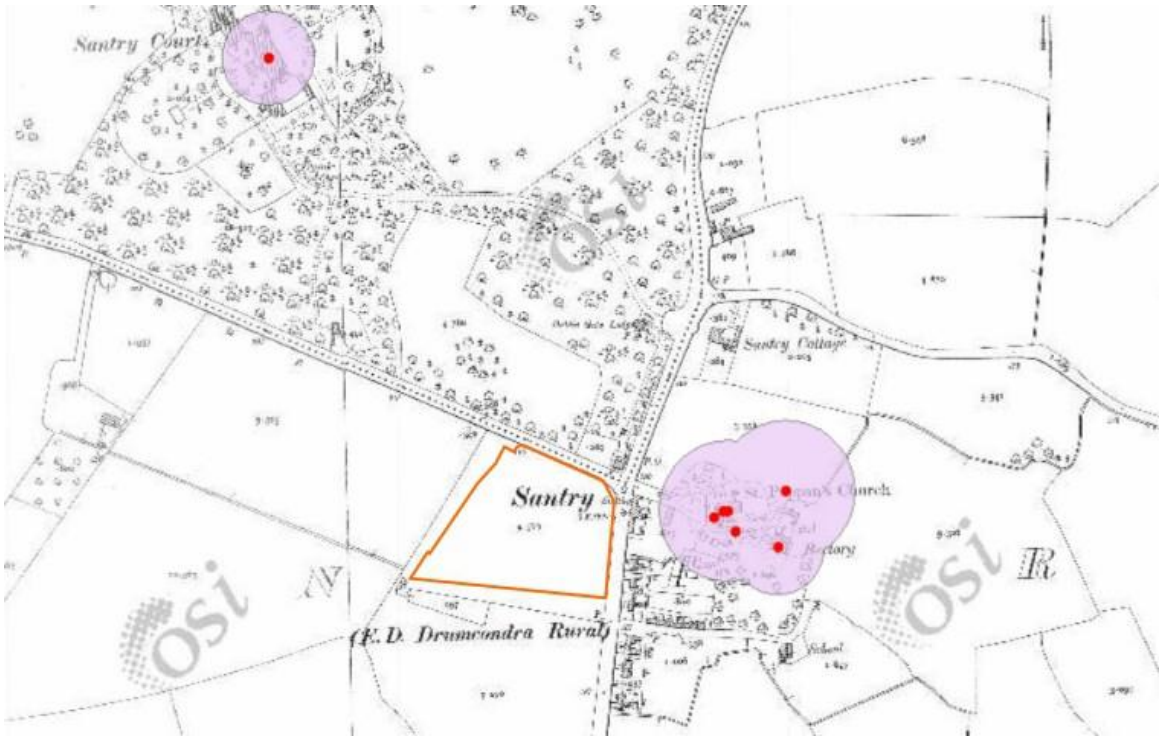

Fig.14.13 The 1910s edition of the Ordnance Survey map shows no change within the Study Area, though a pump, labelled with a 'P.' symbol, is depicted directly to the southeast. A smithy, rectory, school and St Pappan's Church are labelled to the east of the Study Area and to the northwest Santry House has been renamed Santry Court.

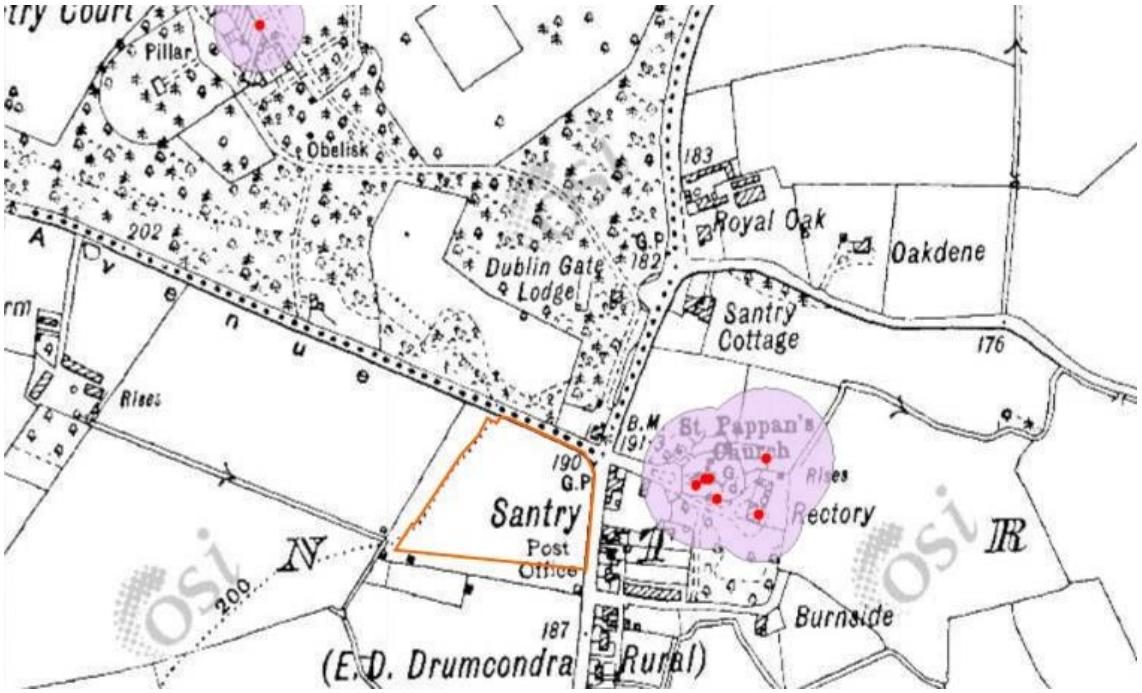

Fig.14.14 Extract from the final Ordnance Survey 6-inch 'Cassini' map. The Cassini maps are so called because they used a system for surveying developed by the Cassini family of cartographers in the eighteenth century in France. The Study Area is again depicted as undeveloped agricultural land. Fur- ther development has taken polace to the east of the Swords Road, with a G.P., post office and rectory labelled along with St Pappan's Church. The wooded grounds of Santry Court are depicted to the northwest.

14.5 Archaeological background

14.5.1 Record of Monuments and Places

There are several archaeological monuments in the vicinity of the development site. The majority of these are part of the St. Pappan's ecclesiastical complex, located across the Swords Road and to the east of the site, around which the medieval village of Santry is believed to have developed. The Santry Demense and house to the northwest of the site were important to the later development of the area.

DU014-057001 – Church

The current St. Pappan's Church was built in 1709, reputedly on the site of a 12th century parish church erected by Adam de Feypo, who granted it to St Mary's Abbey (Adams 1881, 484). According to the Regal Visitations of 1615 the medieval church was already in ruins by that time. It had been built within an earlier ecclesiastical enclosure that in the 6th century was associated with St. Pappan. The remains of the enclosure and a holy well survive near the present church. A font that has been dated to the 14th century is the only medieval element within the present church (Stout, RMP file).

DU014-057002 – Ecclesiastical residence

The rectory of St. Pappan's is no longer part of the overall St. Pappan's property and is instead owned by the Dublin Life Christian Church. It too allegedly occupies the site of an earlier predecessor, in this case a 16th century building (Adams 1881, 484), however no visible remains of the earlier structure survive.

DU014-057003 – Font

As mentioned above, the font is the only medieval component within the present-day St Pappan's church. It is octagonal in plan and is set on its original plinth (Stout, RMP file).

DU014-057004 – Ritual site – holy well

McQuade (2003a) identified the exact location of the holy well during archaeological investigations (Licence number 03E0353) on a property adjacent to, and south of, St. Pappan's church. This had been a private garden in 1850 just outside of the church, and the well was accessed by a flight of stairs. Devotions no longer took place there by the 19th century, though it was still known as a holy well (O'Danachair 1957-8). The well was very overgrown prior to McQuade's archaeological testing. It was uncovered below 400mm of topsoil and it had been backfilled with polythene and concrete. The well measured 3.2m in length from the northern property wall to its southern limestone limits. The stones contained a corroded iron spike which was probably the remains of a railing. The well measured 1.05m - 1.6m in width (McQuade 2003a). It was fenced off and protected during the 2003 construction works and McQuade (2003b) detailed proposals to repatriate the well to the church of St. Pappan's.

DU014-057005 – Ecclesiastical enclosure

The remains of a roughly-oval early enclosure around the present church is depicted on the Ordnance Survey First Edition 6" map (1837- 1842). It is apparent in the northern sector of the graveyard as a raised platform, 1.1m in height. It is interrupted by the 18th century Domville family tomb. The line of the enclosure continues in the eastern graveyard wall to the east and returns to the south-west (Stout, RMP file)

DU014-057006 – Graveyard

The graveyard stands in a walled oval area that likely respects the line of an earlier ecclesiastical enclosure (see above). There are 18th and 19th century memorials in the graveyard (Stout, RMP file).

DU014-030 – House

All that remains of Santry House (sometimes known as Santry Court) are the front steps that lead up to a platform where the house used to stand, and a walled garden. Plaster friezes based on the Parthenon survive in the rear of the walls of the entrance pier and are suggestive of forgotten splendour. Originally built in 1703 by the Barry family and splendidly renovated by their descendant Sir Charles Compton William Domville in 1857, it was destroyed by fire in 1941 whilst occupied by the Irish army. It remained derelict and was eventually demolished in 1959 (Stout, RMP file).

Fig.14.15 St. Pappan's Church, looking east

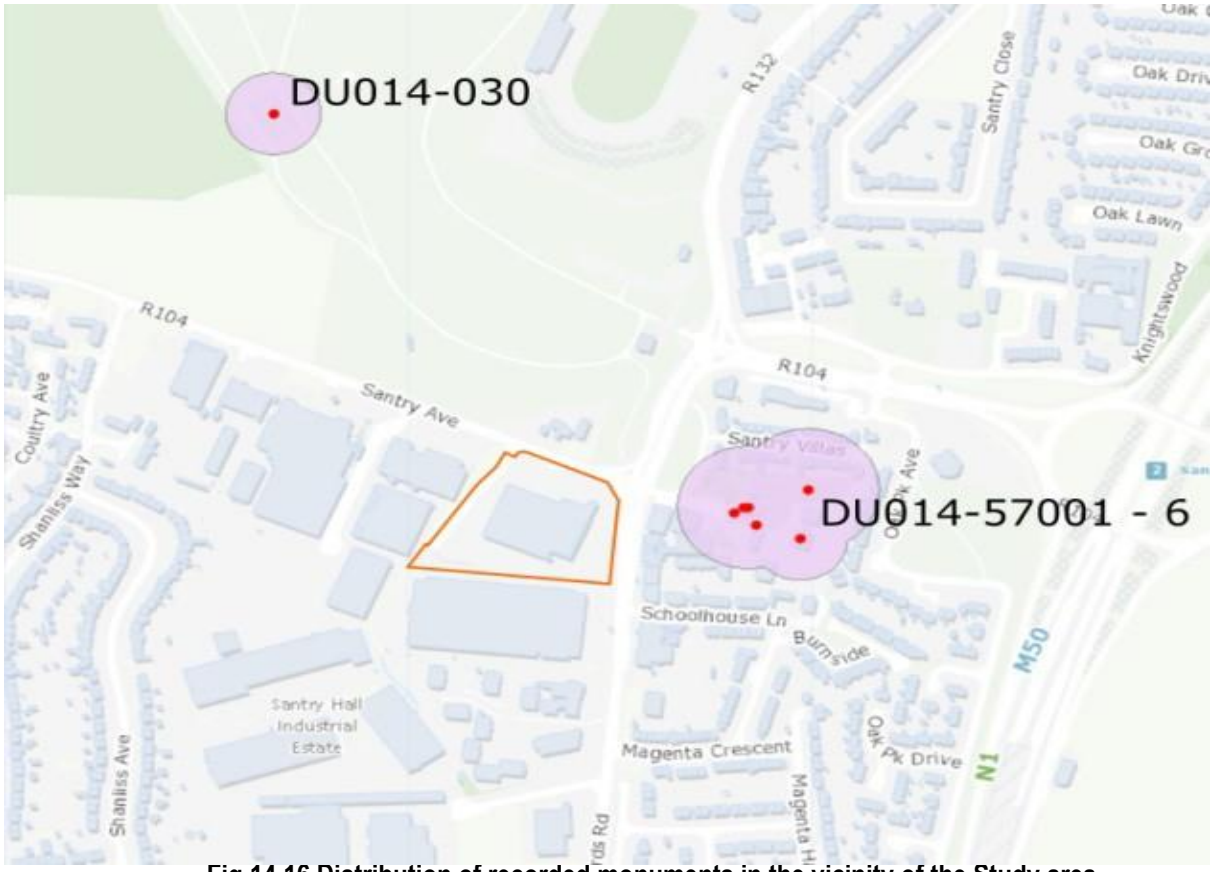

Fig.14.16 Distribution of recorded monuments in the vicinity of the Study area

14.5.2 Topographical files

The topographical files of the NMI record acquisitions and their provenance made by the museum since the 19th century. The topographical files offer the only known evidence for prehistoric activity within Santy and the neighbouring townland of Santry Demense.

1954:44
A clay pipe was found in the garden of a house named 'Coolfin' that was formerly part of the grounds around the Royal Oak Inn.

1969:58-63
A flint scraper, a flint flake from a round pointed implement, a butt-trimmed Bann flake and two unornamented concave/convex copper objects were all found at a depth of 0.6m - 0.76m while digging foundations for a house in Santry.

1969:63:1-7
A copper object, gunflint, a bead, a lump of glass and a ring were also found in Santry and were all handed in with the above objects. The topographical files contain no other information for these objects.

1947:43
A polished stone axe head was found lying in gravel 0.46m below the surface while digging drainage within Santry Demesne.

14.5.3 Archaeological investigations

Several previous licensed archaeological investigations have occurred within 500m of the development site.

Licence No.	Excavations Ref.	Location	Description	Director
19E0069	n/a	Swords Road, Santry	19th century field lane	A. Giacometti
19E0317	2019:510	Swords Rd., Santry	19th century building & boundaries	J. Hession
03E0353	n/a	Schoolhouse Lane, Santry	Holy well. Medieval boundaries	M. McQuade
09E0066	2010:293	Santry Villas, Santry	No archaeology	J. Carroll
05E0039	2005:388	Coultry Ave., Ballymun	No archaeology	H. Keogh
06E0436	2006:698	Schoolhouse Lane, Santry	No archaeology	K. Lohan
17E0545	2017:512	Schoolhouse Lane, Santry	Testing, no archaeology	J. Kiely

Table 14.1 Archaeological excavations within 500m of the Study Area

19E0069
A programme of archaeological monitoring is currently ongoing at the development to the south of the site. A cobbled lane running east- west with ditches running either side of it was revealed during removal of the concrete slab beneath the existing warehouse on the site. This corresponded to a laneway depicted on the First Edition Ordnance Survey maps from c. 1840. A second cobbled laneway was identified branching off to the northwest. The features were post-medieval in date. The original ground level was rising to the north and west with more truncation relating to the previous construction on the site in those directions. There was also significant disturbance towards the road frontage along the Swords Road with no archaeology identified adjacent to the road (pers. comm. Giacometti and McGlade).

19E0317
Demolition and construction under archaeological monitoring to the east of the development site in 2019 uncovered partial wall foundations of one of the eleven Swiss cottages built by Lady Domville in 1840. A boundary wall and cobbled surface of a laneway associated with the cottages was also identified. All of the archaeological features were recorded prior to development on the site.

03E0353
The most significant archaeological discoveries in the area were also those closest to the development site. As noted above, the location of a holy well (DU014-057004) associated with St. Pappan's church and medieval and post-medieval activity were identified in advance of the development of two blocks of student apartments on Schoolhouse Lane. McQuade (2003b, 2) interpreted medieval drainage channels and a possible field boundary as being associated with the cultivation of lands held by St. Mary's Abbey. The gullies had a sticky grey fill with sherds of locally manufactured ware with a green glaze and Leinster cooking ware dating from the late 12th to mid-14th centuries. These channels extended beyond the limits of excavation and were likely part of a wider field system that included the possible field boundary.

Post-medieval furrows and a drain highlighted the continuing use of the land for cultivation following the dissolution of the monasteries. Sherds of tin glazed-earthenware dating to the 17th-18th century were recovered from a furrow, garden soil and topsoil. Drains containing 18th -19th century red earthenware and a clay pipe stem indicated continuing

cultivation. Two medicine bottles found in topsoil were almost certainly associated with the Dispensary marked on the First Edition Ordnance Survey map (McQuade 2003b).

09E066
Archaeological monitoring of groundwork relating to the construction of a detached dwelling adjacent to No. 19 Santry Villas did not reveal any features, deposits or finds of archaeological significance.

05E0039
There was no evidence for any archaeological deposits or features found during monitoring foundation works in advance of the construction of two houses in Coultry, Ballymun.

06E0436
Archaeological test trenching in advance of a three-storey residential block on the corner of Schoolhouse Lane and Magenta Crescent did not reveal any archaeological features or deposits

17E0545
Archaeological testing of the foundations of a proposed new church to the rear of the ecclesiastical residence DU014-057002 did not uncover the earlier 16th century rectory that Adams (1884) alleged once stood on the site. Cultivation furrows were discovered, and these were interpreted as the remains of garden cultivation. No other features of archaeological significance were identified (Kiely 2017).

Fig.14.17 Map of archaeological excavations within 500m of the Study Area

14.5.4 Architectural Heritage

14.5.4.1 Protected Structures

There are no Protected Structures within the Study Area, however St Pappan's church and holy well to the east are listed as RPS No. 1543 in the Record of Protected Structures associated with the most recent Dublin City Development Plan, 2022-2028.

14.5.4.2 National Inventory of Architectural Heritage (NIAH)

There are no sites listed in the NIAH within the Study Area, however a number are listed to the east in the vicinity of St Pappan's Church. These include the Domville Monument (NIAH Reg. No. 50130322), a limestone tomb dating to 1855-1860 of Compton Domville, an important landowner in County Dublin, who resided at Santry House in the 19th century.

A freestanding mausoleum to Henry LeFroy, vicar of Santry, dating to c. 1876 (NIAH Reg. No. 50130320) is also located within the graveyard of the church. It comprises a gable- fronted structure with pitched roof of granite construction.

St Pappan's Church is also listed (NIAH Reg. No. 50130115) and is recorded as a freestanding Church of Ireland church dating to 1709 and modified in the late 19th century. It has a three- bay nave with a vestry to the north and porch to the west. The record also notes that the existing building is set within an historic graveyard on the site of an early Christian foundation.

St Pappan's rectory is the last entry in the vicinity of the church (NIAH Reg. No. 50130116), which is described as a detached three-bay two-storey square plan former rectory and schoolhouse, build c. 1810.

14.5.4 Industrial archaeology

Dublin City Industrial Heritage Record (DCIHR)

The Dublin City Industrial Heritage Record survey makes recommendations for sites to be added to the list of Protected Structures within Dublin City. There is one record listed in the DCIHR that is close to the development site.

14.5.4.1 Known industrial heritage sites

12 004 – Smithy

The smithy is marked on both the First Edition and Second Edition Ordnance Survey maps on the corner of the Swords Road and the entrance lane to St. Pappan's church, also known as Church Lane. There are no upstanding remains of the smithy and the site is currently occupied by a large warehouse.

14.5.4.2 Potential industrial heritage

Rocque's map of 1757 shows a turnpike directly northeast of the Study Area on the Swords Road, just north of the junction with Santry Avenue. Buildings associated with the turnpike are also depicted, however these are to the north of the Study Area on the opposite side of Santry Avenue.

The Ordnance Survey maps also show a post office, dispensary and two pumps in sections directly across the Swords Road from the Study Area. A pump is also depicted in the southeast corner of the Study Area fronting onto the road; however, it is unclear whether this would have been within the site or along the current footpath. No trace of the pump now stands on this site.

Fig.14.18 (above) & Fig. 14.19 (overleaf) - Images of forge in Santry from the Patrick Healy Collection, courtesy of South Dublin County Library. Note the horseshoe-shaped door advertising the business.

14.6 Site Inspection

A site inspection was carried out on Tuesday the 18th March 2021. The site is sub-rectangular in shape and is accessed via Santry Avenue to the north. It is bounded to the north by Santry Avenue and to the east by the Swords Road. The access road for the earlier phase of apartments to the south lies to the west.

Fig.14.20 Oblique overview of eastern end of the Study Area from the new development to the south, looking northeast with St Pappan's church in the background

Fig.14.21 Oblique overview of the central part of the Study Area from the new development to the south, looking north.

Fig.14.22 Oblique overview of the western part of the Study Area from the new development to the south, looking northwest

Fig. 14.23 View of front facade of the existing Heiton Buckley Builders Providers building, looking southeast

Fig.14.24 View of the eastern end of the Study Area, looking south. There has been no construction in this part of the Study Area shown on the maps or aerial images of the site and if there is archaeology present within the Study Area this may be the most promising location for its survival.

Santry Avenue Industrial Estate beyond it. To the south it is bounded by apartments that were constructed over the last three years on the site of the former bonded warehouse of Edward Dillon. It is occupied by Heiton Buckley Builders' Merchants, which is still a going concern. The large warehouse is still standing and is in use.

The remainder of the plot is a concreted yard, car park and storage space, with the main builders' supply store to the south. The entire plot is level and there is no suggestion of any pre-existing features surviving above the ground. The boundary is formed by an iron security fence, which encircles the entire site.

Fig.14.25 Western boundary of the Study Area with security fence forming the boundary, looking northeast

Fig.14.26 Southern boundary of the Study Area with security fence and stores present along the boundary, looking northwest

Fig.14.27 View across the Study Area towards the three completed blocks within the development to the south, looking southeast.

14.7 Impact assessment

14.7.1 Archaeological potential

There are no above-ground archaeological or cultural heritage features or materials within the development site. Given the fact that the site has been previously levelled and concreted over, the potential for anything other than deep cutting archaeological features surviving on the site is low. Nevertheless, the location of the development site within what was once Viking- controlled Fingal and between the Santry Demesne on Santry Avenue and St. Pappan's Church on the Swords Road, is significant.

14.7.1.1 Prehistoric

There are no known prehistoric monuments or excavation evidence from the surrounding area. Some prehistoric activity in the area is apparent from the several flint finds held in the NMI but the potential for prehistoric features to survive on the development site is extremely low.

14.7.1.2 Early medieval

The development site's proximity to the early medieval enclosure at St. Pappan's church means that the site was likely utilised by the monastic community, and most probably for agricultural purposes. The early medieval environment has largely been reconstructed on the basis of pollen evidence but excavated evidence for animal bone, plant remains, charcoal and proxy indicators have helped to increase our knowledge (Harney, Kerr, McCormick and O'Sullivan 2008, 191). The early documentary sources provide a wealth of information on the cultivation of cereals, vegetables, fruit and herbs (Kelly 1997, 219- 271). The archaeological evidence has yet to define a clear difference between the arable agriculture of ecclesiastical and secular settlements, but the documentary evidence implies an emphasis on arable farming on church-controlled lands. The excavated evidence of grain drying kilns, water mills and horizontal mills on church sites seem to support this emphasis, thought they have also been found on secular sites. Faunal evidence from excavated monastic sites may also support an emphasis on arable activity, where the presence of wild species of animals and older slaughtered animals suggest that meat was being consumed, but not produced (Harney, Kerr, McCormick and O'Sullivan 2008, 195).

The curvilinear enclosure, some of which survives at St. Pappan's, of early medieval church sites would have been unsuitable to contain crop cultivation (Harney, Kerr, McCormick and O'Sullivan 2008, 196). Arable agriculture, therefore, can be expected to have taken place outside of the enclosure. It is quite likely that the development site was used for such purpose. The potential for early medieval cultivation ridges and furrows is low, given that the site has been previously scarped. However, evidence for deeper field boundaries may exist throughout the site.

A route along the present-day Swords Road was likely in existence at the time of the original St. Pappan's church, linking Santry to the ecclesiastical settlements at Swords and beyond to Lusk, Rush and Skerries. Though unlikely, evidence of this early medieval routeway may still survive on the eastern part of the development site. Adams (1881) alleged that the village of Santry developed around the church of St. Pappan's, and it is possible that the development site was subject to some form of settlement at this time,

again most probably in the eastern portion, facing the road.

Santry was within the larger Viking-controlled rural area of Fingal during the early Viking Age and its location between the Scandinavian place- names of Finglas, Swords and Howth make it extremely likely to have been directly involved in supplying Hiberno-Norse Dublin with agricultural and industrial supplies. It is less likely that evidence of the exact land use will survive on the development site, though the presence of associated agricultural features cannot be fully precluded.

Since the area was now being used to directly supply the growing town of Dublin, the importance of the Swords Road as a trade route may have led to improvements being made to the road. These improvements could have taken the form of a metalled or cobbled surface and/or improved drainage, the remnants of which could potentially survive towards the eastern part of the development site.

14.7.1.3 Late medieval

The Late medieval period was significant for the development of Santry. The establishment of the Anglo-Norman Santry manor would have introduced new settlement types and farming methods to the area. It could be expected that long burgage plots dedicated to tillage farming, with its distinctive 'S' shaped ridge and furrow ploughing technique, were to be found on both the Swords Road and Santry Avenue leading to the manorial home. For the development site, the likelihood of later medieval structures surviving on the site is stronger on the eastern portion of the site, where the burgage plots would have fronted onto the Swords Road. That is not to rule out the possibility of cultivation features or agricultural structures such as stables or sheds surviving towards the western part of the site. Also, given the contemporary description of the many trees on the de Feypo manor, it is not improbable to suggest that the development site could have been woodland at the time.

The re-building of a church at St. Pappan's and its subsequent granting to St. Mary's Abbey by de Feypo would also have been hugely influential on the development of Santry. It is possible that the development site at that time may have been part of the lands directly controlled by the Abbey, rather than by the manor. Given its proximity to St. Pappan's church and its location on the Swords Road, the development site could have formed part of a proto-urban settlement focused on the abbey grounds. McQuade's (2003b) discovery of drainage features associated with 12th century cultivation just southwest of the church and c. 100m east of the development site suggests a still largely rural element to the area and is also indicative of the potential for medieval features to survive on the site.

14.7.1.4 Post Medieval

Santry in the post-medieval period came to be under the control of the Barry family whose descendants remained as landlords in the area until the foundation of the Free State in 1922. While their development of Santry Court has already been discussed, the change of the landholding system from one of burgage plots to small tenant farms would also have taken place under their supervision. It is known from Rocque's (1860) map that the area around Santry, including the development site, had been subdivided by field boundaries. This likely happened during the Anglo-Norman period, if not earlier (Stout 2005, 145), but the long burgage plots associated with the Anglo- Norman manorial system would have long since disappeared. The development site was outside of the demesne and its current western and southern boundaries were at that time defined

by field boundaries. The Santry Turnpike is mapped on the Swords Road at the junction with Santry Avenue, and on the other side of the Avenue to the Study Area. The existence of the turnpike is suggestive of investment and improvement being made in the road.

The precise location of the development site is more clearly defined on the First Edition Ordnance Survey map, where despite the lack of its current southern boundary, its present shape is visible in the tree-lined eastern boundary with the Swords Road, and the tree- lined Santry Avenue to the north. There were no buildings recorded on the development site at that time. The site was still largely undeveloped by the time of the 25" Ordnance Survey map.

Fig.14.28 Summary of archaeological potential within the Study Area

14.7.2 Characteristics of the Proposed Development

Consideration of the Characteristics of the Proposed Development allows for a projection of the 'level of impact' on any particular aspect of the proposed environment that could arise. For this chapter, the potential impact on Cultural Heritage is discussed.

The subject site forms part of the Applicant's wider landholding to the south, with a total area for the two sites of c. 3.2 Ha. The lands form a sub-rectangular area to the southwest of the junction between the Swords Road and Santry Avenue.

The lands lie within the boundary of Dublin City Council, with Santry Avenue forming the northern boundary of the lands under DCC control. The most recent County Development Plan, 2022-2028 has zoned the entire

of the Heiton Buckley portion of the lands and the eastern portion of the portion of the site already under construction as Zone Z3, which has an aim to provide and improve neighbourhood facilities. The western portion of the portion of the site currently under construction is zoned as Zone Z6, which has an aim to provide for the creation and protection of enterprise and facilitate opportunities for employment creation.

The proposed development provides for 321 no. apartments, comprised of 104 no. 1 bed, 198 no. 2 bed, and 19 no. 3 bed dwellings, in 4 no. seven to thirteen storey buildings, over basement level, with 3 no. retail units, a medical suite / GP Practice unit and community/arts & culture space (total c.1,460sq.m), all located at ground floor level, as well as a one storey residential amenity unit, facing onto Santry Avenue, located between Blocks A and D. The present building of Heiton Buckley Builders Providers, covering an area of 4196.8m², will be demolished as part of the development.

The development to the south consisted of the demolition of an existing eight-bay warehouse building measuring 10,000m2 on a 1.89 Ha. site, and the construction of five blocks of mixed- use office, commercial and residential units over a partial basement carpark and all ancillary and associated site development works, including piled foundations under each of the blocks and the basement area. The initial phase of this development to the east is now complete, with construction yet to begin in the western portion. The development was granted planning permission in 2018 (DCC Planning Ref. 2713/17), with Condition 14 relating to archaeology. This required an archaeological assessment, which was carried out by Archaeology Plan in 2018 (Giacometti 2018). Following on from the archaeological assessment a programme of archaeological monitoring was carried out on the site under Licence No. 19E0069. A report on the findings of the monitoring programme has yet to be finalised as the western portion of the site is not yet complete.

14.7.7 Construction Stage

The removal of topsoil, the digging of foundation trenches for proposed apartments, the insertion of services and the movement of construction machinery across the Proposed Development will have a profound, permanent, negative effect on potential subsurface archaeological features and/or deposits.

14.7.8 Operational Stage

Once construction of the Proposed Development is complete, and the residential development comes into full operation, it is envisaged that there will an imperceptible neutral effect upon any potential surviving archaeological features and/or deposits.

14.8 Cumulative impact of the Proposed Development

The Cumulative Development of the two sites off Santry Avenue is for the construction of 487 residential units with three retail or commercial units, five office units and a creche, along with all associated site works. Both sites were brownfield sites with existing warehouses on them.

14.8.1 Construction Stage

The construction stage of the Cumulative Development involves the demolition of existing warehouses, the

removal of existing hard surfaces prior to the construction of the new buildings on the sites. Due to the presence of the existing buildings and hard surfaces it is not possible to assess for the survival of subsurface archaeological remains prior to the demolition of the buildings.

In the southern portion of the site, it was found that testing was also difficult after the demolition of the upstanding building due to the thickness of the concrete floor of the existing building. Monitoring of the removal of the existing floor and subsurface works below the floor and above the natural subsoil proved to be the best methodology for the assessment of the survival of archaeology within the site. Within the southern site an east-west orientated 19th century road flanked by two road-side ditches was identified, which was depicted on the First Edition of the Ordnance Survey maps. A second metalled surface was also identified, branching off the first and running to the northwest, which overlay the northern road-side ditch. The road was a field access land, with the second feature being a later field access. Some plough furrows were also recorded in the undisturbed portions of the site, while other areas had been profoundly impacted by the previous construction and service laying on the site, with nothing surviving between the concrete and the natural subsoil below.

During the construction phase for the site to the south, the archaeological monitoring and recording of the archaeological features encountered had a permanent, significant positive effect for our knowledge of the agricultural layout of the lands within the bounds of the site in the 19th century.

Within the Proposed Development to the north it is likely the same obstacles to early archaeological investigations will be present. During the construction phase a similar approach involving monitoring of the groundworks following the demolition of the existing building at the time of the removal of the existing concrete pad and prior to any further sub-surface works will allow for the recording and preservation by record of any previously unknown archaeology within the bounds of the site.

14.8.2 Operational Stage

No further groundworks are associated with the operational stage of the Cumulative Development. Therefore, the operational stage of the Cumulative Development will have an imperceptible neutral effect upon any potential surviving archaeological features and/or deposits.

14.9 Potential Impact of the Proposed Development

This section provides a description of the specific, direct and indirect, impacts that the proposed development may have during both the construction and operational phases of the infrastructural elements of the proposed project. This is provided with reference to the Characteristics of the Receiving Baseline Environment and Characteristics of the Proposed Development sections.

The following impact assessment is based on the results of the preceding sections (desktop study, site inspection and previous investigations).

The Impact Assessment is divided both into three sections, and is summarised as follows:

14.9.1 Impacts on Recorded Monuments and Protected Structures

The Proposed Development will not impact directly or indirectly upon any previously recorded site or monument listed in the RMP or the RPS. The closest Recorded Monument, St Pappan's church, graveyard and ecclesiastic enclosure is over 100m away, and the constraint zone surrounding the monuments is 58m to the east of the Study Area.

The desktop assessment did not identify any features of archaeological potential within the boundary of the Study Area. A pump is depicted in the southeast corner of the Study Area on the 1910s Ordnance Survey map, however, it is no longer present.

14.9.2 Impacts on unknown/potential archaeological sites

The Proposed Development will have a widespread, profound permanent negative impact on any previously unidentified sub-surface archaeological remains that may survive on the development site.

The western portion of the Proposed Development is of low archaeological potential. The eastern portion of the Proposed Development has a moderate archaeological potential. This is due to it fronting onto the Swords Road and proximity to the medieval boundaries and drainage channels uncovered on the opposite site of the road to the south of St Pappan's Church in 2003, along with its closer proximity to the ecclesiastic foundation itself. The location of the existing building, set back from the road frontage, increases the likelihood that any belowground archaeological features located within this part of the site would survive. It should be noted that no archaeological remains were identified fronting onto the Swords Road in the monitoring works for the site to the south in 2019 and that the area is depicted as agricultural fields throughout the post-medieval period.

14.9.2.1 Construction Stage

The Construction Stage (without appropriate ameliorative measures) will have no impact on known archaeological features and deposits within the Proposed Development.

The Construction Stage, without appropriate ameliorative measures, will have a profound, permanent negative impact on unknown archaeological features and deposits within the footprint of the Proposed Development.

14.9.2.2 Operational Stage

As there are no known archaeological features within the Proposed Development, the Operational Stage of the residential development would have no impact on known archaeology.
It is envisaged that any unknown potential archaeological features within the Proposed Development would not survive the Construction Stage, without appropriate ameliorative measures. Nevertheless, the Operational Stage of the residential development would have an imperceptible long- term neutral effect on any remnants of the known archaeology. Furthermore, there is a possibility for an imperceptible long-term neutral effect of preservation in situ for unknown archaeological features and/or deposits that potentially survive within the proposed green areas of the development.

14.9.3 Do-Nothing Impact

The Do-Nothing Impact would have no impact on the known archaeology.

The Do-Nothing Impact would have an imperceptible permanent neutral effect on any unknown archaeology.

14.10 Conclusion

The development site is currently occupied by an existing building, with the remainder of the site covered by a layer of concrete. In the southern part of the overall development the concrete layer was found to be c. 0.25m thick. The location of existing services, including electric and drainage, is unknown. The results of the archaeological assessment for the site to the south indicate that archaeological testing was not effective. The best results were to monitor the groundworks as the concrete was being lifted and the material beneath reduced to the top of the natural subsoil, where it survived.

The monitoring carried out for the site directly to the south identified that the northern and western portion of the site had been more scarped by the previous construction on the site. Based on the results of the desktop assessment there is some potential for medieval agricultural features relating to St Pappan's Church to the east or to the manor of Santry, which was located to the north, however these were not identified within the site directly to the south where only 19th century agricultural features were identified.

14.10.1 Recommendations

In the event of a grant of planning permission it is recommended that the removal of the concrete slab be monitored under licence and, after the demolition of the existing structure, a programme of archaeological testing be carried out across the site prior to any further groundworks on site.

Time should be allowed between the monitoring works and any construction or service laying in case archaeological features are uncovered.

These recommendations have been made in consultation with the Archaeology, Conservation & Heritage Department of Dublin City Council.

A report on the results of the monitoring programme should be submitted to the City Archaeologist and the National Monuments Service following the completion of the works. All recommendations are subject to the approval of the City Archaeologist and the National Monuments Service.

Fig.14.29 Summary of the findings of the assessment and recommendation for monitoring of concrete slab removal within the entire footprint of the site (highlighted in blue)

14.11 References

Adams, Rev. B.W. 1883 History and description of Santry and Cloghran parishes, Co. Dublin (Reviewed) in The Irish Builder, 25, No. 569, pp. 272, Dublin.

Bradley, J. 1988 The interpretation of Scandinavian settlement in Ireland, in J. Bradley, (ed.) Settlement and Society in Medieval Ireland, pp. 49-78. Boethius Press, Kilkenny.

Carroll, J. 2010 Archaeological Monitoring 19 Santry Villas, Dublin 9, Unpublished monitoring report submitted to the National Monuments Service, Dublin.

Courtney Deery Heritage Consultancy 2018 Quickpark Car Park Environmental Impact Assessment Report, Unpublished EIA report, Dublin.

Harney, Kerr, McCormick & O'Sullivan. 2008 Early Medieval Archaeology Projects (EMAP) Report 2.1 Early Medieval Ireland: Archaeological Excavations 1930-2004, Report to INSTAR 2008.

Keogh, H. 2005 Coultry 7 Ballymun Dublin 9. Monitoring report, Unpublished monitoring report submitted to the National Monuments Service, Dublin.

Kelly, F. 1997 Early Irish Farming, Dublin Institute for Advanced Studies, Dublin.

Kiely, J. 2017 Archaeological Assessment with Testing Report Dublin Christian Life Church, Schoolhouse Lane, Santry, Dublin 9, Unpublished assessment report submitted to the National Monuments Service, Dublin.

Mills, J. ed. 1905, 1914 Calendar of the judiciary rolls, or proceedings in the court of the justiciar of Ireland 1295-1303, 2 vols, Dublin.

Murphy, M. & Potteron, M. 2010 The Dublin Region in The Middle Ages Settlement, Land-use and Economy, Four Courts Press and The Discovery Programme, Dublin.

McQuade, M. 2003a Archaeological Assessment, Schoolhouse Lane, Swords Road, Santry, Dublin 9, Unpublished assessment report submitted to the National Monuments Service, Dublin.

McQuade, M. 2003b Archaeological Monitoring and Excavations at Schoolhouse Lane, Swords Road, Santry, Dublin 9, Unpublished excavation report submitted to the National Monuments Service, Dublin.

O'Danachair, C. 1957-8 The Holy Wells of Dublin, in Repertorium Novum, 2 (1). Ó Néill, J. 2006 Excavation of pre-Norman structures on the site of an enclosed early Christian cemetery at Cherrywood, Co Dublin, Ó Néill, J. 2006. Excavation of pre-Norman structures on the site of an enclosed early Christian cemetery at Cherrywood, Co Dublin, S. Duffy (ed.) *Medieval Dublin VII*, pp. 66-88, Four Courts Press, Dublin

Simington, R.C. (ed.) 1945 The Civil Survey A.D.1654 – 1656 Vol. III County of Dublin, The Stationery Office, Dublin.

Somerville-Woodward, R. 2002 Ballymun, A History, Volumes 1 & 2 c. 1600-1997. Synopsis, Dublin.

Stout, M. 2005 Early Medieval Boundaries, in T. Condit and C. Corlett (eds), Above and Beyond: essays in memory of Leo Swan, Wordwell, Bray, pp.139-148.

Smyth, W.J. 1992. Exploring the social and cultural topographies of 16th and 17th century county Dublin in F.H.A. Aalen & K. Whelan (eds.) Dublin City and County: From Prehistory to Present, Geography Publications, pp. 121-179.

n/a, 19th century Transcripts of Regal Visitation Books in the Prerogative Office for various dioceses, 1607, 1615, 1633-4, 1679. Prepared for the Record Commission in the early 19th century.

Websites consulted

Website or resource	Web address
South Dublin County Council Local Area Plans: Ballycullen – Oldcourt	https://www.sdcc.ie/en/services/planning/local-area-plans/existing/ballycullen-oldcourt/ballycullen-oldcourt.html (accessed)
South Dublin County Development Plan 2022-2028 Written Statement	https://www.sdcc.ie/en/services/planning/local-area-plans/existing/ballycullen-oldcourt/ballycullen-oldcourt.html (accessed)
South Dublin County Council Development Plan 2016 – 2022: Schedule 2 Record of Protected Structures	https://www.sdcc.ie/en/services/planning/heritage-and-conservation/protected-structures/record-of-protected-structures-schedule-2.pdfd-of-protected-structures-schedule-2.pdf (sdcc.ie) (accessed 21/11/123)
National Inventory of Architectural Heritage (NIAH)	http://www.buildingsofireland.ie/ (accessed)
National Monuments Service Historic Environment Viewer	Historic Environmehttps://heritagedata.maps.arcgis.com/apps/webappviewer/index.html?id=0c9eb9575b544081b0d296436d8f60f8nt Viewer (arcgis.com) (accessed)
Database of Irish Excavation Reports	https://excavations.ie (accessed

Websites and online resources

www.excavations.ie Website listing Archaeological investigations and excavations in Ireland. Accessed January 2024.

www.logainme.ie. Website of place-names and records. Accessed January 2024.

National Inventory of Architectural Heritage. Various years. Archithttps://www.buildingsofireland.ie/ectural Heritage National Inventory of Architectural Heritage. Accessed November January 2024.

National Monuments Service. 2019. http://webgis.archaeology.ie/NationalMonuments/WebServiceQuery/Lookup.aspx Archaeological Survey of Ireland Monument Class Definitions. Accessed January 2024

15.0 The Landscape

15.1 Introduction

This Chapter of the EIAR was prepared by Teodora Karneva, MLI and Jim Bloxam, MLI, of DFLA. This Landscape and Visual Impact Assessment (LVIA) describes the existing receiving environment, contiguous landscape and the methodology utilised to assess the potential impacts of the proposed development (Proposed Development) on the application site (Site). First, this LVIA describes the landscape character of the application site and hinterland, together with the visibility of the site from key views in the locality. It then assesses the visual extent of the Proposed Development and its effects on landscape character and key views throughout the study area. The report summarises the impact of the Proposed Development on the visual and landscape amenity of the Site and contiguous area or receiving landscape.

The following visual receptors are addressed in this assessment:

- Any designated protected views and views/scenic routes protected through development objectives in the Dublin City Development Plan (2022-2028) and the Fingal County Development Plan (2023-2029);
- Local amenity and heritage features;
- Views to assess the landscape and visual impact of the proposal on those who live, work and travel in proximity to the Proposed Development as well as those that use local amenities;
- Relevant local residential and tourism nodes; and
- Major routes adjacent to the site.

15.1.1 Application Site

The subject site, c. 1.5 hectares, is located at the junction of Santry Avenue and Swords Road, Santry, Dublin 9. The Site is bounded to the north by Santry Avenue, to the east by Swords Road, to the west by Santry Avenue Industrial Estate, and to the south by the recently constructed Santry Place development.

15.1.2 Proposed Development

The Proposed Development consists of the following:

- Demolition of the existing building on site, the existing Chadwicks Builders Merchants.
- Construction of 321 no. apartments, comprised of 104no. 1 bed, 198no. 2 bed and 19no. 3 bed dwellings, in 4 no. seven to thirteen storey buildings, over basement level, with 3no. retail units, a medical suite/GP Practice unit and community/arts and culture space (total c.1,460sqm) all located at ground floor level, as well as a one storey residential amenity unit, facing onto Santry Avenue, located between Blocks A and D.

- Construction of basement level car park, accommodating 161no. car parking spaces, 11no. motorbike parking spaces and 664 no. bicycle parking spaces.
- Public open space of c. 1,791sqm is provided between Blocks C-D and E-F. Communal open space is also provided, located between Blocks E-F and G, Blocks A-B and C-D, and in the form of roof gardens located on Blocks A, C and F and the proposed residential amenity use units, totalling c.2,896sqm. The Development includes for hard and soft landscaping and boundary treatments. Private open spaces are provided as terraces at ground floor level of each block and balconies at all upper levels.
- Vehicular access to the development will be via. 2no. existing access points on Santry Avenue in the north-west of the site and off Swords Road in the south-east of the site.
- The Development includes for all associated site development works above and below ground, bin and cycle storage, plant (M&E), sub-stations, public lighting, servicing, signage, surface water attenuation facilities etc.

15.2 Assessment methodology

Landscape and visual impact assessments are two separate but closely related topics. Visual analysis forms part of a Visual Impact Assessment (VIA), the process by which the potential effects of a Proposed Development on visual receptors are methodically assessed. In turn, VIA forms part of a Landscape and Visual Impact Assessment (LVIA).

The Guidelines for Landscape and Visual Impact Assessment or GLVIA differentiates between the concepts of impact and effect, also used in this LVIA:

- Impact: The action being taken, including construction of the Proposed Development.
- Effect: The change or changes resulting from those actions.

The GLVIA also differentiates between a Proposed Development's landscape and visual effects. Any landscape and visual effects are inherently linked but are considered separately and are defined as such in this LVIA:

- Landscape effects: A development's effects on the landscape as a resource in its own right, with an understanding of the landscape resulting from a landscape character assessment.

- Visual effects: A development's effects on specific views and on the general visual amenity experienced by people in the public realm.

15.2.1 Desktop study

A site assessment was undertaken from August 2020 to February 2024. Desktop studies and site visits were carried out to evaluate the existing site conditions such as topography, vegetation, settlement patterns, contiguous land use, drainage, landscape character as well as overall visibility of the Site from surrounding areas. Information was also collated on protected views, scenic routes, protected landscapes, and other areas of relevance to the Site.

The following non-exhaustive list of documents and web resources were consulted for the desktop study:

- Dublin City Council Development Plan 2022-2028;
- Fingal County Council Development Plan 2023-2029;
- Ballymun Local Area Plan 2017, extended to October 2027;
- National Parks and Wildlife Service – Interactive Mapping and Aerial Photography - www.npws.ie;
- Tailte Éireann – Interactive Mapping and Aerial Photography – www.tailte.ie;
- The National Monuments (Amendment) Act 1994, Section 12; and
- http://webgis.archaeology.ie/NationalMonuments/FlexViewer/.

This LVIA has been prepared using the following guidance documents:

- Landscape and Landscape Assessment Draft Guidelines, Department of Environment, Heritage, and Local Government, 2000;
- A Handbook on Environmental Impact Assessment – Guidance on the Environmental Impact, Scottish Natural Heritage (SHN) - Assessment 2009. Appendix 1: Landscape and Visual Impact Assessment;
- Guidelines for Landscape and Visual Impact Assessment (GLVIA), The Institute of Environmental Management and Assessment / Landscape Institute (2nd & 3rd Eds. 2002, 2013);
- Guidelines on the information to be contained in Environmental Impact Assessment Reports, Environmental Protection Agency, 2022.

15.2.2 Impact significance criteria

The assessment of potential landscape or visual effects involves determining the sensitivity of the landscape or visual receptors, the potential magnitude of change, duration, and other effects on each receptor, and combining these to assess the significance of impacts and effects on each receptor. Each impact is finally described as 'negative', 'neutral' or 'positive'. The rating criteria used align with those outlined in the 2022 EPA guidelines for preparing an Environmental Impact Assessment Report or EIAR.

		Landscape or visual receptor sensitivity				
		Very High	**High**	**Medium**	**Low**	**Negligible**
Description of Effect: Character, Magnitude, Duration, Probability and Consequence	**Very high**	Profound	Very significant	Significant	Moderate	Slight
	High	Very significant	Significant	Significant	Moderate	Slight
	Medium	Significant	Significant	Moderate	Slight	Not significant
	Low	Moderate	Moderate	Slight	Not significant	Imperceptible
	Negligible	Slight	Slight	Not significant	Imperceptible	Imperceptible

Table 15.1. Classification of significance of impact, as per the EPA's 2022 Guidelines

The significance of landscape/townscape or visual impacts are described as follows and align with EPA definitions:

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

Table 15.2. Categories of landscape and visual impact significance

Any effects may be positive, negative, or neutral, as per the EPA's 2022 Guidelines:

Positive	A change that improves the quality of the environment.
Neutral	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
Negative	A change that reduces the quality of the environment.

Table 15.3. Categories of landscape and visual impact significance

In terms of duration, effects are considered according to their longevity, timescale, and repetition, as well as whether they are reversible and how frequent the effect will occur. Effects are also considered at multiple project phases, including both the construction and operation stage. Further considerations including cumulative, do-nothing, and interactive effects are also considered, where appropriate, in the assessment.

Momentary	Effects lasting from seconds to minutes
Brief	Effects lasting less than a day
Temporary	Effects lasting one year or less
Short-term	Effects lasting one to seven years
Medium-term	Effects lasting seven to fifteen years
Long-term	Effects lasting fifteen to sixty years
Permanent	Effects lasting over sixty years

Table 15.4. Duration of Landscape and Visual impact

The magnitude of change considers the scale or degree of change imposed on a landscape or view by a development, as well as the duration and reversibility of any effects:

Very High	Total loss, major alteration to or extensive intrusion of key elements/ features/ characteristics in the baseline (existing) landscape or view and/or the introduction of totally uncharacteristic elements with the receiving landscape.
High	Partial loss, alteration to or intrusion of one or more key elements/ features/ characteristics in the existing landscape or view and/or the introduction of the elements that may be prominent but not uncharacteristic within the receiving landscape.
Medium	Minor loss, alteration to or partial intrusion of one or more key elements/ features/ characteristics in the existing landscape or view and/or the introduction of elements that are not uncharacteristic within the receiving landscape.
Low	Very minor loss or alteration to or partial intrusion of one or more key elements/ features/ characteristics in the existing landscape or view and/or the introduction of elements that are not uncharacteristic within the receiving landscape.
Negligible	No loss or alteration to, or barely discernible intrusion, of one or more key elements/ features/ characteristics in the existing landscape or view and/or the introduction of no elements or elements that are not uncharacteristic within the receiving landscape—approximating a 'no change' scenario.

Table 15.5. Categories of magnitude of landscape and visual change

15.2.3 Assessment of landscape effects

Landscape receptors are the physical or natural resource, special interest or viewer group that will experience an effect. The sensitivity of a landscape receptor is based on its vulnerability to change, which is a function of its land use, landscape patterns and scale, visual enclosure, distribution of visual receptors and the value placed on the landscape. Trends of change in the landscape and relevant policy are also considered.

Very high	Areas where the landscape exhibits very strong, positive character with valued elements, features and characteristics that combine to give an experience of unity, richness and harmony. The landscape character is such that its capacity to accommodate change in the form of development is very low. These attributes are recognised in landscape policy or designations as being of national or international value and the principle management objective for the area is protection of the existing character from change.
High	Areas where the landscape exhibits strong, positive character with valued elements, features and characteristics the landscape character is such that it has limited/low capacity to accommodate change in the form of development. These attributes are recognised in landscape policy or designations as being of national, regional or county value and the principle management objective for the area is the conservation of existing character.
Medium	Areas where the landscape has certain valued elements, features or characteristics but where the character is mixed or not particularly strong, or has evidence of alteration, degradation or erosion of elements and characteristics. The landscape character is such that there is some capacity for change in the form of development. These areas may be recognised in landscape policy at local or county level and the principle management objective may be to consolidate landscape character or facilitate appropriate, necessary change.
Low	Areas where the landscape has few valued elements, features or characteristics and the character is weak. The character is such that it has capacity for change; where development would make no significant change or would make a positive change. Such landscapes are generally unrecognised in policy and the principle management objective may be to facilitate change through development, repair, restoration or enhancement.
Negligible	Areas where the landscape exhibits negative character, with no valued elements, features or characteristics. The landscape character is such that its capacity to accommodate change is high; where development would make no significant change or would make a positive change. Such landscapes include derelict industrial lands or extraction sites, as well as sites or areas that are designated for a particular type of development. The principle management objective for the area is to facilitate change in the landscape through development, repair or restoration.

Table 15.6. Categories of landscape sensitivity

15.2.4 Assessment of visual effects

Terminology used in visual assessment is defined as follows:

Visual Intrusion: Where a Proposed Development will feature in an existing view but without obstructing the view.

Visual Obstruction: Where a Proposed Development will partly or completely obscure an existing view.

Sensitivity and Significance: The sensitivity of a visual receptor depends on how people use and experience the area and the extent to which their attention will be focussed on views and visual amenity while in said area.

The significance of impacts on the perceived environment will depend partly on the number of people affected, but also on value judgments about how much the changes will matter. In this respect, it is important to identify actual visual and physical connections between the site, its adjacent occupiers/landowners and those who interact with it from further afield, in the context of the existing and the proposed situations.

While our visual sense is generally acknowledged to represent the dominant contribution to our perception of place and its context, other factors also contribute. Hearing/sound, smell and a variety of social/cultural factors relating to the land-use, function or business conducted on the land (or indeed, memory) can

sometimes over-rule or outweigh the visual aspects and lead to individual perceptions which could be described as relatively subjective. The purpose of this report is to objectively examine and assess the nature and extent of a visual receptor's sensitivity as well as the visual effect of the Proposed Development.

Very high	Receptors with viewers primarily focused on views from this particular location, such as visitors to popular destinations identified for their outstanding views or residents in close or medium proximity whose primary view will be in the direction of the development.
High	Receptors with viewers in medium proximity to the viewpoint, at influential heritage, tourist or recreational areas, even where the view may not be the primary focus, or scenic routes.
Medium	Receptors with viewers who have some susceptibility to a change in view, including views from local recreational areas or moderately scenic routes.
Low	Receptors with viewers engaged in activities where the focus is not the landscape or view; for example, commuting, views from a workplace, or views from a sports facility where the sport does not relate to the landscape.
Negligible	Receptors with viewers engaged in activities where the focus is not the landscape or view; for example, commuting, views from a workplace, or views from a sports facility where the sport does not relate to the landscape.

Table 15.7: Categories of visual receptor sensitivity

15.2.5 Choice of views

The views were chosen to accurately represent the likely visual effect from all directions. Views are from the public domain, particularly those from main roads and access routes. The views submitted are considered the most important and representative, having regard to the requirement to examine the greatest likely effects.

15.2.6 Photomontage methodology

This report should be read in conjunction with the Photomontage Report produced by 3D Design Bureau and included separately within this planning application.

15.3 Existing Environment

15.3.1 Site description and context

The subject site is located on the lands which previously operated as a hardware and building supplies outlet (Chadwicks Builders Merchants), at the junction of Santry Avenue and Swords Road, Santry, Dublin 9. It is bounded to the north by Santry Avenue, to the east by Swords Road, to the west by Santry Avenue Industrial Estate, and to the south by the recently constructed Santry Place development.

Figure 15.1. Satellite image of site with red line boundary showing surrounding context

The subject site is located immediately south of Santry demesne/park, a regional park managed by Fingal County Council, and separated from the site by Santry Avenue. A private lane forms the western boundary and separates the site from the IDA industrial estate to the west. A new mixed-use development has recently been completed to the south. The eastern boundary is formed by a row of trees running along the western edge of Swords Road. Commercial units line Swords Road to the east of the site.

The site is dominated by 1no. double-height, large scale building, punctuated with loading bays. Car parking, vehicle access zones and external storage bays occupy the space between the building and the site boundary.

A low brick wall, topped with steel railing exists on the northern, western and eastern boundary of the site, while a metal palisade fence runs along the full length of the southern boundary. A small number of shrubs in planters on the northern boundary and a small number of trees, planted at the north-western boundary appear to be the only vegetation within the site and constitute little value due to their size and condition.

15.3.2 Historical development of the landscape

Santry is a district on the north side of Dublin close to Dublin Airport. It straddles the borders of Fingal County Council and Dublin City Council. Its landscape character has substantially changed over the last century, from rural and largely agricultural to suburban, comprising of low-density residential properties interspersed with industrial and commercial premises. Its location close to Dublin Airport has encouraged logistic and industrial estates, hotels and retail facilities.

Early maps of Ireland reveal the subject site was unbuilt upon in the 1830s and 1910s. The surrounding context was undeveloped, the most prominent feature in the landscape being Santry House and Demesne. Other built structures at that time include St. Pappan's Church, Santry Hall, and several properties along

what is now Swords Road.

Santry House was built in 1703 on the site of an earlier medieval residence. The house fell into disrepair at the turn of the 20th century and was later demolished in 1959. Santry Demesne was officially taken in charge by Fingal County Council in June of 2003. The public park contains a children's playground, outdoor fitness equipment, an extensive path network and aa community garden.

The Architectural Heritage Impact Assessment prepared by Dermot Nolan Conservation Architect notes that the subject site was developed between 1947 and 1953. Consistent with the trend at this time of new industries being commonly located on the outskirts of urban centers, a modernist industrial building was constructed to accommodate the assembly and sale of agricultural machinery. In the 1990's it was converted for use as Builders' Providers, initially Buckleys, then Heiton/Buckleys and currently Chadwicks.

Figure 15.2. Image of extract of GeoHive Map Viewer, showing 6 inch First Edition map of the surrounding context and site circled in red.

15.3.3 Topography and drainage

The site is located immediately south of Santry Avenue, which is generally located at approximately +55 OD. The topography of Santry slopes gently down from west to east. The site itself is relatively level and dominated by hardstanding.

15.3.4 Vegetation

The wider site context is mixed. To the north of the site, vegetation is abundant in Santry Demesne, with several woodlands, copses, a community garden within a historical walled garden, a few natural-grass playing pitches and large tracts of open, maintained, grassed areas.

To the east, open space is predominantly made up of tarmacadam or concrete surfacing in the commercial units lining the road. The grounds of St. Pappan's Church contain large trees and shrubs. An island of significant sized trees and shrubbery fronts Santry Villas and separates Swords Road from the residential development, situated north of the Santry Avenue/Swords Road junction. Vegetation is present in private front and back gardens. Comprising mostly of grass and mature trees, adding to the vegetation matrix. Further east, open green space comprising maintained grass and considered tree planting exists at the rear of the Chapel of Margaret Bell. It is bound by Oak Park Avenue to the west and the M50 motorway to the east.

South of the site, Avista Office Park contains several mixed trees and shrubbery planted in verges in the carpark areas. The long back gardens of Shanliss Avenue and the open space connected to Greenfield Park Community Field to the west of the subject site contribute to the vegetation in this area. Boundary planting around the Aldi carpark, west of the site, is made up of a mix of small ornamental trees and shrubbery.

Vegetation within the site itself is negligible. There are no trees located within the site. Tree and hedge specimens are located beside and mostly just outside the boundaries of the subject site. A detailed Tree Survey Report and Arboricultural Assessment has been carried out by The Tree File Ltd. and is included separately within the planning submission. Most of the trees can be described as young with great variance in quality. Of the trees surveyed, none were found to be of Category A standard.

To the east of the site, adjacent to the Swords Road and running in a north-south alignment, are 2no. tree lines consisting of a total of 18no. *Tilia europea* (Lime trees) and 2no. hedges comprised of *Fagus sylvatica* (Beech). Within the alignments, 1no. tree has been designated Category U, 1no. tree has been designated Category C. The remaining 16no. trees are designated Category B. The two hedges are both designated Category B.

To the north west of the site, outside the western boundary, 2no. *Acer platanoides* (Norway maple) are stated as Category B value trees. The remainder of the alignment outside the western boundary is of mixed status, with 20no. having Category C designation, and 11no. trees having Category U designation. A treeline consisting of *Chamaecyparis lawsoniana* (Lawson cypress) forms part of the alignment along this boundary, while the remainder of the alignment is made up of mixed species including: *Fraxinus excelsior* (Ash), *Acer pseudoplatanus* (Sycamore), and *Sambucus nigra* (Elder).

One hedge and tree line have been identified to the south, outside of the site, along the southern boundary to the recently completed Santry Place development. The hedge has been given Category B status and consists of a mix of species including: *Hedera helix* (Ivy); *Prunus subhirtella* "Autumnalis" (Winter Flowering Cherry); *Escallonia Sp*. (Escallonia); *Ulex europaeus* (Gorse); *Rubus fruticosus* (Bramble); *Cotoneaster Sp.* (Pyrocantha cotoneaster); *Viburnum Sp.* (Viburnum). The tree line has been designated Category C and is a short alignment consisting of *Cupressocyparis leylandii* (Leyland Cypress).

15.3.5 Contiguous land use

The contiguous lands use adjacent to the subject site is mixed. To the north lies R104 Santry Avenue with recreational amenities offered by Santry Demesne north of the road. The eastern boundary is made up of Swords Road and associated front curtilage and car parking of commercial units. To the south, a historical warehouse is the site of a new residential development beyond which is an established office park, made up of low-rise buildings separated by car park zones. To the west, separated from the site by an access lane, is an industrial estate comprising of low-rise, warehouse style buildings surrounded by loading bays and car parking zones.

15.3.6 Visual analysis of the Site within the receiving landscape

The built fabric is concentrated in the centre of the subject site. Existing built structures include a brick boundary wall, traffic barriers, hardstanding ground structures and the commercial warehouse style building in the centre of the site. Views into the site are possible from the south-east entrance to Santry Demesne.

Figure 15.3. Photograph taken at Santry Demesne entrance, immediately north of subject site.

The site is not visible from all areas within Santry Demesne, as it is predominantly screened by mature tree lines/tree groups on the south boundary of the park.

Figure 15. 4. Photograph taken from north of Santry Demesne playground looking south east towards subject site.

There are medium and short distance views into the site from Swords Road, with part of the site being screened by the mature trees on the eastern boundary of Santry Demesne.

Figure 15.5. Photograph taken from junction of Swords Road with R104, looking south towards subject site.

Views into the site are possible immediately north from Santry Avenue (at the green island in front of Santry Villas, north east of subject site). The subject site is partially screened by the mature trees on the green.

Figure 15.6. Photograph taken from green island at Santry Villas, looking south west towards subject site.

From the east, short to medium distance views are possible from Church Lane, however these are restricted by the commercial unit on the south side of the lane and the mature trees planted on the green area in front of Santry Villas.

Figure 15.7. Photograph taken from Church Lane, looking west towards subject site.

Short distance views are possible from the retail units on Swords Road through gaps in the canopies of trees planted on the west side of Swords Road.

Figure 15.8. Photograph taken from front of commercial unit on Swords Road, looking west towards subject site.

Views to the site from Swords Road, looking north, are restricted by the new development situated south of the subject site and the line of trees running along the west side of Swords Road.

Figure 15.9. Photograph taken from Swords Road, south of site looking north towards subject site.

The residential area to the south-west of the subject site consists of low-rise, predominantly two-storey houses and a community centre with an open, grassed 'field'. Views to the subject site from the roads are restricted by the houses and street trees in both front and rear gardens and by boundary walls at the community centre.

Figure 15.10. Photograph taken from junction of Shanliss Way and Shanliss Avenue, looking east towards subject site.

Figure 15.11. Photograph taken from entrance of Greenfield Park Community Club on Shanliss Avenue, looking north-east towards subject site.

From the west, the subject site is partially visible from Santry Avenue at the Shanliss Way junction, however the fence-line and boundary planting at the front of the IDA industrial estate on Santry Avenue limits long distance views on this road.

Figure 15.12. Photograph taken from entrance of Aldi near Shanliss Way junction with Santry Avenue, looking east towards subject site.

15.4 Planning Context

Landscape planning policy for the area is laid out in the Dublin City Development Plan (2022-2028) and the Fingal County Development Plan (2023-2029). The eastern boundary of the Ballymun Local Area Plan (2017) is 350m west of the western boundary of the site.

15.4.1 Land use zoning

The Dublin City Development Plan (2022-2028) shows the site as being zoned Z3, '*to provide for and improve neighbourhood facilities'*, with adjoining areas zoned Z6 *'to provide for the creation and protection of enterprise and facilitate opportunities for employment creation'.*

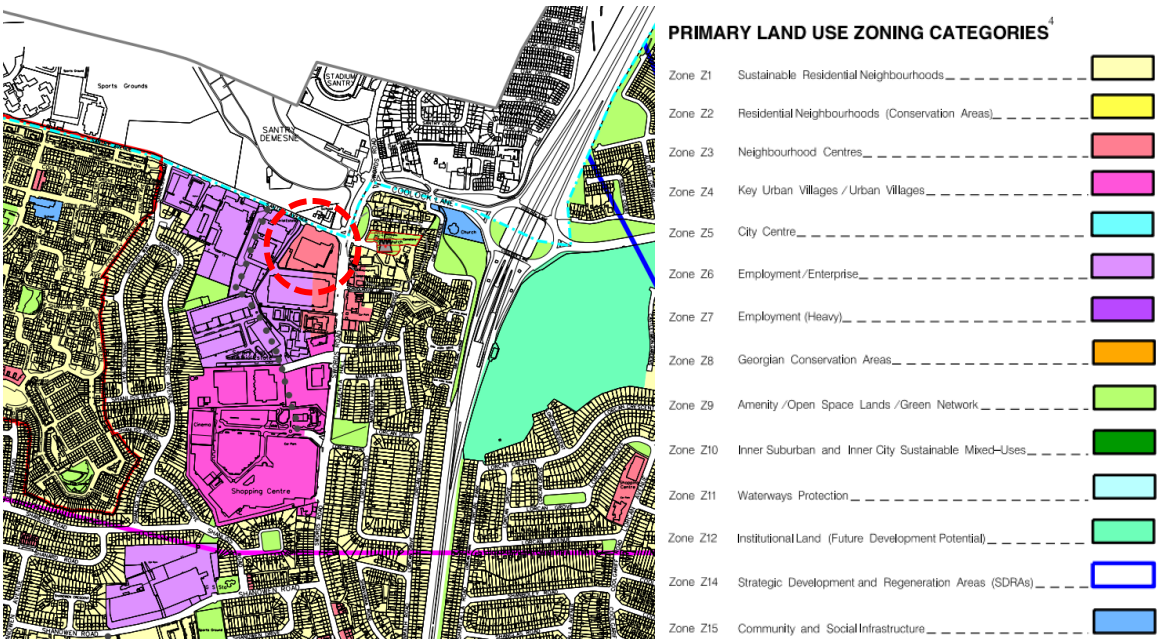

Figure 15.13. Image of extract of Map B, Dublin City Development Plan (2022-2028), showing site circled in red and accompanying zoning key

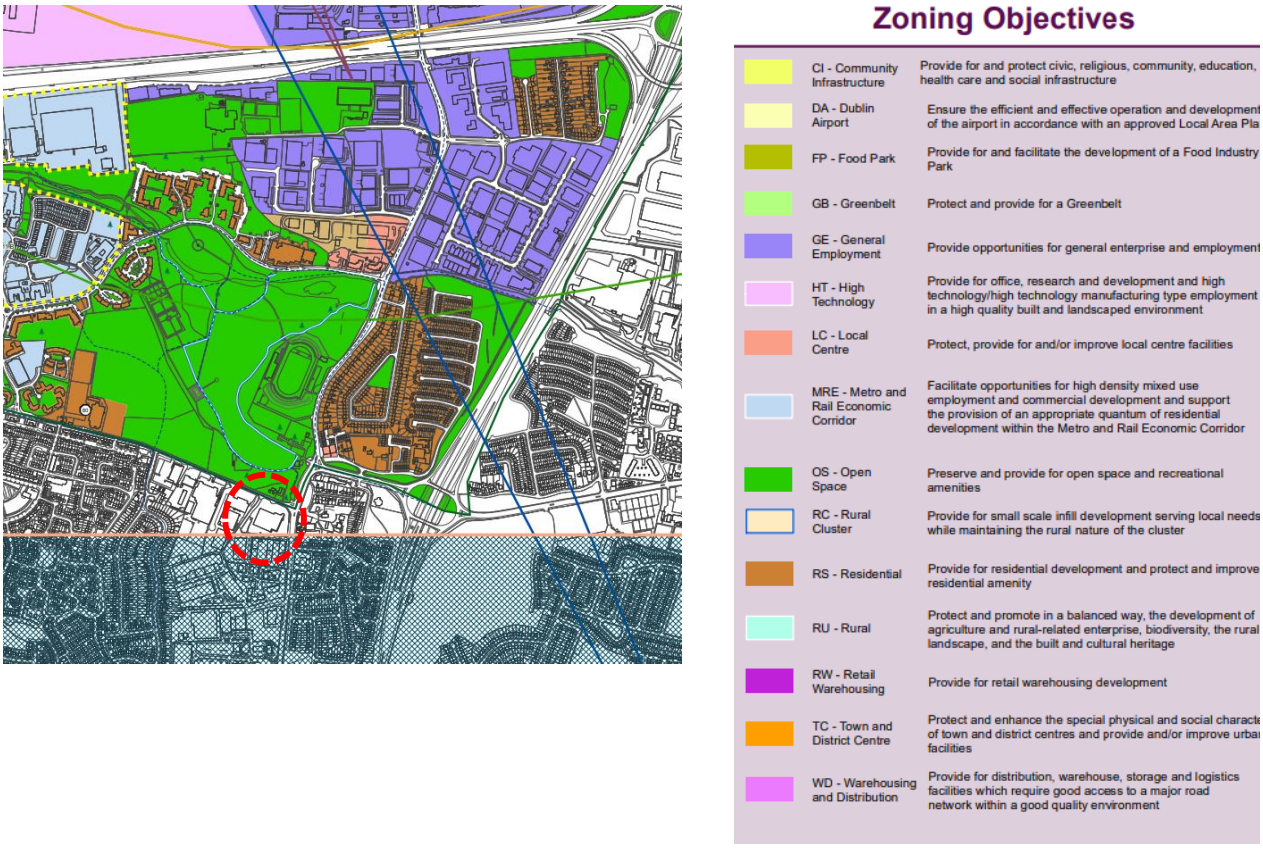

Figure 15.14. Image of extract of Sheet 11, Fingal County Development Plan (2023-2029), showing site circled in red and accompanying zoning key

The subject site is proximate to Santry Demense with an OS- Open Space zoning objective according to the Fingal County Development Plan (2023-2029) to *'preserve and provide for open space and recreational amenities'.*

15.4.2 Landscape character

There are no Landscape Character Areas (LCA's) identified in the Dublin City Development Plan (2022-2028).

The Ballymun Local Area Plan (2017) is described as "*mostly residential in nature with parks, local retail and community/sporting facilities defining the different character areas*". Parks and Open Space Areas are noted as being a key element in the physical regeneration of Ballymun.

There are 6no. Landscape Character Types identified in the Fingal County Development Plan (2023-2029) which are described as representing '*generic areas of distinctive character that makes one landscape different from another'.*

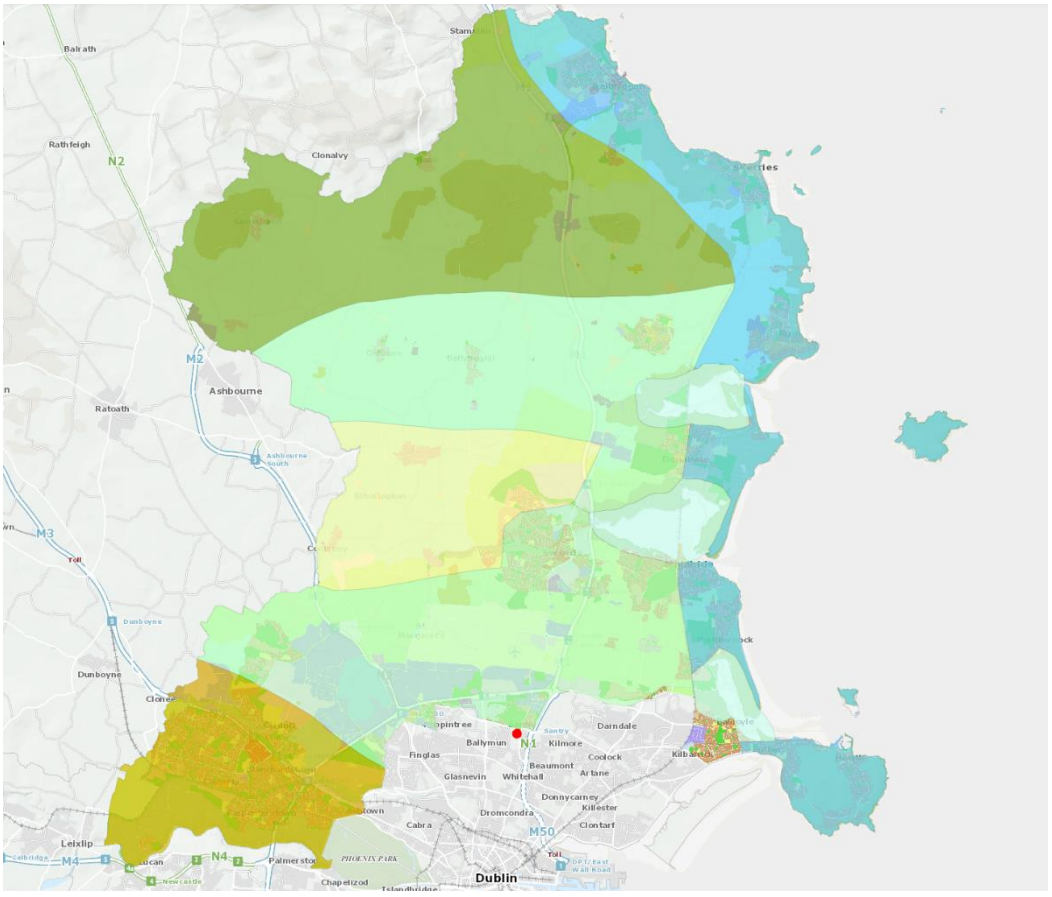

Figure 15.15. Image of extract of map viewer, Fingal County Development Plan (2023-2029), showing Landscape Character Types and the subject site as a red dot.

The subject site is proximate to Santry Demesne which has a Landscape Character Type designation of 'Low Lying Agricultural' and a landscape value of 'modest'. Fingal County Development Plan (2023-2029) rates landscapes based on sensitivity '*evaluated using criteria ranging from high to low. A highly sensitive landscape is likely to be vulnerable to change whereas a landscape with a low sensitivity is likely to be less at risk from change'*. The 'Low Lying Character Type' is described as having *'an open character combined with large field patterns, few tree belts and low roadside hedges'* and is of 'low' landscape sensitivity.

15.4.3 Landscape sensitivity

The sensitivity of the site is a function of its land use, landscape patterns and scale, visual enclosure, distribution of visual receptors and the value placed on the landscape. Trends of change in the landscape and relevant policy are also considered.

The sensitivity of the Site and receiving landscape is classified as medium. In summary it is an area *'where the landscape has certain valued elements, features or characteristics but where the character is mixed or not particularly strong, or has evidence of alteration, degradation or erosion of elements and characteristics. The landscape character is such that there is some capacity for change in the form of development. These areas may be recognised in landscape policy at local or county level and the principal management objective may be to consolidate landscape character or facilitate appropriate, necessary change*.'

15.4.4 Natural heritage and environmental designations

This section outlines the closest areas to the site with environmental designations. The closest area to the site with environmental designation is Santry Demesne, 0.03km to the north of the site.

No. / Designation	Name	Approx. distance to Site
SPA		
Site No. 004024	South Dublin Bay and River Tolka Estuary SPA	4.14km east of the site
Site No. 004006	North Bull Island SPA	5.89km east of the site
Site No.004016	Baldoyle Bay SPA	7.41km east of the site
Site No. 004025	Malahide Estuary SPA	7.81km north-east of the site
Site No.004236	North-West Irish Sea SPA	8.95km east of the site
SAC		
Site No. 000206	North Dublin Bay SAC	5.95km east of the site
Site No. 000199	Balydoyle Bay SAC	6.95kms east of the site

Site No. 000205	Malahide Estuary SAC	7.80km east of the site
pNHA		
Site No. 000178	Santry Demesne pNHA	0.03km north of the site
Site No. 002103	Royal Canal pNHA	3.83km south of the site
Site No. 000206	North Dublin Bay pNHA	5.87km east of the site
Site No. 001763	Sluice River March pNHA	6.80km north of the site
Site No. 000199	Baldoyle Bay pNHA	6.92km east of the site

Table 15.8. Proximity of the site to areas with environmental designation, as detailed via NPWS Map Viewer.

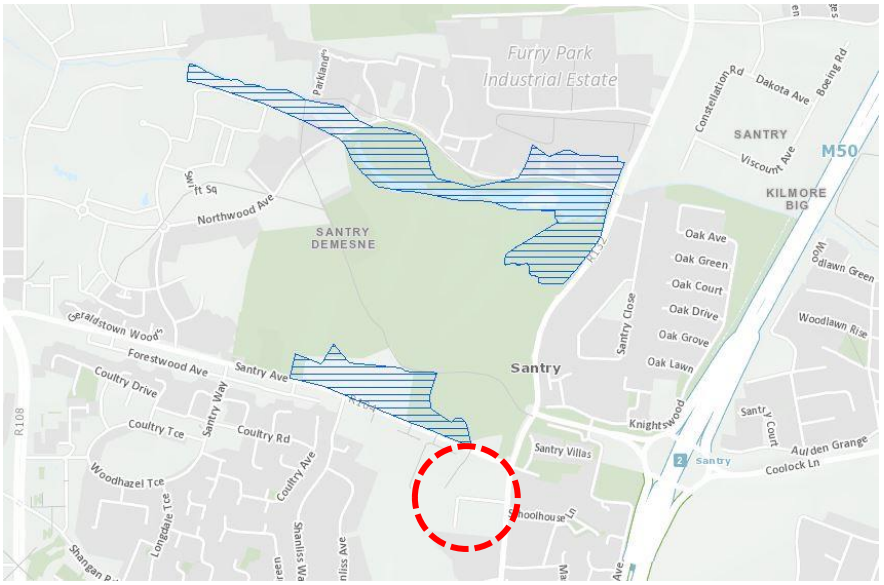

Figure 15.16. Image of extract from National Parks and Wildlife Service online map viewer, showing proposed Natural Heritage Area (pNHA) areas of Santry Demesne (woodland and riparian zones) in blue hatch. The subject site is circled in red.

Existing developments on the boundaries of Santry Demesne are of a mixed nature. Blocks of residential and commercial developments on Northwood Avenue and Santry Avenue are visible through and above the tree lines, from within the parkland of Santry Demesne.

The uses of the demesne lands are varied and incorporate community gardens, playground, sports facilities, and woodland.

Figure 15.17. View from obelisk in Santry Demesne looking north to Northwood Avenue apartments and Crown Plaza Hotel

Figure 15.18. View from path at east of walled garden in Santry Demesne looking north west to The Elms apartments.

15.4.5 Protected views and prospects

There are no specified protected views relevant to the site identified in the Dublin City Development Plan (2022-2028) and no specified protected views relevant to the site identified in the Fingal County Development Plan (2023-2029).

15.4.6 Public Rights of Way

The Dublin City Development Plan (2022-2028) outlines a limited number of Public Rights of Way, as shown in Figure 18. The closest to the Site are the Coast Road North and the Royal Canal, which are both approx. 4km south and east from the site. No known formal trails, hiking or walking routes relate to the Site.

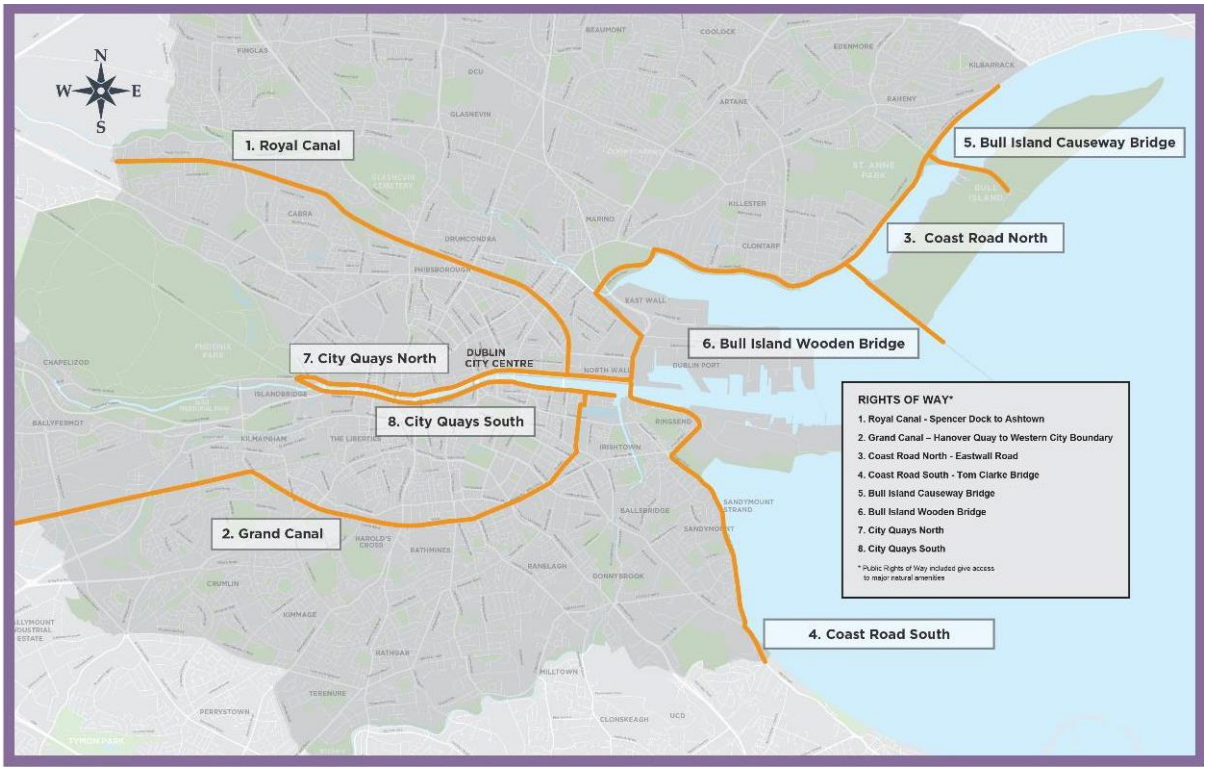

Figure 15.19. Public Rights of Way as defined in the Dublin City Development Plan (2022-2028), p. 340, the site is situated to the north and not shown on this map.

15.4.7 Architectural Conservation Areas

Dublin City Council has adopted 24 Architectural Conservation Areas (ACAs). There are no ACAs that are immediately relevant to the site. The closest ACAs to the Site are:

Name	Distance to Site
Marino Casino ACA	3km south-east of the site
DeCourcy Square-Prospect Square & Environs ACA	3.09km south of the site
Hollybrook Road ACA	3.93km south-east of the site

Table 15.9. Closest Architectural Conservation Areas to the Site, Dublin City Development Plan 2022-2028.

15.4.7 Protected Structures

There is one protected structure relevant to the site identified by its Record of Protected Structures number as per the Dublin City Development Plan (2022-2028):

RPS No.	Name/Address	Description	Distance from the Site
1543	Church Lane, off Swords Road, Dublin 9	St. Pappin's Church and holy well	115m east of the site

Table 15.10. Closest Protected Structures to the Site, Dublin City Development Plan (2022-2028).

Map 3 of the Dublin City Development Plan (2022-2028) marks out 'conservation areas' including the Santry River Greenway, located 1km north-east of the subject site; and, St. Pappan's Church environs, located 115m east of the subject site.

The closest protected structure to the site, noted in the Fingal County Development Plan (2023-2029) is a thatched cottage RPS 604, situated 2.15km north of the site on Swords Road.

The Historic Environment Viewer by the Department of Housing, Local Government and Heritage, facilitating datasets of the National Monuments Service and the National Inventory of Architectural Heritage (NIAH) was also referred to, identifying several additional historic built structures in the area:

- House, 18th/19th century, Santry Demesne- Sites and Monuments Records. no. DU014-030
- Church (St. Pappan's Church of Ireland (1709))– Sites and Monuments Records no. DU014-057001
- Ritual Sie-holy well (St. Pappin's Well) – Sites and Monuments Records no. DU014-057004
- Ecclesiastical enclosure – Sites and Monuments Records no. DU014-057005

- Graveyard – Sites and Monuments Records no. DU014-057006
- Domville Monument, St. Pappin's Church, Grave Monument – NIAH Ref. no. 50130322
- LeFroy Tomb, Grave Monument – NIAH Ref. no. 50130320
- St. Pappan's Church, Church/Chapel – NIAH Ref. no. 50130115

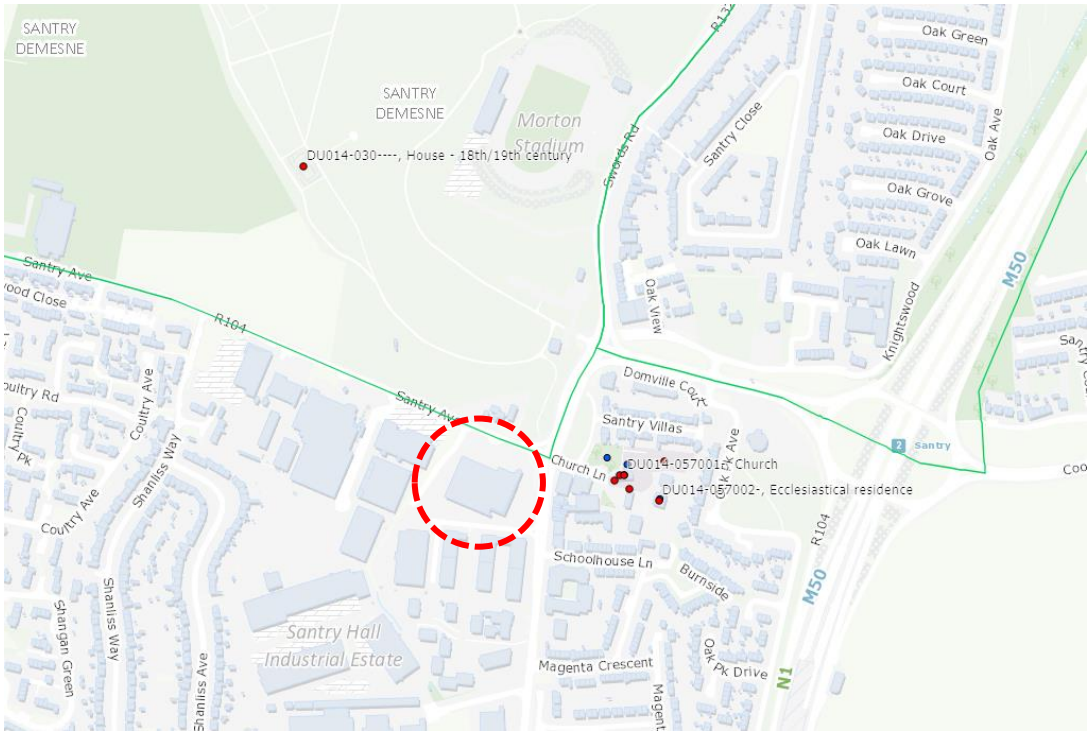

Figure 15.20. Historic built structures relative to the site. Map from Historic Environment Viewer application

15.4.8 Tree Preservation Orders

While no Tree Preservation Orders are proximate to the subject site, the Dublin City Development Plan (2022-2028) lists 6no. current Tree Preservation Orders. The closest to the subject site is at Road/All Saints Drive, Adjoining St. Anne's National School (Order 1989), located approx. 5.38km south-east.

15.5 Potential effects

The potential effects are those that the Proposed Development and its impacts could have without consideration of landscape and/or public realm mitigation or amelioration—i.e. without landscape works. These effects have been compiled to identify any areas where the Proposed Development may be injurious to the landscape or visual character of the area.

For this section, it is assumed that no specific landscape works are carried out with the construction of the

development. This enables recognition of potential, rather than actual, effects to facilitate the identification of suitable landscape mitigation measures.

15.5.1 Potential effect on existing vegetation

15.5.1.1 Construction phase

Existing vegetation on the site is very limited and the value of what is present is negligible and recommended for removal as per the Arboricultural Assessment. Demolition and construction works will result in the removal of all existing vegetation on the site.

Trees adjoining the boundary of the site may be faced with a degree of disturbance, particularly where any Root Protection Areas are encroached on by the construction works. For further details refer to the Arboricultural Assessment. Site hoarding, construction traffic, ground disturbance and temporary structures required for construction will have a *negative, moderate and short-term* impact.

The effect on existing vegetation will be *moderate, negative and permanent* while the effect on contiguous trees will be *negative, moderate and short-term*.

15.5.1.2 Operational phase

There are no predicted impacts on the existing vegetation in the operational phase.

15.5.2 Potential effects on landscape character

15.5.2.1 Construction phase

Site hoarding, construction traffic, ground disturbance and temporary structures required for construction will have a *negative, moderate and short-term* impact.

15.5.2.2 Operational phase

The proposed landscape design will likely have a *positive, moderate and permanent* impact, due to the conversion from a vacant site to usable high quality public ream and amenity spaces, allowing for permeability through the site and significant new planting throughout.

15.5.3 Potential effects on views

15.5.3.1 Construction phase

Site hoarding and temporary structures required for construction will have a *negative, moderate and short-term* impact on views.

15.5.3.2 Operational phase

Fourteen key views were chosen to illustrate the visual impact of the Proposed Development – refer to the Photomontage Report produced by 3D Design Bureau. The Photomontage Report includes a view location plan showing the points the views were taken from. Each view is illustrated as existing and proposed and the views are numbered 1 to 14. The views include long, mid and short-distant views.

Figure 15.21. View location map, an extract from the Verified Photomontage and CGI Report by 3D Design Bureau.

Each Photomontage view includes the following versions:

- **'Existing'** view
- **'Proposed'** view showing the Proposed Development
- **'Proposed and Permitted'** view showing the Proposed Development and the adjacent development permitted under An Bord Pleanala, Reg. Ref. No. 307011-20, which is located approximately 250 metres south of the subject site.

View 1 *From junction of Shanliss Way and Shanliss Avenue looking east towards the subject site*

The proposed development will be blocked by existing residential units on Shanliss Avenue. The impact

will be *imperceptible*, *neutral, and permanent.*

View 2 *From Santry Avenue, looking east towards the subject site*

The proposed development will be predominantly blocked by existing trees and buildings associated with the IDA estate. However, the taller element of the proposed development will be visible as it meets Santry Avenue. The development will also be partially visible above the existing fence line in the centre of the view. The character and composition of the view is altered, however not inappropriately, and is consistent with emerging trends. The impact will be *moderate, neutral and permanent.*

View 3 *From Santry Demesne, looking south east towards the subject site*

The proposed development will be predominantly screened by the existing trees along Santry Road and Santry Demesne boundary. However, the upper floors of the proposed development will create a visual intrusion about the existing tree line. The character and the composition of the view would be altered, however it is consistent with other existing boundary views elsewhere in Santry Demesne. The valued features of the view would remain. The impact is considered to be *moderate, negative and long term.* The duration is considered long term (fifteen to sixty years) as when the existing tree planting within Santry Demesne in the middle-ground of the view matures, it will provide further screening of the development.

View 4 From Santry Demesne, looking south towards the subject site

The proposed development will be screened at the lower levels by the existing trees along Santry Road and Santry Demesne boundary. However, the upper floors of the proposed development will be visible above the existing tree canopies. The character and the composition of the view would be altered, which reflects a more urban context as demonstrated by emerging developments in the area. The impact is considered to be *moderate, negative and long term.* The duration is considered long term (fifteen to sixty years) as when the existing tree planting within Santry Demesne in the middle-ground of the view matures further, it will add to the screening of the development.

View 5 *From Swords Road (R104), looking south towards the subject site*

The proposed development will be predominantly blocked by existing vegetation and stone wall associated with the boundary of Santry Demesne. There will be a slight visual intrusion through and above the tree line. The character and composition of the view would be altered, but not inappropriately and the valued features of the view would remain. The impact will be *slight, negative, and permanent.*

View 6 *From Swords Road (R104), looking south towards the subject site*

The proposed development will be visible due to the open character of this section of the Swords Road (R104). There will be partial screening of the proposed development by existing trees associated with the south east of Santry Demesne and existing trees associated with the open space in front of Santry Villas. The character and the composition of the view would be altered, however it is consistent with emerging trends. The impact will be *moderate, negative and permanent.*

View 7 *From Coolock Lane, looking west towards the subject site*

The proposed development will be partially blocked by the existing residential units in Santry Villas estate and existing trees associated with Oak Park Avenue. However, the upper floors of the proposed development will be partially visible in the background, and above the existing tree line. The character of view remains unchanged. The composition is altered slightly, but not inappropriately. The impact will be *slight, neutral and long term.* The duration is considered long term (fifteen to sixty years) as when the existing tree planting in the middle-ground of the view matures it will provide further screening of the development.

View 8 *From Coolock Lane, looking west towards the subject site*

The proposed development will be predominantly blocked by the tree line associated with the M50 motorway planting. The impact will be *slight, neutral and long term.* The duration is considered long term (fifteen to sixty years) as when the existing tree planting in the middle-ground of view matures it will provide screening of the development almost in its entirety.

View 9 *From Santry Villas, looking west towards the subject site*

The proposed development will be blocked to some degree by existing warehouse buildings on Santry Villas, in the left of the view. The northern frontage of the proposed development to Santry Road will be largely visible in the view. The eastern frontage of the proposed development to Swords Road (R104) will be partially visible. The character and composition of the view is altered, but is consistent with existing and emerging trends in the area. The impact is considered *moderate, negative and permanent.*

View 10 *From Swords Road (R104), looking north towards the subject site*

The proposed development will be predominantly blocked by the existing development in the middle-ground of the view and trees on Swords Road (R104). However, the upper levels of the proposed development will be visible in the long distance, where the proposed development is located at the junction of Santry Road and Swords Road. The impact will be *slight, neutral and permanent.*

View 11 *From Burnside estate, looking west towards the subject site*

The proposed development will be completely screened by existing trees associated with open space in Burnside estate. The impact is considered *imperceptible, neutral and permanent*.

View 12 *From Swords Road (R104), looking north towards the subject site, at Lorcan Road junction*

The proposed development will be blocked to some degree by existing commercial units in the Santry Hall Industrial Estate and existing trees on the access road of the industrial estate. However, the upper levels of the proposed development will be visible in the long distance, where the proposed development is located at the junction of Santry Road and Swords Road. The composition and character of the view remains unchanged. The impact will be *slight, neutral and permanent.*

View 13 *From Swords Road (R104), looking north towards the subject site*

The proposed development will not be visible due to the rising topography and curvature of the Swords Road. Existing housing and vegetation associated with housing completely block the views of the development. There will be *no impact.*

View 14 *From Santry Demesne, looking south east towards the subject site*

The development will be mostly screened by the existing trees which form part of the southern boundary of Santry Demesne. The upper storeys of some of the blocks will be partially visible through the tree canopies. The character of the view is unchanged. The composition of the view is altered slightly, however is consistent with other boundary views from within Santry Demesne. The impact will be *slight, negative and long term.* The duration is considered long term (fifteen to sixty years) as when the existing tree planting in the middle-ground of the view matures it will provide further screening of the development.

15.6 Mitigation measures

Given the overall lack of significance of any effects on the landscape or views, which range from moderately negative to slightly positive as outlined by this LVIA, mitigation measures are not strictly determined necessary. However, the Proposed Development's activities may mitigate some effects as described below.

15.6.1 Mitigating effects on existing vegetation

15.6.1.1.1 Construction phase

Existing vegetation on the site is limited and the value of what is present is negligible and therefore proposed for removal. There are no mitigation measures required for on-site vegetation.

However, attention should be given to any Root Protection Areas outlined for trees along the boundary with the Site, as detailed in the Arboricultural Assessment. This will help to ensure that there are no negative effects on existing vegetative screening contiguous to the site.

15.6.1.1.2 Operational phase

Similar to the construction phase, there are no mitigation measures required to reduce impacts on the very limited and low-value existing vegetation. The overall effect on vegetation is positive due to the introduction of significantly more trees and planted areas than which currently exist on the Site.

To further mitigate any potential effects on vegetation, including surrounding vegetation, the Site is to be monitored for indicators of invasive species.

15.6.2 Mitigating effects on landscape character

15.6.2.1 Construction phase

The use of appropriate hoarding, including of an appropriate colour, during the construction phase can mitigate effects on landscape character during the construction phase (*short-term*). Near the end of the construction phase, the installation of planting and landscape design in accordance with the proposed Landscape Plan by DFLA will have a positive effect on the townscape character (*long-term*).

15.6.2.2 Operational phase

The following mitigation measures are proposed:

- Maintain all proposed planting and landscape design in accordance with best practice and the Landscape Plan by DFLA to help ensure the development of habitats and their associated biodiversity;
- The site is to be monitored for indicators of invasive species, which can have a negative effect on landscape character through density, competition with other species or removal phases;
- Installed trees will be maintained in line with industry best practice to help ensure maturation and a long-term positive contribution to landscape character.

15.6.3 Mitigating effects on views

15.6.3.1 Construction phase

The following mitigation measures are proposed:

- Restrict hours of construction activity in accordance with local authority guidance;
- Extend hoarding to appropriately restrict views of construction activities on the site;
- Install boundary walls and planting to ensure that sight lines and areas of privacy are retained across the site and footpaths along Santry Avenue and Swords Road as appropriate;
- Install tree species as per the proposed Landscape Plan by DFLA to screen the development and create an appropriate landscape at ground level.

15.6.3.2 Operational phase

The proposed vegetation, including trees, will be maintained to keep sight lines open across the site and footpaths as appropriate. Similarly, areas of buffer planting within the site will be maintained to provide the requisite privacy screening. Finally, installed trees will be maintained in line with industry best practice to help ensure maturation and a *long-term* positive contribution to views.

15.7 Residual effects

15.7.1 Construction phase

Mitigation measures will reduce the effect of construction on both landscape character and views. Landscape character will experience *slight, negative and short-term* effects, while most views will also only experience *slight, negative and short-term* effects. Short-range views are likely to experience *moderate, negative* effects that are *temporary*.

15.7.2 Operational phase

The Proposed Development will result in an overall positive change in character, with an increase in public green space along Santry Avenue and Swords Road. The overall effect on landscape character will be *not significant, positive, and permanent.* Similarly, the residual effects on views will range from *imperceptible and neutral* to *slight and negative* in the *long-term*.

No.	Significance	Sensitivity	Magnitude	Duration	Quality
View 1	Imperceptible	Low	Negligible	Permanent	Neutral
View 2	Moderate	Medium	Medium	Permanent	Neutral
View 3	Moderate	Medium	Medium	Long term	Negative
View 4	Moderate	Medium	Medium	Long term	Negative
View 5	Slight	Low	Medium	Permanent	Negative
View 6	Moderate	Low	High	Permanent	Negative
View 7	Slight	Low	Medium	Long term	Neutral
View 8	Slight	Low	Medium	Long term	Neutral
View 9	Moderate	Medium	Medium	Permanent	Negative
View 10	Slight	Medium	Low	Permanent	Neutral
View 11	Imperceptible	Low	Negligible	Permanent	Neutral
View 12	Slight	Low	Medium	Permanent	Neutral
View 13	No impact	No impact	No impact	No impact	No impact
View 14	Slight	Medium	Low	Long term	Negative

Table 15.11. Summary of assessment of visual effects with mitigation measures

15.8 Monitoring

The landscape design will be subject to a detailed design and construction process supervised by a qualified Landscape Architect to help ensure that the design is implemented in accordance with best practice. A suitably qualified Arborist will be retained to supervise the implementation of tree protection measures in accordance with best practice.

As part of the operational phase, monitoring of the completed landscape works will be undertaken on a regular basis. Planting and landscape design will be subject to a defects and maintenance period for initial establishment. If any replacement trees or plantings are required, these works will be carried out during this period.

15.9 Interactions

15.9.1 Biodiversity

Proposed planting, including native species and species listed in the All-Ireland Pollinator Plan, is detailed in the Landscape Plan by DFLA and will have a long-term positive effect on the biodiversity of the site and the receiving landscape.

15.9.2 Land, soil and geology

There is potential for importation of soil to the site to affect the quality of existing and surrounding soil. Suitable mitigation measures, such as working in accordance with industry best practice BS4428:1989 and BS3882:2007, will reduce any such effect.

15.9.3 Air, dust and climatic factors

Proposed planting, as detailed in the Landscape Plan by DFLA, is likely to have a positive effect on air quality and climate for the site and receiving landscape.

15.9.4 Cultural heritage and archaeology

The development will be visible and have a moderately negative impact from protected structure St Pappins Church, shown in View 9 and as outlined in this document.

15.10 Cumulative effects

Potential effects can act cumulatively with other effects from developments in the surrounding landscape. The following developments are noted in the vicinity of the subject site which have been recently permitted and /or are under construction and / or recently completed:

- **Reg. Ref. 2713/17** - Carnamadra Ltd. received a final grant of permission on 23rd April 2018 for a mixed-use development located at Santry Avenue and Swords Road, Santry, Dublin 9. The development included for the partial demolition of existing buildings and the construction of 137 no. residential dwellings, 3 no. retail/commercial units, commercial office uses and a creche in 5 no. four and five storey blocks (Blocks A-E). The development also included for new vehicular and pedestrian accesses via Swords Road, environmental improvements along the Swords Road frontage, basement level car parking, and all ancillary and associated site development works on a site of c. 1.9 hectares.

- Under consent of Carnamadra Ltd., Dwyer Nolan Developments Ltd. began constructing the aforementioned development, known as Santry Place, and subsequently Dwyer Nolan Developments Ltd. applied for modifications to the permitted development to Dublin City Council in April 2019. The details of same can be found below:

- **Reg. Ref. 2737/19 -** Dwyer Nolan Developments received a final grant of permission on 1st October 2019 for modifications to the development permitted under Reg. Ref. 2713/17. This permission increased the heights of the permitted Blocks A, B & C from 5 storeys to 7 storeys, and included for a change in unit type and increase in number of apartments (68 no. apartments after design changes at Additional Information stage). The permission included for the provision of balconies and roof terraces (i.e. 240sq.m. each) to Blocks A, B & C.

- **ABP-306987-20 -** Permission for the development of 120 no. apartments and associated site development works on the former Swiss Cottage lands, Swords Road, Santry, Dublin 9. The development included for building heights of 3 no. storeys to 7 no. storeys and caters for a density of c. 250 no. dwellings per hectare. The development supersedes and amended the previously permitted development granted under ABP-303358-19. The site is located approximately 100 meters to the south-east of the subject application site.

- **ABP-307011-20 -** Permission for the development 324 no. apartments, a creche and associated site development works on lands to the northeast of Omni Park Shopping Centre, Swords Road, Santry, Dublin 9. The development included for building heights of 5 no. storeys to 12 no. storeys and caters for a density of c. 250 no. dwellings per hectare. The site is located approximately 250 meters to the south of the subject application site.

The likely cumulative impacts on the landscape include the further loss of existing trees and vegetation through the construction of the developments. However, overall, the biodiversity and tree planting in the area should increase in the medium to long-term as the plantings in the new developments mature. The proposed network of open spaces and public realm should make a positive contribution to the emerging townscape of the area, in the context of the proposed and permitted developments.

The future developments will also have a cumulative impact on views. The proposed developments are for residential and commercial development. The height of the blocks which are proposed as part of the developments will be visible from public routes in the immediate context including Swords Road and Santry Avenue. Medium distance views may be impacted slightly, particularly from the north and south. It is expected that views from the east and west would be slightly restricted due to the built fabric and existing mature trees of the surrounding environment. The developments may be partially visible from within Santry Demesne to the north.

15.11 Do-nothing effect

The lands are in underutilized, brownfield condition at present and if the Proposed Development does not proceed, the site will likely remain in brownfield condition. Therefore, in the do-nothing scenario, it is considered most likely that some form of broadly similar development will take place on these lands at

some stage in the foreseeable future. Any such development will likely have a broadly similar range of landscape and visual effects and opportunities. If development was not to proceed on these lands, the lands would remain in its current condition, i.e. there would be no change to the lands.

15.12 Difficulties Encountered in Compiling

No significant difficulties were encountered in the preparation of this LVIA.

15.13 Conclusion

The Proposed Development is located on appropriately zoned lands. The layout and design of the Proposed Development is also consistent with the key development principles set out in the Dublin City Development Plan (2022-2028), including those concerning density, height and scale, as well as relevant government policies regarding increased height and density and recently permitted developments.

The sensitivity of the receiving landscape is medium and it has capacity to accommodate change. This considers the landscape's history of development, which has resulted in a mixed character of low-density residential properties interspersed with industrial and commercial properties and institutional landscapes, as well as the proximity to Santry Demesne.

It is considered in this LVIA that the Proposed Development will have a slightly positive effect on the landscape character and an imperceptible to moderate negative effect on views. Effects on the landscape and views will be pronounced during the construction stage, with increased activity, including movement of materials to and from the site, as well as the installation of planting and landscape design along Santry Avenue and Swords Road. As vegetation matures, it will screen some of the Proposed Development and improve the overall quality of the landscape character, particularly along Santry Avenue. Some visual intrusion will remain at the upper floors of the Proposed Development but will not significantly alter the skyline along key views.

The effects are not incongruous with the landscape's current mix of urban land uses or changing character. There already exist buildings of multiple scales and heights as well as multi-storey apartment blocks along Swords Road. Planning permission has also been received in 2019 and 2020 for similar high-density developments. The addition of the Proposed Development's 21st C. high-density apartment blocks is a continuation of the area's suburban and urban revolution and responds appropriately to the Dublin City Development Plan's (2022-2028) criteria for proposals of enhanced neighbourhood facilities, height, density, and scale. Replacement of the industrial space and on site is a positive contribution towards an emerging urban landscape character.

Finally, the proposed public open space and communal amenity space will also complement the existing green space at Santry Demesne as well as positively contribute to the biodiversity, habitats, and amenity spaces along Swords Road and Santry Avenue.

16.0. Identification of Significant Impacts / Interactions

16.1 Identification of Significant Effects

The purpose of this section of the EIAR is to draw attention to significant interaction and interdependencies in the existing environment. In preparing the EIAR, each of the specialist consultants have and will continue to liaise with each other and will consider the likely interactions between effects predicted as a result of the proposed development during the preparation of the proposals for the subject site and this ensures that mitigation measures are incorporated into the design process.

This approach is considered to meet with the requirements of Part X of the Planning and Development Act 2000 and Part 10, and schedules 5, 6 and 7 of the Planning and Development Regulations 2001 (as amended). The detail in relation to interactions between environmental factors will be covered in each chapter of the EIAR.

All environmental factors are interlinked to a degree such that interrelationships exist on numerous levels. Interactions within the study area can be one-way interactions, two-way interactions and multiple-phase interactions which can be influenced by the proposed development. As this EIAR document has been prepared by a number of specialist consultants, an important aspect of the EIA process is to ensure that interactions between the various disciplines have been taken into consideration. This chapter of the EIAR was prepared by Tracy Armstrong, BA, MRUP, MIPI, MRTPI, Planning Consultant of Armstrong Fenton Associates.

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 EIAR. 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 requirement of an EIAR is to draw attention to significant interaction and interrelationships in the existing environment. Armstrong Fenton Associates Planning Consultants, in preparing and co-ordinating this EIAR ensured that each of the specialist consultants liaised with each other and dealt with the likely interactions between effects predicted as a result of the proposed development during the preparation of the proposals for the subject and ensuring that appropriate mitigation measures are incorporated into the design process.

Having regard to the approach taken, the aspects of the environment likely to be significantly affected by the proposed development, during both the construction and operational phases, have been considered in detail in the relevant Chapters of this EIAR document. In addition, likely interactions between one topic and another have been discussed, where relevant, by the relevant specialist consultant(s).

The primary interactions can be summarised as follows:

- Noise, air, waste, water and traffic with population and human health;
- Land and soils with traffic, water, resource management, noise, air and biodiversity;

- Water with biodiversity;
- Waste with biodiversity;
- Cultural heritage and the landscape and
- Air quality and climate and traffic.

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.

However, the reader is directed to the relevant environmental topic chapter of this EIAR document for a more detailed assessment.

During the Operational Phase, it is anticipated that water and traffic will be the key environmental factors impacting upon population and human health as a new residential landscape will be created. The increase in population will result in increased traffic and increased demands on water supply and increased requirements for wastewater treatment. These are addressed in the appropriate sections of this EIAR.

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. As demonstrated throughout this EIAR, most inter-relationships are neutral in impact when the mitigation measures proposed are incorporated into the design, construction or operation of the proposed development.

Where appropriate, the relevant impact areas are considered in grouped form, as set out below.

16.2 Impact Interactions

Where any potential negative effects have been identified during the assessment process, these impacts have been avoided by design or reduced by the proposed mitigation measures.

Table 16.1 over provides a summary of the potential interactions anticipated from the proposed development.

Subject	Interaction With:	Interactions / Inter-Relationships
Population & Human Health	**Air Quality**	The completed development will generate additional emissions to the atmosphere associated with the development, and due to plant equipment within the development. However, air quality in the region of the site is expected to be within the limits set by the air quality standard. During construction there may be potential for slight dust nuisance in the immediate vicinity of the site. However, dust control measures, which include a range of measures such as wheel washes and covering of fine materials will minimise the impact on air quality. A dust management plan will be formulated for the site. The effect of construction on air quality will not be significant following the implementation of the proposed mitigation measures. It is proposed to adhere to good working practices and dust mitigation measures to ensure that the levels of dust generated will be minimal and are unlikely to cause an environmental nuisance. There is no significant impact from dust once the development is completed. Overall, it is envisaged that the proposed development will not have a significant impact on air quality.
Population & Human Health	**Noise**	The greatest potential for noise and vibration impact arising from the proposed development will be in the construction phase. However, following the implementation of the proposed mitigation measures in relation to noise, the impact associated with the construction phase of the proposed development is predicted to be temporary and intermittent in nature. No significant impacts on the local noise and vibration climate are predicted during the operational phase of the proposed development.
Air Quality	**Soils**	Exposed soil during the construction phase of the proposed development may give rise to increased dust emissions. However, the implementation of a dust management plan and dust control measures will ensure that the proposed development will not give rise to the generation of any significant quantities of dust.
Material Assets	**Air Quality**	The proposed development is located in an urban area. However, mitigation measures for dust control and dust suppression can keep the potential for dust to impact upon neighbouring properties in Santry very low.

Subject	Interaction With:	Interactions / Inter-Relationships
Water	**Biodiversity**	During the construction phase, surface water quality would be protected through the implementation of mitigation measures, which include the regular maintenance and inspection of construction plant, the appropriate storage of potentially polluting substances and the supervision of all concrete works. Therefore, no potential significant impacts upon water quality is anticipated during the construction phase. There would be no potential impacts to water quality during the operational phase of the development.
Material Assets – Resource & Waste Management	**Water**	Should waste be incorrectly handled or stored at the development site during construction works, it has the potential to cause an adverse impact upon water quality in the area through leaching of materials to groundwater or surface water. However, waste is to be segregated and stored in suitably contained waste receptacles at the site compound, considerably reducing the potential risk of pollution to water. It is not considered that there would be any significant risk to water quality as a result of waste management during the operational phase, given that waste would be collected by private, licenced waste contractors and recovered, recycled or disposed of at appropriately licenced waste facilities, which would have environmental controls in place as standard.
Material Assets Waste	**Biodiversity**	Waste has the potential to impact upon biodiversity during the construction phase, by causing pollution to soils and water and by potentially attracting pests / vermin to the site. However, wastes would be stored in suitably contained waste receptacles at the site compound, reducing the potential of pollution to soils and water. Furthermore, the majority of wastes generated during the construction phase would be inert materials, which would reduce the potential for issues regarding pests / vermin. It is not considered that there would be any significant impact upon biodiversity due to waste management during the operational phase, given that waste would be collected by licenced waste contractors and recovered, recycled or disposed of at appropriately licenced waste facilities, which would have environmental controls in place as standard.

Subject	Interaction With:	Interactions / Inter-Relationships
Material Assets – Resource & Waste Management	**Human Beings**	Should waste be incorrectly handled or stored at the development site, it has the potential to cause an adverse impact upon human beings through nuisance, including visual, odour and pests, and pollution to soils and water. It should also be noted that given the inert nature of the majority of C&D waste types, it is unlikely that issues regarding odour or pests would arise. During the operational phase, suitably contained wheelie bins / waste receptacles would be provided to the residential area, commercial and community use facilities by private waste contractors, thus there would be no significant risk of pollution to soils. Waste would be collected on a regular basis, typically on a two-weekly basis alternating between recyclables and municipal waste. Therefore, waste would not be envisaged to accumulate to high enough volumes to cause nuisance.
Material Assets – Resource & Waste Management	**Landscape**	Waste and litter have the potential to adversely affect the appearance of the landscape. However, as waste management measures would be implemented as part of the proposed development, it is considered that there would be no significant adverse impact upon the landscape.
Air, Population and Human Health	**Biodiversity**	An adverse impact on air quality has the potential to impact upon human health, cause dust nuisance and cause disturbance to fauna. However, the risk to air quality as a result of the proposed development would not be considered significant, both at the local community level and on a broader national / global scale. During the construction phase of the development, there would be potential for dust emissions, which could impact upon the communities and residents on the roads to the site and fauna in Santry Demesne Park and in the surrounding area. The potential impact of dust would be temporary, given the transient nature of construction works. Dust control would be an integral part of construction management practices, with mitigation measures implemented where required, including sweeping of roads and hardstand areas, appropriate storage and transport of material and dust suppression measures where required. It should be noted that an important interaction exists between air quality and flora, whereby vegetation can play an important role in acting as an air purifier by absorbing carbon dioxide and giving out oxygen. It would therefore be anticipated that potential carbon dioxide emissions generated by home heating systems and discharged from vehicle exhausts would be somewhat mitigated by vegetation in the environs of the site.

Subject	Interaction With:	Interactions / Inter-Relationships
Air & Climate	**Surface Water / Groundwater**	The interactions between Air & Climate and surface water and groundwater will be mainly limited to the construction phase and are mitigated by the drainage design and proposed mitigation measures.
Air Quality	**Biodiversity**	An increase in dust emissions during the construction phase has the potential to adversely impact upon flora by blocking leaf stomata, interfering with photosynthesis, respiration and transpiration processes. However, given the transient nature of construction works, and given that standard dust control measures would be implemented, no significant impact would be anticipated.
Air & Climate	**Biodiversity**	During construction there are potential issues for biodiversity if the trees in the surrounding area were to be covered in dust during construction. However, this will be mitigated by the implementation of a proposed dust minimisation plan and then there should be no impacts on nearby trees.
Noise	**Population and Human Health/Biodiversity**	Increased noise levels during the construction phase will be temporary only and are not expected to have a long-term significant adverse effect upon Population and Human Health in the general area. Furthermore, the application of binding noise limits and hours of operation, along with the implementation of appropriate noise and vibration control measures, will ensure that noise and vibration impact is kept to a minimum. There will be no significant increase in ambient noise levels arising during the operational phase of the proposed development. Noise generated during the construction and operational phases of the proposed development has the potential to impact upon Population and Human Health and fauna within the vicinity of the site. During the construction phase, noise may be generated due to increased vehicle movements and the operation of construction plant. It is anticipated that there would be a moderate impact, for limited periods of time, on the nearest local residences and fauna within the vicinity of the development. Control and mitigation measures would be implemented to reduce noise and vibration, including measures relating to equipment operation and timing of activities.

		Given the transient nature of construction works, and provided mitigation measures are implemented, noise from construction would not be considered to pose a significant impact upon human beings or biodiversity.

Subject	Interaction With:	Interactions / Inter-Relationships
Landscape	**Population and Human Health**	Changes to the landscape character of the site itself will include the development of new buildings and associated landscape. The landscape and visual impact associated with Population and Human Health focuses on the effects to dwellings. The settlement pattern comprises residential development to the south and east, with the Santry centre located to the south-east. The proposed development generates visual effects, and the effects and associated amelioration of these effects is discussed in the impact section of the chapter.
Landscape	**Biodiversity**	The long-term effects of the proposed development will have a positive effect on the provision of landscaped areas associated with the development, creating pedestrian connections from the subject site to Santry Demesne to the north. Further consultation with the Ecological Consultant will take place at implementation and monitoring stages to ensure adherence to best practice and sound ecological principles.
Surface Water / Groundwater	**Soils/Geology/Waste Management**	There is a close link between soils & geology and water (hydrogeology and hydrology). For example, surface water runoff during the construction phase may contain increased silt levels (e.g. runoff across areas stripped of hardstanding) Impacts on the geological environment include stripping of topsoil which will result in exposure of the underlying subsoil layers to the effects of weather and construction traffic and may result in subsoil erosion and generation of sediment laden runoff.

		Waste Management and dust management is also considered in interactions as soil removal will be required for this development. Interactions between soils/geology will be mainly limited to the construction phase due to material excavation.
Subject	**Interaction With:**	**Interactions / Inter-Relationships**
Material Assets - Utilities	**Material Assets - Waste Management, and Water (hydrogeology)**	The proposed works result in an increase in surface water runoff, if not catered for adequately this may have an effect on the hydrogeology.
Material Assets – Resource & Waste Management	**Traffic and Transportation/Soils and Geology**	Waste management interacts with traffic and transportation, soils and geology. The direct and indirect effects of waste-related transport are considered in Chapter 12, Traffic and Transportation and the geotechnical characterisation of the scheme is considered in Chapter 6 – Land and Soils.
Material Assets – Traffic	**Population and Human Health**	Temporary negative impacts to human health may be likely during the construction phase due to noise, dust, air quality and visual impacts which are discussed in other chapters within this EIAR. The traffic impacts, which would also be temporary in duration are not considered to be significant due to the implementation of the mitigation measures identified.

Subject	Interaction With:	Interactions / Inter-Relationships
Air & Climate	**Surface Water / Groundwater**	The interactions between Air & Climate and surface water and groundwater will be mainly limited to the construction phase and are mitigated by the drainage design and proposed mitigation measures.
Air Quality	**Biodiversity**	An increase in dust emissions during the construction phase has the potential to adversely impact upon flora by blocking leaf stomata, interfering with photosynthesis, respiration and transpiration processes. However, given the transient nature of construction works, and given that standard dust control measures would be implemented, no significant impact would be anticipated.
Air & Climate	**Biodiversity**	During construction there are potential issues for biodiversity if the trees in the surrounding area were to be covered in dust during construction. However, this will be mitigated by the implementation of a proposed dust minimisation plan and then there should be no impacts on nearby trees.
Noise	**Population and Human Health/Biodiversity**	Increased noise levels during the construction phase will be temporary only and are not expected to have a long-term significant adverse effect upon Population and Human Health in the general area. Furthermore, the application of binding noise limits and hours of operation, along with the implementation of appropriate noise and vibration control measures, will ensure that noise and vibration impact is kept to a minimum. There will be no significant increase in ambient noise levels arising during the operational phase of the proposed development. Noise generated during the construction and operational phases of the proposed development has the potential to impact upon Population and Human Health and fauna within the vicinity of the site. During the construction phase, noise may be generated due to increased vehicle movements and the operation of construction plant. It is anticipated that there would be a moderate impact, for limited periods of time, on the nearest local residences and fauna within the vicinity of the development. Control and mitigation measures would be implemented to reduce noise and vibration, including measures relating to equipment operation and timing of activities.

		Given the transient nature of construction works, and provided mitigation measures are implemented, noise from construction would not be considered to pose a significant impact upon human beings or biodiversity.

Subject	Interaction With:	Interactions / Inter-Relationships
Landscape	**Population and Human Health**	Changes to the landscape character of the site itself will include the development of new buildings and associated landscape. The landscape and visual impact associated with Population and Human Health focuses on the effects to dwellings. The settlement pattern comprises residential development to the south and east, with the Santry centre located to the south-east. The proposed development generates visual effects, and the effects and associated amelioration of these effects is discussed in the impact section of the chapter.
Landscape	**Biodiversity**	The long-term effects of the proposed development will have a positive effect on the provision of landscaped areas associated with the development, creating pedestrian connections from the subject site to Santry Demesne to the north. Further consultation with the Ecological Consultant will take place at implementation and monitoring stages to ensure adherence to best practice and sound ecological principles.
Surface Water / Groundwater	**Soils/Geology/Waste Management**	There is a close link between soils & geology and water (hydrogeology and hydrology). For example, surface water runoff during the construction phase may contain increased silt levels (e.g. runoff across areas stripped of hardstanding) Impacts on the geological environment include stripping of topsoil which will result in exposure of the underlying subsoil layers to the effects of weather and construction traffic and may result in subsoil erosion and generation of sediment laden runoff. Waste Management and dust management is also considered in interactions as soil removal will be required for this development. Interactions between soils/geology will be mainly limited to the construction phase due to material excavation.

Subject	Interaction With:	Interactions / Inter-Relationships
Material Assets - Utilities	**Material Assets - Waste Management, and Water (hydrogeology)**	The proposed works result in an increase in surface water runoff, if not catered for adequately this may have an effect on the hydrogeology.
Material Assets – Resource & Waste Management	**Traffic and Transportation/Soils and Geology**	Waste management interacts with traffic and transportation, soils and geology. The direct and indirect effects of waste-related transport are considered in Chapter 12, Traffic and Transportation and the geotechnical characterisation of the scheme is considered in Chapter 6 – Land and Soils.
Material Assets – Traffic	**Population and Human Health**	Temporary negative impacts to human health may be likely during the construction phase due to noise, dust, air quality and visual impacts which are discussed in other chapters within this EIAR. The traffic impacts, which would also be temporary in duration are not considered to be significant due to the implementation of the mitigation measures identified.

Table 16.1 – Summary of Potential Interactions / Inter-relationships

16.2.1 Summary of Interaction of Impacts

Schedule 6 Item 2 (b) of the Planning and Development Regulations, 2001-2015 requires that proposed developments are examined with regard to the inter-relationship of aspects referred to in Item 2 (b) of Schedule 6. The matrix incorporated in Table 15.2 overleaf inter-relates the various Chapters of this EIAR to the various impact headings referred to in Schedule 6 Item 2 (b) of the Planning and Development Regulations, 2001 - 2015. The matrix also indicates where these statutory information requirements have been incorporated in this EIAR. It should be emphasised that this matrix does not represent a form of relative assessment of impacts, but merely identifies and amalgamates areas of principal interaction and significance.

Chapter No.	Chapter Headings in EIAR	Interaction of Impacts / Identification of Significant Effects									
		Population & Human Health	Biodiversity	Land & Soils	Water	Air Quality & Climate	Noise & Vibration	Material Assets	Waste Management	Cultural Heritage	Landscape
4	Population & Human Health		✓		✓	✓	✓	✓	✓	✓	✓
5	Biodiversity	✓		✓	✓	✓			✓		✓
6	Land, Soils & Geology		✓		✓	✓	✓	✓	✓		
7	Water	✓	✓	✓				✓	✓		
8	Air Quality & Climate	✓	✓	✓	✓			✓			
9	Noise	✓						✓			
10	Material Assets: Built Services		✓	✓	✓	✓					
11	Material Assets: Transportation	✓		✓	✓	✓	✓		✓		
12	Material Assets: Resource & Waste Management	✓	✓	✓	✓				✓		✓
13	Archaeology & Cultural Heritage	✓									
14	The Landscape	✓							✓		

✓ Area of Principal Interaction

Table 16.2 – Interactions Matrix

16.3 Other Impacts

15.3.1 Direct and Indirect Effects Resulting from the Use of Natural Resources

Schedule 6 Item 2 (c) of the Planning and Development Regulations, 2001 - 2015 requires that an EIAR contains a description of the likely significant effects (including direct, indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative) of the proposed development on the environment resulting from the use of natural resources. No likely significant effects (including direct, indirect, secondary, cumulative, short, medium and long term, permanent and temporary, positive and negative) of the proposed development on the environment are expected to arise from the use of natural resources.

16.3.2 Direct and Indirect Effects Resulting from Emission of Pollutants, Creation of Nuisances and Elimination of Waste

Schedule 6 Item 2 (c) of the Planning and Development Regulations, 2001 - 2015 requires that an EIAR contains a description of the likely significant effects (including direct, indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative) of the proposed development on the environment resulting from the emission of pollutants, the creation of nuisances and the elimination of waste. No likely significant effects on the environment are expected to arise from the emission of pollutants, the creation of nuisances or the elimination of waste.

16.4 Residual Impacts and Cumulative Impacts

Residual impacts can be defined as the final impacts that occur after proposed mitigation measures have taken effect. Many of the findings of the EIA have been incorporated into the design of the development and have contributed to the reduction or amelioration of potential impacts. Where residual impacts arise, they are detailed in the relevant chapters and further mitigation measures detailed where necessary.

Cumulative impacts are defined as: *"The addition of many small impacts to create one larger, more significant, impact"* (EPA 2002). Cumulatively, these impacts may be significant if they occur close together in terms of location and time. The cumulative impact of the proposed development is categorised as neutral and moderate.

As outlined in Chapter 3 this EIAR, where relevant, the EIAR also takes account of other development(s) within the area. These impacts have been addressed in the relevant chapters of the EIAR.

To determine traffic impacts in Chapter 12, the traffic generated by the proposed development is combined with the baseline traffic generated by the traffic on the road network in the area. The potential traffic impacts from other developments were also considered in the assessment (e.g. residential developments - adjacent to the site to the south and east).

Each of the relevant specialists has considered the potential for cumulative impact in preparing their assessments. While there is the potential for negative impacts to occur during the construction stage of the scheme, with the

implementation of the appropriate mitigation outlined in the EIAR, the residual cumulative impact is not considered to be significant.

16.5 Environmental Commitments and Mitigation Measures

Mitigation measures to be adopted during the construction and operational phases of the proposed development are detailed within each chapter. These measures should be implemented through planning conditions imposed by the Planning Authority / An Bord Pleanála, as appropriate/necessary.

Mitigation measures will be managed by the contractor(s) as part of the Construction Management Plan and by the developer/ landowners thereafter.

16.5.6 Conclusion

This EIAR has regard to and builds on the Strategic Environmental Assessment prepared with the Dublin City Development Plan 2022-2028.

The EIAR has considered the likely, significant, adverse effects of the proposed project on the receiving environment.

Mitigation measures are included, to avoid and / or reduce impacts on the environment where considered necessary. This includes mitigation measures incorporated into the design of the proposed development.

The EIAR concludes that there are no material or significant environmental issues arising which were not anticipated by the Dublin City Development Plan 2022-2028 and considered in its Strategic Environmental Assessments.

17.0 Summary of EIA Mitigation and Monitoring Measures

17.1 Introduction

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 has been prepared by Armstrong Fenton Associates and sets out a summary of the range of methods described within the individual chapters of this EIAR document which are proposed as mitigation and for monitoring. 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. This chapter of the EIAR was prepared by Tracy Armstrong BA, MRUP, MRTPI, MIPI, of Armstrong Fenton Associates Planning Consultants.

EIA related conditions are normally imposed by the competent/consent authority as part of conditions of planning consent and form a key part of the Impact Anticipation and Avoidance strategy. Conditions are principally used to ensure that undertakings to mitigate are secured by explicitly stating the location, quality, character, duration and timing of the measures to be implemented. A secondary role of EIA related conditions is to ensure that resources e.g. bonds / insurances will be available and properly directed for mitigation, monitoring or remedial action, in the event that the impacts exceed the predicted levels.

Monitoring of the effectiveness of mitigation measures put forward in the EIAR document, both by the competent authorities and the developer, is also an integral part of the process. Monitoring of environmental media and indicators arise either from undertakings or from conditions.

In the case of mitigation and monitoring measures it is important for all parties to be aware of the administrative, technical, legal and financial burdens that can accompany the measures proposed. It is also important to ensure that, where monitoring is provided for, it is clearly related to thresholds, which, if exceeded, cause a clearly defined set of actions to be implemented.

17.2 Mitigation Strategies

17.2.1 Introduction

There are three established strategies for impact mitigation - avoidance, reduction and remedy. The efficacy of each is directly dependent on the stage in the design process at which environmental considerations are taken into account (i.e. impact avoidance can only be considered at the earliest stage, while remedy may be the only option available to fully designed projects).

17.2.2 Mitigation by Avoidance

Avoidance is generally the fastest, cheapest and most effective form of impact mitigation. Environmental effects and consideration of alternatives have been taken into account at the earliest stage in the project design processes. The consideration of alternatives with respect to the development of the subject lands has been described in Chapter 3.

17.2.3 Mitigation by Reduction

This is a common strategy for dealing with effects which cannot be avoided. It concentrates on the emissions and effects and seeks to limit the exposure of the receptor. It is generally regarded as the *"end of pipe*" approach because it does not seek to affect the source of the problems (as do avoidance strategies above). As such this is regarded as a less sustainable, though still effective, approach.

17.2.4 Reducing the Effect

This strategy seeks to intercept emissions, effects and wastes before they enter the environment. It monitors and controls them so that acceptable standards are not exceeded. Examples include wastewater treatment, filtration of air emissions and noise attenuation measures.

17.2.5 Reducing Exposure to the Impact

This strategy is used for impacts which occur over an extensive and undefined area. Such impacts may include noise, visual impacts or exposure to hazard. The mitigation is effected by installing barriers between the location(s) of likely receptors and source of the impact (e.g. sound barriers, tree screens or security fences).

17.2.6 Mitigation by Remedy

This is a strategy used for dealing with residual impacts which cannot be prevented from entering the environment and causing adverse effects. Remedy serves to improve adverse conditions which exist by carrying out further works which seek to restore the environment to an approximation of its previous condition or a new equilibrium.

17.2.7 Mitigation and Monitoring Measures

The following provides a list, for ease of reference, of the mitigation and monitoring measures recommended in each chapter of the EIAR.

17.3.1 Project Description and Alternatives Examined

Construction Phase

It is envisaged that the development of the lands subject of the proposed development will occur over a five year period. Given the nature of the project and the need for flexibility to respond to market demand, the development phases are indicative. An Outline/Preliminary Construction Management Plan has been prepared and reviewed by the relevant EIAR consultants and is included as part of this LRD application. A Construction and Environmental Management Plan has been prepared by DBFL Consulting Engineers which addresses noise and vibration, traffic management, working hours, pollution control, dust control, road cleaning, compound/public health facilities and staff parking associated with the construction works, and is submitted as part of this LRD planning application.

Operational Phase

Not applicable.

Monitoring

Not applicable.

17.3.2 Population and Human Health

Construction Phase

A range of construction related remedial and mitigation measures are proposed throughout this EIAR document with reference to the various environmental topics examined and the inter-relationships between each topic. These remedial and mitigation measures are likely to result in any significant and likely adverse environmental impacts on population and human health during the construction phases being avoided. Readers are directed to Chapter 16 of this EIAR document which summarises all of the remedial and mitigation measures proposed as a result of this EIA.

During the Construction Phase a number of mitigating measures should be considered, including *inter alia:*

- Maintain a Construction Environment Management Plan (CEMP) in effect for duration of works;
- Restrict working hours from 07:00 to 18:00; Monday to Friday and from 08:00 to 14;00 on Saturdays. No general works are envisaged to be carried out on Sundays. Should there be a need to work Sundays/Bank Holidays, a written request will be made to DCC for permission to do so. Any conditions from DCC relating to out of hours working will be followed including any required notifications to relevant parties;
- Maintain a Traffic Management Plan (TMP) in effect for duration of works;
- The CEMP will be agreed with the Planning Authority upon receipt of planning permission. The construction of the proposed development shall adhere to the relevant provisions of this Plan; and;

- As part of the CEMP, maintain a Dust and Noise abatement plan in operation.

Operational Phase

Where relevant, mitigation measures to address the potential impacts of noise, air traffic etc. on people are included in the appropriate chapters of this EIAR. No likely significant impacts have been identified for population, or land use, accordingly no mitigation measures are required for the Operational Phase.

The proposed development has been designed to avoid significant impacts in relation to local amenities and recreational facilities by:

- Incorporating the provision of a new community use facility within the design proposal;
- Incorporating the provision of a new residential amenity facility within the design proposal;
- Incorporating the provision of 4 no. commercial / retail facilities and a medical suite / GP Practice unit within the design proposal;
- The provision of c.1,915 sq.m of public open space representing c. 13% of the site area.

Monitoring

In relation to the impact of the development on population and human health it is considered that the monitoring measures outlined in regards to the other environmental topics such as water, air quality and climate and noise etc. sufficiently address monitoring requirements.

17.3.3 Biodiversity

Construction Phase Mitigation

Protection of Santry Demesne pNHA: Dust Control

The following general dust control measures will be followed for the duration of the Construction Phase of the Proposed Development, and will ensure no significant dust related impacts occur to nearby sensitive receptors such as Santry Demesne pNHA.

- Screens (permeable or semi-permeable) will be erected to minimise dust leaving the Site during the works and affecting the surrounding environment.
- Haulage vehicles transporting gravel and other similar materials to site will be covered by a tarpaulin or similar.
- Access and exit of vehicles will be restricted to certain access/exit points.
- Vehicle speed restrictions of 20km/hr will be in place.

- Bowsers will be available during periods of dry weather throughout the construction period.
- 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 thereby reducing the amount of dust.
- Stockpiles will be stored in sheltered areas of the site, covered, and watered regularly or as needed if exposed during dry weather.
- Gravel should be used at site exit points to remove caked-on dirt from tyre tracks.
- Equipment should be washed at the end of each workday.
- Hard surfaced roads will be wet swept to remove any deposited materials.
- Unsurfaced roads will be restricted to essential traffic only.
- If practical, wheel-washing facilities should be located at all exits from the construction sites.
- Dust production as a result of site activity will be minimised by regular cleaning of the site ac-cess roads using vacuum road sweepers and washers. Access roads should be cleaned at least 0.5km on either side of the approach roads to the access points.
- Public roads outside the site shall be regularly inspected for cleanliness, as a minimum daily, and cleaned as necessary. A road sweeper will be made available to ensure that public roads are kept free of debris.
- The frequency of cleaning will be determined by the site agent and is weather and activity de-pendent.
- The height of stockpiles will be kept to a minimum and slopes should be gentle to avoid wind-blown soil dust.
- The following will be dampened during dry weather:
    - Unpaved areas subject to traffic and wind.
    - Stockpiles.
    - Areas where there will be loading and unloading of dust-generating materials.

Habitats and Flora

It is considered that there will be some loss of Hedgerows (WL1). To compensate for the loss of natural habitats at the Site, tree and hedgerow planting consisting of native, pollinator friendly tree/shrub species will be carried out within and around the perimeter of the Site. It is proposed to plant new trees along the western and southern boundaries and throughout the proposed green spaces. The final landscape design includes gardens and open areas with native species planted throughout. This will enhance the habitat provisions on the Site. Typical tree planting will include Alder *Alnus glutinosa*, Birch *Betula nigra*, Hazel *Corylus avellana* and semi mature Oak *Quercus robur.* Please refer to DLFA report and landscape plans for further details.

The planting of native flora will improve local biodiversity and increase insect abundance. This will provide additional foraging/roosting habitat for bats and birds at the Site and improve the biodiversity value of the Site in comparison to its current state.

Tree planting and retention

The loss of the hedgerow vegetation from the site to facilitate the Proposed Development is to be mitigated against with the planting of new trees, shrubs and hedge planting within the completed landscaped development. Tree planting will consist of native tree species such as Alder *Alnus glutinosa*, Birch *Betula nigra*, Hazel *Corylus avellana* and semi mature Oak *Quercus robur*. The current treeline along the western and eastern boundary will also be protected and supplemented (See Figure 5.8) as its is largely outside of the redline boundary; although it must be noted that some of these trees are Ash trees suffering from Ash die-back disease, and may be removed in the future. It is concluded that the Proposed Development will thus have an overall positive impact on the habitat make-up at the Site, and therefore no additional mitigation is necessary.

Figure 17.1: Schematic of the Proposed landscaping at the Site of the Proposed Development (Dermot Foley Landscape Architects, 2024).

Birds

Any demolition works or clearance of vegetation will be carried **out outside the main breeding season**, **i.e., outside of period: 1st March to 31st August,** in compliance with the Wildlife Act 2000. Should any demolition/ vegetation

removal be required during this period, this areas to be affected will be checked for birds and nests by a suitable qualified Ecologist, and if any are noted during this evaluation prior to removal, the nest will be protected until the young have fledged as confirmed by the Ecologist, after which time the inactive nest can be destroyed.

Biosecurity

The following will be adhered to, to avoid the introduction of invasive species to the Proposed Development site.

- Any material required on the site will be sourced from a stock that has been screened for the presence of any invasive species by a suitably qualified ecologist and where it is confirmed that none are present.
- All machinery will be thoroughly cleaned and disinfected prior to arrival on site to prevent the spread of invasive species.

Non-native Species

Although not considered to be '*high impact'* invasive species or listed under regulation S.I. 477, the non-native species recorded at the Site, Butterfly-bush, Sycamore saplings and Cotoneaster should be controlled/removed as per the appropriate best-practice guidelines. Removal and disposal should be carried out in accordance with appropriate guidelines such as TII (formerly NRA) Guidelines on The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads (2010), with consideration given to the prevention of spread of these plants.

Aquatic species and Waterbodies

A potential hydrological connection exists between the Site of the Proposed Development, the Santry River and Dublin Bay via Construction Phase surface water discharge. The below measures for the general protection of water quality will act to reduce the likelihood of any potential impact on aquatic species and water quality within the waterbodies connected to the Proposed Development, specifically the Santry River, during the Construction Phase.

General Protection of Water Quality

The following standard operational measures will protect surface waters during the Construction Phase of the Proposed Development:

- No direct discharges will be made to waterbodies or drains where there is potential for cement or residues in discharges.
- The washing out of concrete trucks on Site will not be permitted, all concrete truck washout must take place back in the ready-mix depot.
- The pH of any and all discharges made from and during the Construction Phase of the Proposed Development shall be in the range of 6-9 units and not alter the pH of any receiving waters by more than +/- 0.5 pH units.
- Run-off from the working Site or any areas of exposed soil will be managed and controlled for the duration of the construction works until the permanently attenuated surface water drainage system is complete. A temporary positive drainage system shall be installed prior to the commencement of works.

- The level of suspended solids in any discharges to fisheries waters as a consequence of construction works shall not exceed 25mg/l, nor result in the deposition of silts on gravels or any element of the aquatic flora or fauna.
- A regular review of weather forecasts of heavy rainfall will be conducted, and a contingency plan will be prepared for before and after such events to minimise any potential nuisances. As the risk of the break-out of silt laden run-off is higher during these weather conditions, no work will be carried out during such periods where possible.
- Any imported materials will, as much as possible, be placed on site in their proposed location and double handling will be avoided. Where this is not possible designated temporary material storage areas will be used.
- All containment and treatment facilities will be regularly inspected and maintained.
- If cast-in-place concrete is required, all work must be carried out in the dry and effectively isolated from any water courses or drainage ditches.
- Refuelling of plant during the Construction Phase will only be carried out at designated refuelling station locations on site. Each station will be fully equipped for spill response and a specially trained and dedicated Environmental and Emergency Spill Response team will be appointed before the commencement of works on site.
- Only emergency breakdown maintenance will be carried out on site. Drip trays and spill kits will be available on site to ensure that any spills from vehicles are contained and removed off site.
- All personnel working on site will be trained in pollution incident control response. Emergency silt control & spillage response procedures contained within the CMP will ensure that appropriate information will be available on site outlining the spillage response procedures and a contingency plan to contain silt during an incident.
- Any other diesel, fuel or hydraulic oils stored on site will be stored in bunded storage tanks- the bunded area will have a volume of at least 110% of the volume of the stored materials as per best practice guidelines (Enterprise Ireland, BPGCS005).
- Portaloos and/or containerised toilets and welfare units will be used to provide facilities for site personnel. All associated waste will be removed from site by a licenced waste disposal contractor.
- The Site Management Team will maintain a record of all receipts for the removal of toilet or interceptor waste off site to ensure its disposal in a traceable manner.

All wastewater generated on-site during the Construction Phase will be stored and disposed of appropriately by discharge to foul sewer or by tankering off site.

Under no circumstances will any untreated wastewater generated onsite (from equipment washing, road sweeping etc.) be released into nearby drains or watercourses.

Operational Phase Mitigation

Habitats and Flora

Soft landscaping will be managed in such a way as to promote pollinators (e.g., pollinator friendly mowing regime, planting of native wildflower meadows and native tree species), please see DFLA Landscape Plan and Landscape Rationale Report (DFLA, 2024) along with the Biodiversity Management Plan (BMP) prepared by Enviroguide (Enviroguide, 2024b) for the Site.

Fauna

No Operational Phase mitigation is required for fauna species.

Monitoring

No specific monitoring is required in terms of biodiversity. No significant effects or impacts to KERs are envisaged as a result of the Proposed Development.

17.3.4 Land, Soil and Geology

Construction Phase

With regards to the demolition of existing structures, during demolition of existing structures hazardous material on site is to be identified and removed following the correct procedures.

Excavation of existing subsoil layers will be required in order to allow for basement excavation, drainage and utility installation and provision of underground attenuation of surface water. Underlying subsoil layers are expected to be generally suitable for reuse as non-structural fill.

In the context of materials imported to site, these will be natural stones sourced from locally available quarries in accordance with the appropriate statutory guidelines, greenfield/inert soil imported under a Waste Permit issued by the local authority; or materials that have been approved as by-products by the EPA in accordance with the EPA's criteria for determining a material is a by-product, per the provisions of article 27(1) of the European Communities (Waste Directive) Regulations, 2011.

Imported materials will be granular in nature and used in the construction of road pavement foundations, drainage and utility bedding and surrounds. Imported fill may be required to raise the development to the required level for drainage.

Materials will be brought to site and placed in their final position in the shortest possible time. Any imported material will be kept separate from the indigenous arisings from the site. All excavation to accommodate imported material will be precisely co-ordinated to ensure no surplus material is brought to site beyond the engineering requirement.

Due to the site being brownfield, earthworks plant (e.g. dump trucks) and vehicles delivering construction materials to site (e.g. road aggregates, concrete deliveries etc.) have potential to cause rutting and deterioration of the soil layers, resulting in erosion and generation of sediment laden runoff. This issue can be particularly noticeable at site access points (resulting in deposition of mud and soil on the surrounding road network). Dust generation can also occur during extended dry weather periods as a result of construction traffic.

During the construction phase there is a risk of accidental pollution from the sources noted below. Accidental spills and leaks may result in contamination of the soils underlying the site.

- Storage of oils and fuels on site
- Oils and fuels leaking from construction machinery
- Spillage during refuelling and maintenance of construction machinery
- Use of cement and concrete during construction works

Groundwater vulnerability is mapped as *'low'* by the GSI at the proposed site. This vulnerability will likely be temporarily increased due to the removal of soils, subsoils and made ground cover during construction. Therefore, accidental spillages may have potential to impact on the '*locally important'* aquifer.

Any excavations associated with development of the site are expected to be moderate. The drainage infrastructure will require excavations of approximately 2.0m on average with 3.0m in the deepest sections. A basement is proposed for under blocks Blocks A, B, C, D, E & F and expected to be in the region of approximately 3m. It is possible that underlying geology may be disturbed in areas of deep excavation, this will be verified by site investigation works following the receipt of planning permission.

- All temporary construction compounds are to be removed upon completion of the construction phase. Such areas are to be reinstated in accordance with the landscape architects plan and engineer's drawings
- All construction waste and/or scrapped building materials are to be removed from site on completion of the construction phase
- Oil, fuel etc. storage areas are to be decommissioned on completion of the construction phase. Any remaining liquids are to be removed from site and disposed of at an appropriate licenced facility.
- All sediment control measures (e.g. sediment retention ponds) are to be decommissioned on completion of the construction phase. Such areas are to be reinstated in accordance with the landscape architects plan and engineer's drawing

Operational Phase

The operational phase of the development is unlikely to have any significant adverse impacts on the local geological/hydrogeological environment due to the environmental considerations incorporated into the design. These measures will seek to avoid or minimise potential effects, in the main, through the implementation of best practice construction methods and adherence to all relevant legislation.

Monitoring

Proposed monitoring during the construction phase in relation to the soil and geological environment are as follows:

- Adherence to the CEMP.
- Construction monitoring of the works (e.g. inspection of existing ground conditions on completion of cut to road formation level in advance of placing capping material, stability of excavations etc.).
- Inspection of fuel / oil storage areas.
- Monitoring cleanliness of adjacent road network, implementation of dust suppression and provision of vehicle wheel wash facilities.
- Monitoring of contractor's stockpile management (e.g. protection of excavated material to be reused as fill, protection of soils for removal from site from contamination).
- Monitoring sediment control measures (sediment retention ponds, surface water inlet protection etc.)

No ongoing monitoring is proposed on completion of the construction phase.

17.3.5 Water

Construction Phase

The following measures are proposed during the construction phase to mitigate against risks to the surrounding hydrological environment:

- Surface water runoff during the construction phase may contain increased silt levels (e.g. runoff across areas stripped of hardstanding) or become polluted by construction activities.
- Discharge of rainwater pumped from excavations may also contain increased silt levels (potential impact on existing hydrology e.g. discharge to existing open drain).
- Accidental spills and leaks associated with storage of oils and fuels, leaks from construction machinery and spillage during refuelling and maintenance contaminating the surrounding surface water and hydrogeological environments.

- Concrete runoff, particularly discharge of wash water from concrete trucks (potential impact on existing hydrology e.g. infiltration to ground).
- Discharge of vehicle wheel wash water (potential impact on existing hydrology e.g. discharge to existing surface water drainage infrastructure).
- Improper discharge of foul drainage from contractor's compound (impact on existing hydrology e.g. cross-contamination of existing surface water drainage.).
- Cross contamination of potable water supply to construction compound.

Operational Phase

Potential operational phase impacts are noted below:

- Accidental hydrocarbon leaks and subsequent discharge into piped surface water drainage network (e.g. along roads and in driveway areas).
- Increased impermeable surface area will reduce local ground water recharge and potentially increase surface water runoff (if not attenuated to greenfield runoff rate).
- Increased discharge to foul drainage network (Daily Foul Discharge Volume = approx. 955m³)
- Increased potable water consumption (Average Daily Domestic Demand = approx. 144.6m³)

Implementation of the mitigation measures described below will prevent and minimize the potential impacts of this interaction.

Monitoring

Proposed monitoring during the construction and operational phase in relation to the water and hydrogeological environment are as follows:

- Adherence to Construction Management Plan.
- Inspection of fuel / oil storage areas.
- Monitoring cleanliness of adjacent road network, implementation of dust suppression and vehicle wheel wash facilities.
- Monitoring sediment control measures (sediment retention ponds, surface water inlet protection etc.).
- Monitoring of discharge from sediment retention ponds (e.g. pH, sediment content).
- During the operational phase an inspection and maintenance contract is to be implemented in relation to the proposed Class 1 fuel / oil separators, hydrobrakes, SuDS and attenuation facilities.

17.3.6 Air Quality

17.3.6.1 Mitigation

Construction Phase

The proposed development has been assessed as having a low risk of dust soiling impacts and dust related human health impacts and a medium risk of dust-related ecological impacts during the construction phase as a result of earthworks, construction and trackout activities (see Section 8.3.3). Therefore, the following dust mitigation measures shall be implemented during the construction phase of the proposed development. These measures are appropriate for sites with a 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), 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.

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 bowsers and regularly cleaned.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
- Access gates to be located at least 10 m from receptors where possible.

Monitoring

- Undertake daily on-site and off-site inspections, where receptors (including roads) are nearby, to monitor dust, record inspection results in the site inspection log. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary, with cleaning to be provided if necessary.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.

Operational Phase

No mitigation is proposed for the operation phase of the proposed development as effects on air quality are predicted to be neutral and imperceptible.

17.3.6.2 Monitoring

Construction Phase

During working hours, dust control methods will be monitored as appropriate depending on the prevailing meteorological conditions. Monitoring of emissions is not proposed for the construction phase of the proposed development as effects are predicted to be imperceptible. Once the dust mitigation measures outlined in the mitigation section are implemented, then construction dust emissions will be imperceptible.

Operational Phase

There is no monitoring recommended for the operational phase of the development as impacts to air quality are predicted to be imperceptible.

17.3.7 Climate

17.3.7.1 Mitigation Measures

Construction Phase

Embodied carbon of materials and construction activities will be the primary source of climate impacts during the construction phase. The Demolition Justification Report which accompanies this planning application details some measures to reduce the embodied carbon of the demolition works. These include:

- Creating a demolition and construction program which allows for sufficient time to determine reuse and recycling opportunities for demolition wastes.
- Appointing a suitably competent demolition contractor who will undertake a pre-demolition audit detailing resource recovery best practice and identify materials/building components that can be reused/recycled.
- Materials will be reused on site within the new build areas where possible.
- The project shall review and determine compliance with the requirements set out in the EU taxonomy in relation to circular economy. This is specific to reuse, recycling and material recovery of demolition and construction wastes.

During the construction phase the following best practice measures shall be implemented on site to prevent significant GHG emissions and reduce impacts to climate:

- Appointing a suitably competent contractor who will undertake waste audits detailing resource recovery best practice and identify materials can be reused/recycled;
- Materials will be reused on site where possible;
- 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; and
- Sourcing materials locally where possible to reduce transport related CO_2 emissions.

In terms of impact on the proposed development due to climate change, during construction the Contractor will be required to mitigate against the effects of extreme rainfall/flooding through site risk assessments and method statements. The Contractor will also be required to mitigate against the effects of extreme wind/storms, temperature extremes through site risk assessments and method statements. All materials used during construction will be accompanied by certified datasheets which will set out the limiting operating temperatures. Temperatures can affect the performance of some materials, and this will require consideration during construction. During construction, the Contractor will be required to mitigate against the effects of fog, lighting and hail through site risk assessments and method statements.

Operational Phase

Some measures have been incorporated into the of the development to mitigate the impacts of future climate change. For example, adequate attenuation and drainage have been incorporated to avoid potential flooding impacts due to increased rainfall events in future years. These measures have been considered when assessing the vulnerability of the proposed development to climate.

No additional specific mitigation measures in relation to climate have been identified for the operational phase.

17.3.7.2 Monitoring

There is no monitoring proposed in relation to climate.

17.3.8 Noise

Mitigation measures for the construction phase are set out below in order to reduce potential impacts as far as practicable to within the adopted criteria for noise and vibration. These mitigation measures should be read in tandem with the specific noise mitigation measures in line with the DCC GPG for high risk sites.

Mitigation

Construction Phase – Noise

The contract documents will clearly specify the construction noise criteria included in this chapter which the construction works must operate within. The Contractor undertaking the construction of the works will be obliged to take specific noise abatement measures and comply with the recommendations of BS 5228-1:2009+A1:2014 *Code of Practice for Noise and Vibration Control on Construction and Open Sites – Noise* and the *European Communities*

(Noise Emission by Equipment for Use Outdoors) Regulations, 2001. These measures will ensure that:

- No plant used on site will be permitted to cause an ongoing public nuisance due to noise.
- The best means practicable, including proper maintenance of plant, will be employed to minimise the noise produced by on site operations.
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract.
- Compressors will be attenuated models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers.
- Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use;
- Any plant, such as generators or pumps that is required to operate outside of normal permitted working hours will be surrounded by an acoustic enclosure or portable screen.

BS 5228 -1:2009+A1 2014 includes guidance on several aspects of construction site practices, which include, but are not limited to: -

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

Detailed comment is offered on these items in the following paragraphs. Noise control measures that will be considered include the selection of quiet plant, enclosures and screens around noise sources, limiting the hours of work and noise and vibration monitoring, where required.

Selection of Quiet Plant

This practice is recommended in relation to static plant such as compressors and generators. It is recommended that these units be supplied with manufacturers' proprietary acoustic enclosures. The potential for any item of plant to generate noise will be assessed prior to the item being brought onto the site. The least noisy item should be selected wherever possible. Should a particular item of plant already on the site be found to generate high noise levels, the first action should be to identify whether or not said item can be replaced with a quieter alternative.

Noise Control at Source

If replacing a noisy item of plant is not a viable or practical option, consideration will be given to noise control "at source". This refers to the modification of an item of plant or the application of improved sound reduction methods in consultation with the supplier. For example, resonance effects in panel work or cover plates can be reduced through stiffening or application of damping compounds; rattling and grinding noises can often be controlled by fixing resilient materials in between the surfaces in contact.

Referring to the potential noise generating sources for the works under consideration, the following best practice

migration measures should be considered:

- Where practical, site compounds will be located in excess of 30m from noise sensitive receptors within the site constraints. The use lifting bulky items, dropping and loading of materials within these areas should be restricted to normal working hours.
- For mobile plant items such as dump trucks, excavators and loaders, the installation of an acoustic exhaust and or maintaining enclosure panels closed during operation can reduce noise levels by up to 10dB. Mobile plant should be switched off when not in use and not left idling.
- For concrete mixers, control measures should be employed during cleaning to ensure no impulsive hammering is undertaken at the mixer drum.
- For all materials handling ensure that materials are not dropped from excessive heights, lining drops chutes and dump trucks with resilient materials.
- For compressors, generators and pumps, these can be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation.
- Demountable enclosures can also be used to screen operatives using hand tools and will be moved around site as necessary.
- All items of plant should be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures.

Screening

Screening is an effective method of reducing the noise level at a receiver location and can be used successfully as an additional measure to all other forms of noise control. Construction site hoarding will be constructed around the site boundaries as standard. The hoarding will be constructed of a material with a mass per unit of surface area greater than 7 kg/m^2 to provide adequate sound insulation.

In addition, careful planning of the site layout will also be considered. The placement of site buildings such as offices and stores will be used, where feasible, to provide noise screening when placed between the source and the receiver.

Liaison with the Public

A designated environmental liaison officer will be appointed to site during construction works. Any noise complaints should be logged and followed up in a prompt fashion by the liaison officer. In addition, where a particularly noisy construction activity is planned or other works with the potential to generate high levels of noise, or where noisy works are expected to operate outside of normal working hours etc., the liaison officer will inform the nearest noise sensitive locations of the time and expected duration of the noisy works.

Monitoring

Where required, construction noise monitoring will be undertaken at periodic sample periods at the nearest noise sensitive locations to the development works to check compliance with the construction noise criterion.

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

Project Programme

The phasing programme will be arranged so as to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. During excavation/ demolition or other high noise generating works are in progress on a site at the same time as other works of construction that themselves may generate significant noise and vibration, the working programme will be phased so as to prevent unacceptable disturbance at any time.

Construction Phase – Vibration

The vibration from construction activities will be limited to the values set out in Section 10.2. Magnitudes of vibration slightly greater than those in the table are normally unlikely to cause cosmetic damage, but construction work creating such magnitudes should proceed with caution. Limit values have been provided for soundly constructed residential and commercial properties.

Operational Phase – Noise

Additional Traffic on Adjacent Roads

During the operational phase of the development, noise mitigation measures with respect to the outward impact of traffic from the development are not deemed necessary.

Mechanical Services Plant

Taking into account that sensitive receivers within the development are much closer than off-site sensitive receivers, once the relevant noise criteria is achieved within the development it is expected that there will be no negative impact at sensitive receivers off site, and therefore no further mitigation required.

Inward Noise

As is the case in most buildings, the glazed elements and ventilation paths of the building envelope 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, noise intrusion via the wall construction will be minimal.

In this instance, the facades highlighted in Figure 10.12 (see Figure 17.1 overleaf) and Figure 10.13 (see Figure 17.2

overleaf) will be provided with glazing and ventilation that achieves the minimum sound insulation performances as set out in Table 17.3.7.1 and Table 17.3.7.2 (overleaf). Other facades in the development have no minimum requirement for sound insulation.

Mark-up	Octave Band Centre Frequency (Hz)						R_w
	125	250	500	1000	2000	4000	
RED	26	27	34	40	38	46	**37**
ORANGE	26	29	33	28	24	24	**33**

Table 17.3.7.1: Sound Insulation Performance Requirements for Glazing, SRI (dB)

The overall R_w and $D_{ne,w}$ outlined in this section are provided for information purposes only. The over-riding 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 9.22 and Table 9.23 or greater.

The following performance requirements apply to all ventilation paths from outside the building. This can be achieved by passive acoustic wall or window vents or via mechanical ventilation systems.

Octave Band Centre Frequency (Hz)						$D_{n,e,w}$
125	250	500	1000	2000	4000	
30	33	38	37	36	36	**38**

Table 17.3.7.2: Sound Insulation Performance Requirements for Ventilation, $D_{n,e,w}$ (dB)

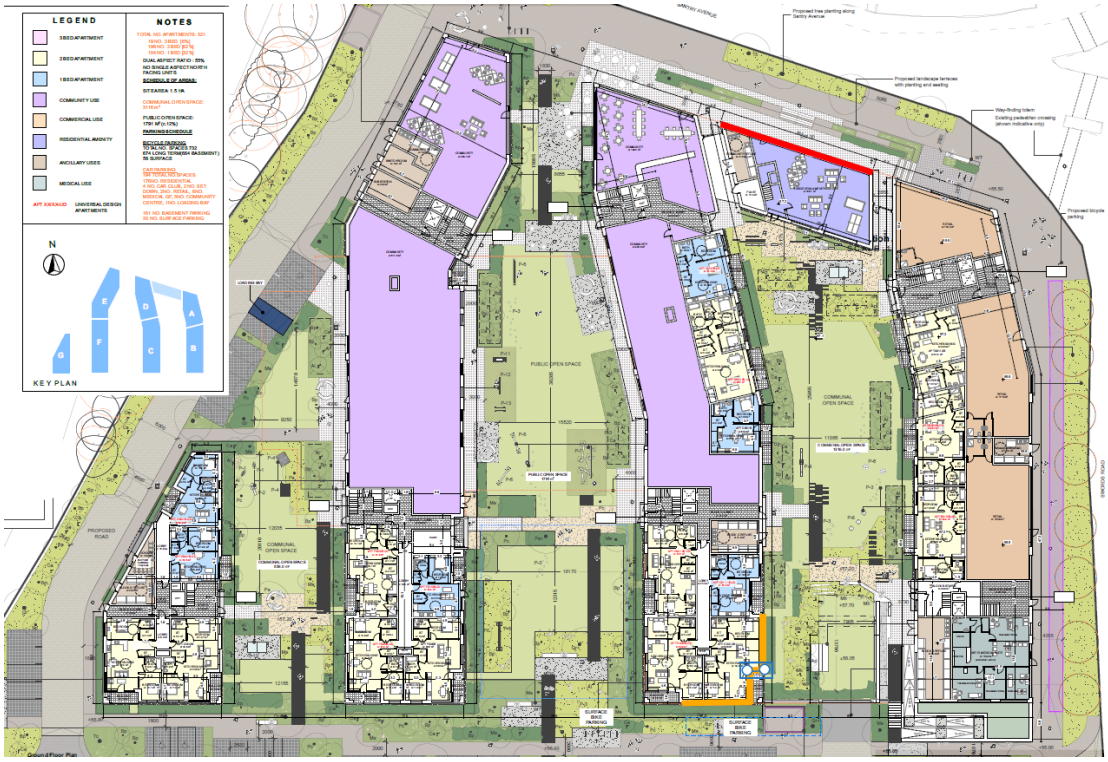

Figure 17.2 Façade Acoustic Requirements – Ground Floor

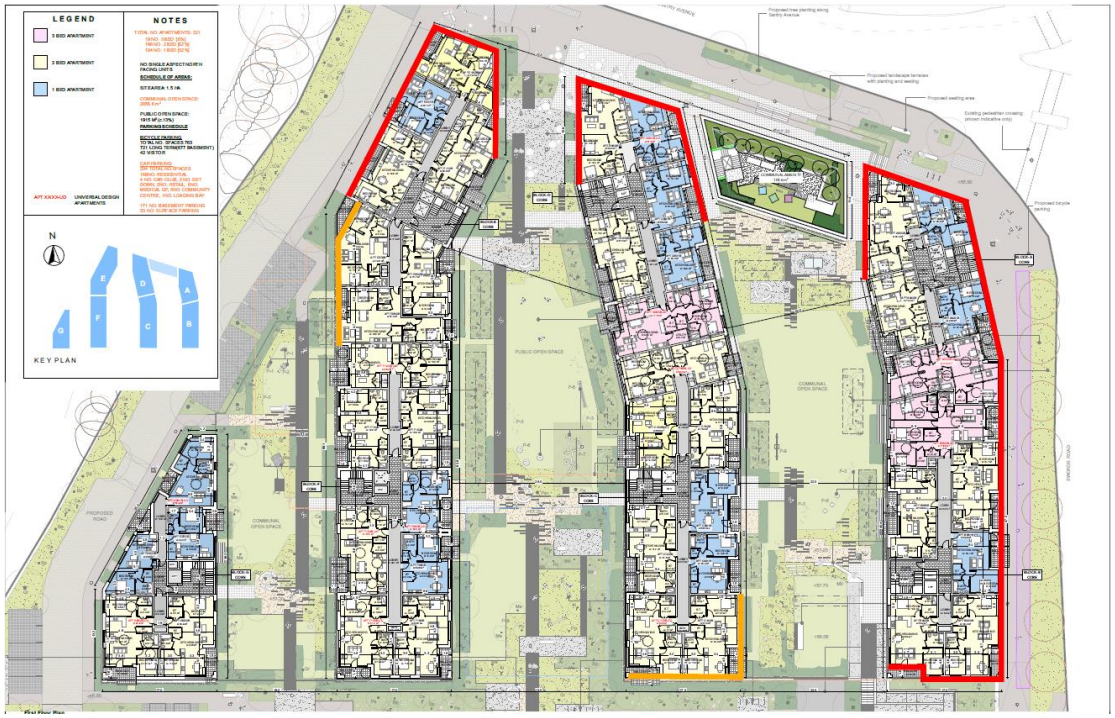

Figure 17.3: Façade Acoustic Requirements – First Floor to Seventh Floor

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 can be achieved through consideration of the proposed façade elements at the design stage. The calculated glazing and ventilation specifications are preliminary and are intended to form the basis for noise mitigation at the detailed design stage. Consequently, these may be subject to change as the project progresses.

Operational Phase – Vibration

No vibration mitigation measures are required applicable the operational phase.

17.3.9 Material Assets: Built Services

Construction Phase

The construction works contractor shall liaise with the relevant utilities provider prior to works commencing, with on-going consultation throughout the proposed development. Where new services would be required, the construction works contractor shall apply to the relevant utility provider and adhere to the requirements outlined in the connection permit / licence.

The Contractor will be obliged to put measures in place to ensure that there are no interruptions to existing services unless this has been agreed in advance with the relevant service provider.

All works in the vicinity of utilities apparatus will be carried out in ongoing consultation with the relevant utility company or local authority and will be in compliance with any requirements or guidelines they may have.

Where new services or diversions to existing services are proposed, the Contractor will apply to the relevant utility company for a connection permit where appropriate, and will adhere to their requirements.

Mitigation measures proposed in relation to the construction stage include the following:

A detailed *"Construction Management Plan"* will be developed and implemented during the construction phase. Site inductions will include reference to the procedures and best practices as outlined in the "Construction Management Plan".

The construction works contractor shall liaise with the relevant utility providers prior to works commencing, with on-going consultation throughout the proposed development. Where new services are required, the construction works contractor shall apply to the relevant utility provider and adhere to the requirements outlined in the connection permit / licence.

The Contractor will be obliged to put measures in place to ensure that there are no interruptions to existing services unless this has been agreed in advance with the relevant service provider.

All works in the vicinity of utilities apparatus will be carried out in ongoing consultation with the relevant utility company or local authority and will be in compliance with any requirements or guidelines they may have.

Where new services or diversions to existing services are proposed, the Contractor will apply to the relevant utility company for a connection permit, where appropriate, and will adhere to their requirements.

Where possible, backup network supply to any services will be provided should the need for relocation or diversion or existing services be required. Otherwise, relocation or diversion works will be planned to incur minimal impact, with users notified in advance of any works.

Connections to the utility networks will be coordinated with the relevant utility provider and carried out by approved contractors.

Operational Phase

Please refer to Chapter 7 of this EIAR *"Water"* for mitigation measures associated with the surface water treatment. All new drainage lines (foul and surface water) will be pressure tested and will be subject to a CCTV survey to identify any possible defects prior to being made operational.

Chapter 7 includes the mitigation measures associated with the surface water system for the development.

Water conservation methods such as the use of low flush toilets and low flow taps should be incorporated into dwellings to reduce water volumes and related treatment and abstraction costs of the development.

Similarly, water conservation methods would reduce the loading on the foul sewer network. As part of the development, a number of different SuDS measures are proposed to minimise the impact on water quality and quantity of the runoff and maximise the amenity and biodiversity opportunities within the site.

The measures detailed below have been designed to take account of potential percolation but have not been incorporated into any storage calculations. This will result in additional storage being available in extreme events.

The proposed SuDS measures will include a combination of Source Control, Site Control and Regional Control measures as part of a Management Train whereby the surface water is managed locally in small sub-catchments rather than being conveyed to and managed in large systems further down the catchment. The combination of SuDS measures will maximise the potential for surface water interception, reducing the impact on the existing surface water drainage network. The proposed techniques will offer a high level of treatment processes and nutrient removal of the turnoff, particularly during the *"first flush"*.

The proposed development is located within an area designated for the type of development proposed.

As such the services pertaining to the development are required to facilitate the proposed scheme. It is not possible to not provide the services required. Notwithstanding this, the potable water, foul and stormwater services have all been designed in accordance with the requirements of the various stake holders, notable, Irish Water for the foul and potable water utilities and Dublin City Council for the surface
water services.

Monitoring

All internal potable water and drainage services within the proposed development will be monitored by the local authority / management firm and their maintenance personnel will routinely inspect and carry out maintenance as required. The external potable water and foul drainage connections to the public system will be maintained by Irish Water. The public surface water drainage connections and sewers will be maintained by Dublin City Council.

The electricity network will be monitored by ESB networks. Telecoms will be monitored by EIR and Gas Networks Ireland will monitor the existing gas network.

17.3.10 Material Assets: Transportation

Construction Phase

All construction activities on-site will be governed by a Construction Traffic Management Plan (CTMP), the details of which will be agreed in full with Dublin City Council (DCC) prior to the commencement of construction activities on site.

A Construction Management Plan is prepared as part of the planning application with an associated Construction Traffic Management Plan (CTMP) which incorporates a range of integrated control measures and associated management activities with the objective of minimising the construction activities associated with the development. The following initiatives will be implemented to avoid, minimise and/or mitigate against the anticipated construction period impacts:

- The works will be undertaken across three phases thereby minimising the otherwise concentration of construction activities into a single defined period.
- During the pre-construction phase, the site will be securely fenced off from adjacent properties, public footpaths and roads;
- Appropriate on-site parking and compound area will be provided to prevent overflow onto the local network;
- It is likely that some numbers of the construction team will be brought to/from the site in vans/minibuses, which will serve to reduce the trip generation potential;
- Delivery vehicles to and from the site will be spread across the course of the working day, therefore, the number of HGVs travelling during the peak hours will be relatively low;
- Truck wheel washes will be installed at construction entrances and any specific recommendations with regard to construction traffic management made by Westmeath County Council will be adhered to;
- Potential localised traffic disruptions during the construction phase will be mitigated through the implementation

of industry standard traffic management measures. These traffic management measures shall be designed and implemented in accordance with the Department of Transport's Traffic Signs Manual *"Chapter 8 Temporary Traffic Measures and Signs for Roadworks*" and "*Guidance for the Control and Management of Traffic at Roads Works – 2nd Edition*" (2010); and

- Site entrance point/s from the public highway will be constructed with a bound, durable surface capable of withstanding heavy loads and with a sealed joint between the access and public highway. This durable bound surface will be constructed for a distance of 10m from the public highway.
- Material storage zone will be established in the compound area and will include material recycling areas and facilities;
- *'Way finding'* signage will be provided to route staff / deliveries into the site and to designated compound / construction areas;
- Dedicated construction haul routes will be identified and agreed with Westmeath County Council prior to commencement of activities on-site; and
- On completion of the works, all construction materials, debris, temporary hardstands etc. form the site compound will be removed off-site and the site compound area reinstated in full on completion of the works.

Operational Phase

A package of integrated mitigation measures has been identified to off-set the additional local demand that the proposed residential development at the subject site could potentially generate as a result of the forecast increase in vehicle movements by residents of the scheme. The identified measures and associated timescale for their implementation are summarised below.

- **Management** – A Mobility Management (MMP) has been compiled by DBFL with the aim of guiding the delivery and management of coordinated initiatives by the scheme promotor to be implemented upon occupation of the site. The MMP will ultimately seek to encourage sustainable travel practices for all journeys to and from the proposed development.

- **Car Parking Management Strategy** - A management regime will be implemented by the development's management company to control and actively manage the availability of on-site car parking for residents. The signing of a rental agreement for one of the proposed residential apartments will NOT include access to a designated on-site parking space. All potential residents (prior to signing rental agreement) will be notified that the proposed scheme is a '*low car allocation'* development with no access (or guarantee thereof) to either (i) the limited on-site residents car parking provision or (ii) apply to Dublin City Council for a residents parking permit (to park on-street in one of the neighbouring streets). Nevertheless, all residents of the proposed residential apartment scheme will have the opportunity to apply to the on-site management company for both a (i) residents car parking permit (updated weekly, fortnightly, monthly, quarterly or annually) and subsequently access to a dedicated (assigned) on-site basement car parking space or (ii) a visitor's car parking permit for a short period of time. A charge will be applied to obtain a permit with the objective of covering the associated management costs and discouraging long term usage of the car parking space. All surface located parking bays will also be subject to parking management regime.

- **Infrastructure** – Infrastructure measures identified to reduce reliance of private vehicles include the provision of ample secure cycle parking on site and ensuring a design which promotes permeability for pedestrians and cyclists

to, through and from the development. The level of parking provision for the development will also act as a powerful mobility management measure, ensuring against an overprovision of parking and a resultant over reliance on the private vehicle. Development also proposes dedicated pedestrian footpaths and cycle paths throughout the development site.

- **Car Sharing –** The provision of 4 no. dedicated car share (GoCar) spaces for the use of the scheme's residents. The availability of these on-site provide a viable alternative to residents owning private vehicles whilst still having access to a car as and when required

Monitoring

During the construction stage, the following monitoring exercises are proposed:

- Compliance with construction vehicle routing practices;
- Compliance with construction vehicle parking practices;
- Internal and external road conditions; and
- Timing of construction activities.

During the operational stage, and as part of the MMP process, bi-annual post occupancy surveys are to be carried out in order to determine the success of the measures and initiatives as set out in the proposed MMP document. The information obtained from the monitoring surveys will be used to identify ways in which the MMP measures and initiatives should be taken forward in order to maintain and further encourage sustainable travel characteristics.

17.3.11 Material Assets: Resource and Waste Management

Construction Phase

A project specific R&WMP 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 13.1. The mitigation measures outlined in the RWMP will be implemented in full and form part of mitigation strategy for the site. The mitigation measures presented in this RWMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the excavation and construction phases of the proposed development.

- Prior to commencement, the appointed Contractor(s) will be required to refine / update the R&WMP (Appendix 12.1) in agreement with DCC or submit an addendum to the R&WMP to DCC, detailing specific measures to minimise waste generation and resource consumption, and provide details of the proposed waste contractors and destinations of each waste stream.

- The Contractor will be required to fully implement the R&WMP throughout the duration of the proposed construction and demolition phases.

A quantity of topsoil, sub soil, clay and made ground which will need to be excavated to facilitate the proposed development. Project Engineers have estimated that c. 20,000 m^3 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 with an aim 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;
- 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, if required. If any of the material is to be reused on another site as by-product (and not as a waste), this will be done in accordance with Regulation 27 of the EC (Waste Directive) Regulations (2011-2020). EPA approval will be obtained prior to moving material as a by-product.
National End-of-Waste Decision EoW-N001/2023 (Regulation 28) establishes criteria determining when recycled aggregate resulting from a recovery operation ceases to be waste. Material from this proposed development will be investigated to see if it can cease to be a waste under the requirements of the National End of Waste Criteria for Aggregates.

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, the EMR Waste Management Plan 2015 – 2021 and the draft NWMPCE. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will promote more sustainable consumption of resources.

Operational Phase

A project specific OWMP has been prepared and is included as Appendix 13.2.

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 EMR Waste Management Plan 2015 – 2021, the draft NWMPCE, Waste Action Plan for a Circular Economy – Waste Management Policy in Ireland and the DCC waste bye-laws.

- The tenants / operators / facilities management company(s) of the 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 tenants / operators / facilities management company(s) 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 Operator 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;
- Medical Waste;
- Confidential Paper
- 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 / tenants / operator / facilities management company will ensure that all waste materials will be stored in colour coded bins or other suitable receptacles in designated, easily accessible locations. Bins will be clearly identified with the approved waste type to ensure there is no cross contamination of waste materials;
- The residents / tenants / operator / facilities management company will ensure that all waste collected from the site of the Proposed Development will be reused, recycled, or recovered, where possible, with the exception of those waste streams where appropriate facilities are currently not available; and
- The residents / tenants / operator / facilities management company will ensure that all waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted, or licensed facilities.

These mitigation measures will ensure the waste arising from the Proposed Development during the operational phase is dealt with in compliance with the provisions of the Waste Management Act 1996 as amended, associated regulations, the Litter Pollution Act 1997, the EMR Waste Management Plan 2015 – 2021, the draft NWMPCE and the DCC Waste Bye-Laws. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved.

Monitoring

For the *"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.

During the "*Operational Phase*", waste generation volumes should be monitored by the residents, tenants operator / buildings Management. 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 contactor costs.

17.3.12 Archaeology and Cultural Heritage

Construction Phase

Based on the results of the desktop assessment there is some potential for medieval agricultural features relating to St Pappan's Church to the east or to the manor of Santry, which was located to the north, however these were not identified within the site directly to the south where only 19th century agricultural features were identified.

Operational Phase

Not applicable.

Monitoring

It is recommended that archaeological monitoring be carried out under licence after the demolition of the existing building during the removal of the concrete layer. Any features encountered during the monitoring programme should be tested, and if archaeological fully excavated by hand to preserve them by record. In the event of a grant of planning permission it is recommended that the removal of the concrete slab be monitored under licence and, after the demolition of the existing structure, a programme of archaeological testing be carried out across the site prior to any further groundworks on site.

In the unlikely event that significant archaeology is uncovered a revised mitigation plan may be necessary, which will be agreed upon in discussion with the City Archaeologist and The National Monuments Service. Time should be allowed between the monitoring works and any construction or service laying in case archaeological features are uncovered.

These recommendations have been made in consultation with the Archaeology, Conservation & Heritage Department of Dublin City Council. A report on the results of the monitoring programme should be submitted to the City Archaeologist and the National Monuments Service following the completion of the works. All recommendations are subject to the approval of the City Archaeologist and the National Monuments Service

17.3.13 The Landscape

Construction Phase

It is considered that the initial development will have a moderate effect on the existing brownfield character of the site. The landscape and visual change will be most pronounced during the mobilisation and construction stage, when activity is unfamiliar and when the existing character of the lands is altered by demolition and the removal of existing trees and vegetation. The changes arising from the initial site development and construction works will have slight negative landscape and visual effects.

In the medium to long term, the landscape effects (both on vegetation and character) would be moderate and positive, due to the conversion of the site from a vacant and industrial site to a considered high quality public realm and

sequence of landscape spaces, both communal spaces and public open spaces. The landscape design provides for a detailed, permeable and site-specific response to the provision of high-quality public open spaces. The open space network provides for an attractive and diverse range of amenity and recreational opportunities. Equally the open space network enhances the strong urban design framework for the site.

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In the medium to long term, the landscape effects (both on vegetation and character) would be moderate and positive, due to the conversion of the site from a vacant and industrial site to a considered high quality public realm and sequence of landscape spaces, both communal spaces and public open spaces. The landscape design provides for a detailed, permeable and site-specific response to the provision of high-quality public open spaces. The open space network provides for an attractive and diverse range of amenity and recreational opportunities. Equally the open space network enhances the strong urban design framework for the site.

The following mitigation measures are proposed:

- Restrict hours of construction activity in accordance with local authority guidance
- Extend hoarding to restrict views of the site during construction
- Construct changes to topography and retaining elements in accordance with the proposed landscape plan to ensure that sight lines are retained across the site where required e.g. pedestrian route along the northern boundary.
- Plant tree species and sizes as per the proposed landscape plan in order to screen the development and create an appropriate landscape at ground level
- There are communal roof terraces included for residents which will be visible from the surrounding neighbourhood. The terraces will include tree, hedge and herbaceous planting.

Operational Phase

The mitigation measures, including measures taken during the design stage, which have evolved throughout the design process, that have been adopted in the proposed scheme and are detailed in the Landscape Plan, are as follows:

- Maintain all proposed vegetation to ensure that sight lines are retained across the site where required e.g. pedestrian route along the northern boundary;

- Maintain and manage proposed tree planting to ensure that it matures in accordance with industry best practice

- Application of best practice horticultural methods to ensure that mitigation measures establish and grow appropriately.

Landscape works are proposed to reduce and offset any adverse impacts generated due to the proposed development, where possible. The planting of substantial numbers of new trees and other planting in the open spaces the site boundaries and internal roads will enhance the overall appearance of the new development and compensate for the removal of hedgerows and trees where needed for the construction works, and increase the overall landscape capacity of the site to accommodate development.

Monitoring

The landscape design will be subject to a detailed design and construction process supervised by a qualified Landscape Architect to ensure that the design is implemented in accordance with best practice. A suitably qualified Arborist should be retained to supervise the implantation of tree protection measures in accordance with best practice.

Monitoring of the completed landscape works will be undertaken on a regular basis post completion. The proposed plantings will be subject to a defects and maintenance period for initial establishment and if any replacement trees or plantings are required these works shall be carried out during this period.