REPORT

Environmental Impact Assessment Report

Carmanhall Road SHD 2022

Submitted to:

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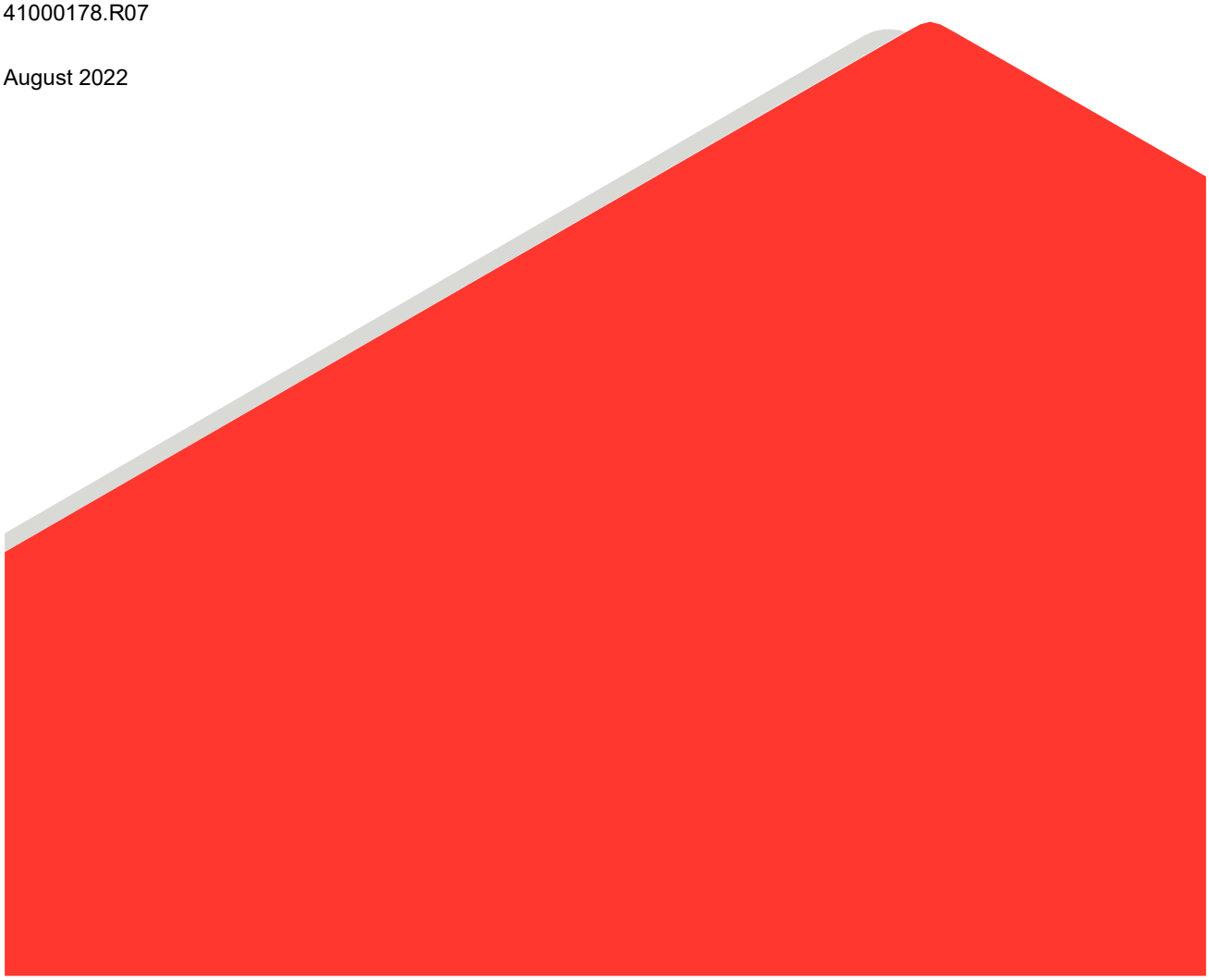

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1.0 INTRODUCTION AND BACKGROUND

1.1 EIAR and Proposed Development

Golder, member of WSP in Ireland, (Golder) has been commissioned to prepare an Environmental Impact Assessment Report (EIAR) on behalf of Atlas GP Ltd, as Developer and Applicant for the Carmanhall Road Strategic Housing Development (SHD) 2022, (the 'Proposed Development'), on lands located at the former Avid Technology Site, at the junction of Carmanhall Road and Blackthorn Road in the Sandyford Industrial Estate, Dublin 18 (the 'Site' / 'Application Site'). The Proposed Development is a stand-alone application however the development has been designed as part of a masterplan in combination with an adjacent site, referred to as the 'Tack Sandyford SHD' (see Chapter 3 for further details). This Environmental Impact Assessment Report (EIAR) sets out the details of the technical assessments that have been carried out as part of the EIA process and identifies the potential for environmental effects to arise as a result of the Proposed Development. Chapter 2 of this EIAR contains details of the scope and methodology of the EIA process that has been followed.

1.2 Context and Description of the Proposed Masterplan

The Proposed Development is located on the south-western corner of the intersection of Carmanhall Road and Blackthorn Road in the Sandyford Industrial Estate, Dublin 18, (Figure 1.1). The Site is located within Zone 5 (Residential) of the Sandyford Urban Framework Plan. Dún Laoghaire-Rathdown County Council (DLRCC) have identified Specific objectives (A2 1 to A2 5) in relation to the creation of Sustainable Residential Neighbourhoods, that preserve and protect residential amenity in Zone 5 of the Sandyford Business District. A Specific Local Objective, SLO 52, has been included in the Plan for Carmanhall Road Neighbourhood to ensure the appropriate provision of social and community infrastructure to serve the needs of the resident and employee population (DLRCC 2022). The Site is located ca. 8.8 km south-east of Dublin City Centre.

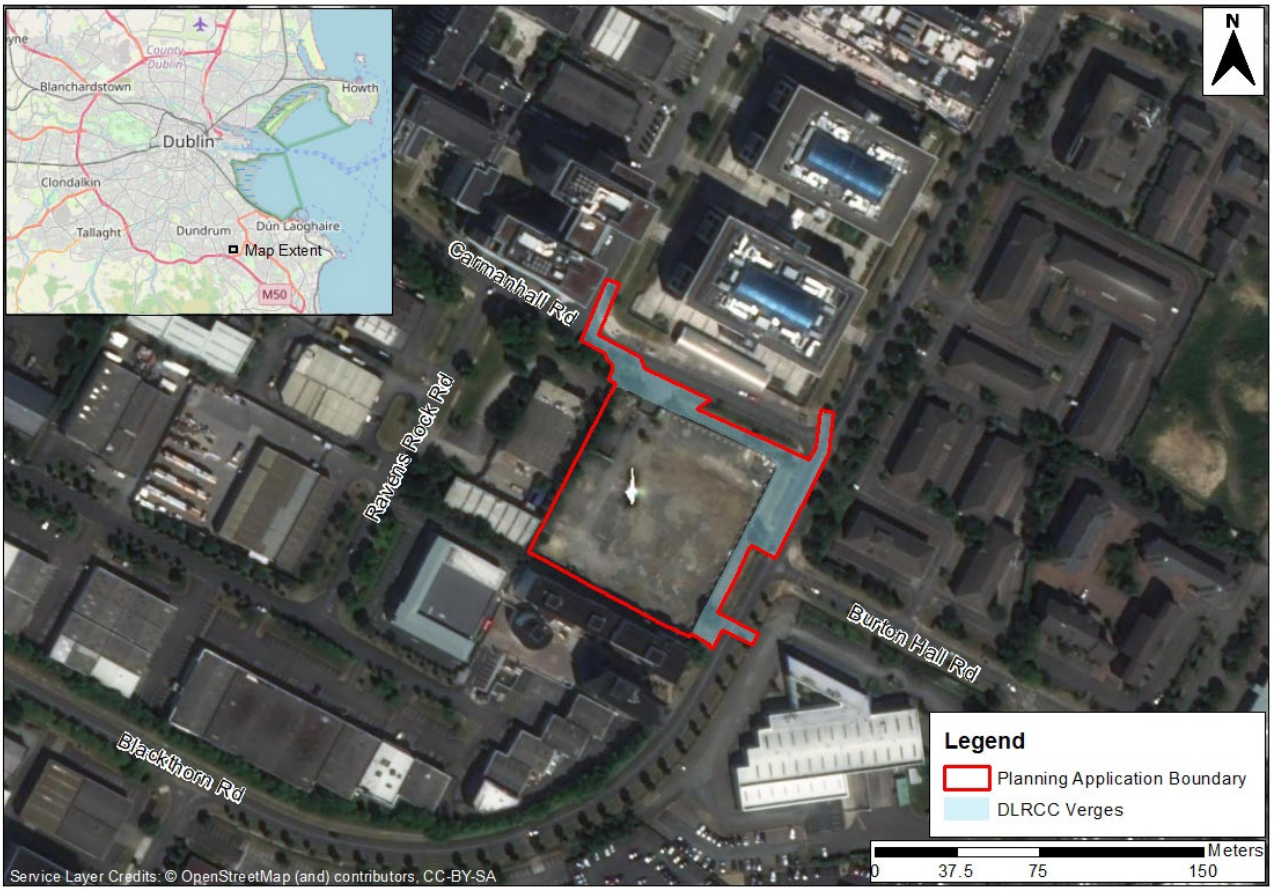

Figure 1.1: Location and Application Boundary of the Proposed Carmanhall Road SHD 2022

The Application Site is a brownfield site that is the location of the former Avid Technology site. The site was previously occupied by a double storey office building and associated carpark (recently demolished). The Site has been reduced and cleared to ground level and is currently vacant.

Carmanhall Road abuts the Site's northern boundary and Blackthorn Road abuts the Site's Eastern boundary. Opposite the Application Site to the north is Arkle Road with two significant office developments on each side, The Chase (eight-storey) and Nova Atria building (six-storey). The vacant former Tack Packing Site is located to the west of the Site. The three-storey Mercury office building is situated to the southwest and Three Rock Plaza comprising four- to six-storey building blocks is located to the south. A two-storey building is located to the east of the Site, beyond Blackthorn Road.

Vehicular access is currently provided in the north-eastern corner of the Site via a crossover to Carmanhall Road. The Site slopes from south to north towards Carmanhall Road, with a difference in elevation of approximately 3 m across the Site.

Landscaping proposals include communal landscaped space that will be provided within a central courtyard. Chapter 3 –Project Description sets out further details and illustrations of the proposed built development and landscaping proposals.

Specifically:

- *The proposed development consists of 334 Build to Rent residential apartment units within 4 no. apartment blocks and as follows:*
  - *79 No. Studio*
  - *175 No. 1 bed*
  - *80 No. 2 bed*
- *All residential units provided with private balconies/terraces to the north/south/east and west elevations;*
- *Crèche 272 sq.m.;*
- *Residential amenity spaces 896 sq.m. (including resident's gym, business centre, multipurpose room, staff facilities, multimedia/cinema room, shared working space, concierge and games room);*
- *Height ranging from 5 to 16 storeys (over basement);*
- *Landscaped communal space in the central courtyard;*
- *Provision of a new vehicular entrance from Carmanhall Road and egress to Blackthorne Road;*
- *Provision of pedestrian and cycle connections;*
- *125 No. Car Parking, 6 No. Motorcycle Parking and 447 cycle spaces at ground floor/under croft and basement car park levels;*
- *Plant and telecoms mitigation infrastructure at roof level;*
- *The development also includes 2 no. ESB substations, lighting, plant, storage, site drainage works and all ancillary site development works above and below ground.*

1.3 Need for an EIAR

EIA is a process undertaken for certain types of development. It provides a means of drawing together the findings from a systematic analysis of the likely significant environmental effects of a scheme to assist planning

authorities, statutory consultees and other key stakeholders in their understanding of the impacts arising from the development.

The European Union's 1985 EIA Directive (85/337/EEC) was amended by Directives 97/11/EC, 2003/35/EC and 2009/31/EC, and the Directive and its amendments were codified in 2011 by Directive 2011/92/EU. The current Directive 2014/52/EU amends the 2011 codified Directive but does not replace it.

This amending Directive was transposed into national planning consent procedures in September 2018 through the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018).

The following is stated by the Department of Housing, Planning and Local Government in the Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment, (August 2018):

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

The EIA Directive (Directive 2011/92/EU, as amended by Directive 2014/52/EU) prescribes a range of environmental factors which are used to organise descriptions of the environment and these factors must be addressed in the EIAR. Article 3(1) of the EIA Directive states 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).*

EIA is mandatory for certain types of projects and for other projects that meet or exceed thresholds as set out in Annexes I and II of the EIA Directive (and Part 1 and Part 2 of Schedule 5 of the Planning and Development Regulations 2001, as amended).

A review of the Planning and Development Regulations (2001, as amended) Schedule 5 Part 1 thresholds (Developments for the purposes of Part 10), indicates that the Proposed Development is not of a size which requires a mandatory EIA.

Furthermore, with regards to Schedule 5 Part 2 of the Planning and Development Regulations (2001, as amended) the Proposed Development is not classified as an Infrastructure Project under Class 10, as it: comprises less than 500 dwelling units, (Class 10(b)(i)); and it does not involve an area greater than 2 hectares within a business district, (Class 10(b)(iv)).

Notwithstanding the above thresholds, and having regard to the specific characteristics and nature of this site, its size, and the quantum of development proposed, an EIAR has been prepared to accompany this SHD application to An Bord Pleanála.

The EIAR for the Proposed Development sets out the likely significant effects on the receiving environment which may arise during the construction and operation/occupation of the scheme. The EIAR also identifies potential cumulative and interacting effects which may arise when considered with other relevant nearby development proposals

The significance and magnitude of these effects is assessed, and where appropriate, mitigation and monitoring measures are identified for implementation during the respective construction and operation/occupation phases of the scheme.

1.4 The Planning Applicant

The Applicant for the proposed Carmanhall Road SHD 2022 Development is Atlas GP Ltd, with a registered address of 7th Floor O'Connell Bridge House, 27/28 D'Olier Street, Dublin 2, D02 RR99. Atlas GP Ltd are a subsidiary of the Marlet Property Group.

The Marlet Property Group is one of Ireland's largest independently owned property development companies. The Marlet Group possess an extremely diverse property portfolio which includes major mixed-use developments, Build to Rent apartment schemes, student accommodation, hotels and aparthotels.

As an industry leader, Marlet believe that it has a responsibility to provide the safest and healthiest places for people to live, work, and play. Their efforts go beyond the design and construction phase and the materials that are used. Marlet challenge themselves to reduce the environmental footprint and incorporate the latest sustainability and innovation into their projects.

1.5 Relationship of the EIAR to the Planning Application

This EIAR accompanies the planning application for the Carmanhall Road SHD 2022 that will be made to An Bord Pleanála ('The Board'). It includes a separate Non-Technical Summary (NTS), which consists of an easily accessible summary of the EIAR, using non-technical language. The NTS is intended to be understandable to those without a background to the project or the relevant technical disciplines.

The overall SHD application documentation also includes the following:

- Application forms, notices and covering letter;
- Statement of Consistency and Planning Report;
- Social and Community Audit;
- Architectural Design Statement, Plans, Drawings and Residential Quality Audit;
- Landscape Design Statement and Drawings;
- Preliminary Construction Management Plan, Preliminary Construction Environmental Management Plan, Preliminary Construction Demolition Waste Management Plan and Resource & Waste Management Plan for Construction & Demolition Waste;
- Operational Waste Management Plan;
- Daylight & Sunlight Analysis;
- Property Management Strategy Report; and
- Other reporting such as, Design and Engineering Statements, Infrastructure reports, and Flood Risk Assessment.

1.6 EIAR Document and Chapter Structure

The assessment of the environmental impacts associated with the proposed the development are set out in this EIAR and comprises the following chapters as set out in Table 1.1.

The responsible parties examining the respective disciplines have also been described in Table 1.2. Relevant competent persons leading each discipline have been identified in Section 1.7.

Table 1.1: Carmanhall Road SHD 2022 EIAR Chapter Structure

EIAR Chapter	Chapter Title	Responsibility
1	Introduction and Background	Golder
2	Scope and Methodology	Golder
3	Project Description	Golder
4	Population and Human Health	Golder
5	Ecology and Biodiversity	Golder
6	Land, Soils and Geology	Golder
7	Water	Golder
8	Air Quality and Climate	Golder
9	Noise and Vibration	ITP Energised
10	Cultural Heritage	Franc Myles (Archaeology & Built Heritage Ltd)
11	Traffic and Transport	Waterman Moylan
12	Wind	BFluid
13	Landscape and Visual	Macro Works
14	Material Assets	Golder & Independent Site Management
15	Interactions, Cumulative and Combined Effects	All appropriate discipline leads
16	Mitigation and Monitoring Measures	All appropriate discipline leads

1.7 EIA Project Team

The choice of team members for each study has been informed by the experience of the relevant lead specialist in their area of technical interest.

In accordance with Article 5(3)(a) of the EIA Directive, ('the developer shall ensure that the environmental impact assessment report is prepared by competent experts'), an EIA project team has been chosen that are sufficiently qualified and experienced to be deemed "competent experts" in the preparation of the required inputs into the EIAR.

The team of EIA technical specialists is presented in Table 1.2.

Table 1.2: Carmanhall Road SHD 2022 EIA Project Team

EIAR Chapter	Discipline	Lead Specialist	Qualifications	Accreditations	Years of Professional Experience
1 2 3 4 14 15	Introduction and Background Scope and Methodology Project Description Population and Human Health Material Assets Interactions, Cumulative and Combined Effects	Dr Rhian Llewellyn (Golder)	PhD (Earth Science) M Geol (Hons) Masters of Geology (Integrated Masters)	Practitioner Member of the Institute of Environmental Management and Assessment	12+
5	Ecology and Biodiversity	Freddy Brookes (Golder)	MSc Aquatic Ecosystem Management	Member of the Chartered Institute of Ecology and Environmental Management (MCIEEM) Member of the Institute of Fisheries Management (MIFM)	14+
6 7	Land, Soils and Geology Water	Anna Goodwin (Golder)	MSc Geology MSc Hydrogeology	Chartered Geologist (Geological Society of London) and European Geologist.	18
8	Air Quality and Climate	Rachel Lansley (Golder)	MSc Environmental Monitoring and Analysis, BSc Physical Geography	Chartered Scientist (CSci), Member of the Institution of Environmental Sciences (IES) Member of the Institute of Air Quality Management (IAQM)	15+
9	Noise and Vibration	Simon Waddell (ITPEnergised)	BSc (Hons.) Environmental Geoscience PG Dip Acoustics and Noise Control	MIOA	12
10	Archaeology and Cultural Heritage	Franc Myles (Archaeology & Built Heritage Ltd)	Masters in Urban and Building Conservation	Member of the Institute of Archaeologists of Ireland	25+
11	Traffic	Brian McCann	DIC MSc Eng	Fellow, Engineers Ireland	30+

EIAR Chapter	Discipline	Lead Specialist	Qualifications	Accreditations	Years of Professional Experience
			B Eng	Member, Assoc of Consulting Engineers of Ireland	
12	Wind Microclimate	Cristina Paduano Patrick Okolo	PhD Mech MSc Aerospace Engineering PhD Mech MSc Mech Engineering	Chartered Engineer MIEI Chartered Engineer MIEI	18 10
13	Landscape and Visual	Richard Barker (Macro Works)	MLA, PG Dip Forestry, BA Env	Corporate Member Irish Landscape Institute	17+
16	Mitigation and Monitoring Measures	All appropriate discipline leads			
	EIAR Senior Review	Ruth Treacy	Adv Dip. Planning & Env Law MSc Agr Sc BSc Agr Sc	Member of Engineers Ireland Chartered Resource and Waste Manager	20+

1.8 Transboundary Impacts

Transboundary project impacts are those which are likely to cause significant effects on the environment or significant adverse impact across at least two countries' administrative areas. These 'transboundary' projects are likely to have significant environmental effects in each, and involve many stakeholders (national, regional and local authorities, NGOs, the public).

Given the nature and scale of the proposed residential development, located in Sandyford, within the Dún Laoghaire Rathdown County Council administrative area, it is considered that there will be no transboundary environmental impacts.

1.9 Difficulties Encountered in Preparing the EIA

There were no significant difficulties in the preparation of the EIAR however the following is noted:

Final details of the construction program and methodology will be determined by the Main Contractor. These details will be confirmed in the Main Contractor's final Construction Management Plan and in consultation with the planning authority and relevant stakeholders.

Other details of the development may be revised prior to the final planning permission grant of the development, again in agreement with the Dún Laoghaire Rathdown County Council. Any changes would be agreed through the formal planning process.

Conservative assessments and construction good practice methods/mitigations have been applied where information concerning the construction methodology or program could not be fully determined.

At the time of undertaking this EIA process COVID-19 pandemic restrictions were in the process of being substantially eased. As outlined in the Traffic and Transport chapter of this document (Chapter 11) there has

not been a full return to work for most of the businesses in the Sandyford area. Therefore, certain assumptions have been made in terms of traffic flows, air and noise modelling. Where these have been made, they have been clearly set out within the relevant chapters.

1.10 References

- Department of Housing, Planning and Local Government, (2018), 'Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment'. Available at: https://www.opr.ie/wp-content/uploads/2019/08/2018-Environmental-Impact-Assessment-1.pdf (Accessed: 20 July 2022).
- DLRCC, (2022), County Development Plan 2022-2028, Appendix 16 Sandyford Urban Framework Plan 2022-2028 (Accessed: 20 July 2022).
- EPA, (2022), 'Guidelines on the information to be contained in Environmental Impact Assessment Reports'. https://www.epa.ie/publications/monitoring--assessment/assessment/EIAR_Guidelines_2022_Web.pdf (Accessed: 20 July 2022).
- European Union, (1985), 'Council Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment'. OPOCE. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:31985L0337&from=EN (Accessed: 20 July 2022).
- European Union, (2011), 'Directive 2011/92/EU of the European Parliament and of the Council on the assessment of the effects of certain public and private projects on the environment'. Official Journal of the European Union. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32011L0092&from=EN (Accessed: 20 July 2022).
- European Union, (2014), 'Directive 2014/52/EU of the European Parliament and of the Council, amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment'. Official Journal of the European Union. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014L0052&from=EN (Accessed: 20 July 2022).
- Irish Statute Book, (2018), 'S.I. No. 296 of 2018 - European Union (Planning and Development) (Environmental Impact Assessment) Regulations'. Office of the Attorney General. Available at: http://www.irishstatutebook.ie/eli/2018/si/296/made/en/print (Accessed: 20 July 2022).

2.0 SCOPE AND METHODOLOGY

Golder, member of WSP in Ireland ("Golder") have been commissioned to prepare an Environmental Impact Assessment Report (EIAR) to assess the environmental impacts of a proposed Carmanhall Road Strategic Housing Development (SHD) 2022. This document comprises an Environmental Impact Assessment Report (EIAR), which presents the methodology used and the findings of the technical assessments undertaken as part of the EIA process. It is to be submitted to An Bord Pleanála ('ABP'/ 'the Board') in support of the SHD application, in order to assist the Board in its own EIA for the Proposed Development.

The Carmanhall Road SHD 2022 is proposed for the former Avid Technology site, which is located at the junction of Carmanhall Road and Blackthorn Road at the Sandyford Industrial Estate, Dublin 18 (the 'Site' / 'Application Site'). The Proposed Development is a stand-alone application however, the development has been designed as part of a masterplan in combination with an adjacent site, referred to as the 'Tack Sandyford SHD' (see Chapter 3 – Project Description for further details).

The scope of this EIAR is for the Carmanhall Road SHD 2022 development and a separate EIAR has also been prepared for the Tack Sandyford SHD development[1]. Within this EIAR, the likely significant cumulative impacts for the development of the Carmanhall Road SHD 2022 in combination with the Tack Sandyford SHD are considered in Chapter 15 – Interactions, Cumulative and Combined Effects.

The Application Site to which this EIAR relates is 0.99 ha, which is located in the Electoral Division of Dundrum-Balally, in the administrative area of Dún Laoghaire Rathdown County Council (DLRCC) in Co. Dublin.

Figure 2.1 identifies the Subject Site and the lands the subject of the EIAR and shows it in the wider regional context.

[1] NOTE: Within the Tack Sandyford SHD application the 'Carmanhall SHD 2022' is referred to as the 'Avid Sandyford SHD'.

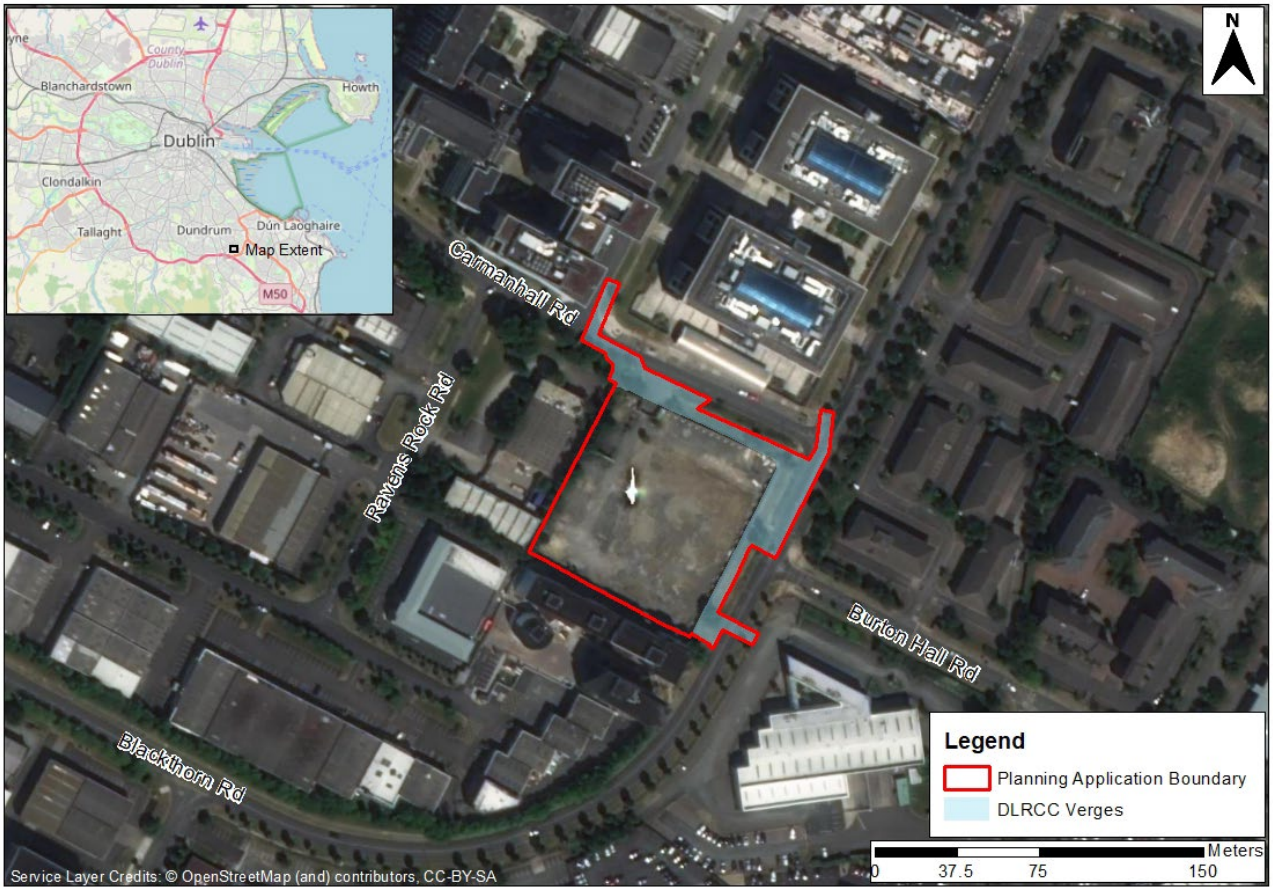

Figure 2.1: Application Site Subject of the EIAR

2.1 EIA Approach Overview

Environmental Impact Assessment (EIA) is a process undertaken for certain types of development. It provides a means of drawing together the findings from a systematic analysis of the likely significant environmental effects of a scheme to assist planning authorities, statutory consultees and other key stakeholders in their understanding of the impacts arising from the development.

The aim of EIA is to protect the environment by ensuring that when a responsible authority decides whether to grant permission for a Proposed Development, which is likely to have significant effects on the environment, it does so with full knowledge of the likely significant effects. It is then able to take these into account in the decision-making process.

The aim of EIA is also to ensure that the public are given early and effective opportunities to participate in the decision-making procedures. General objectives of the EIA process have been identified in Figure 2.2.

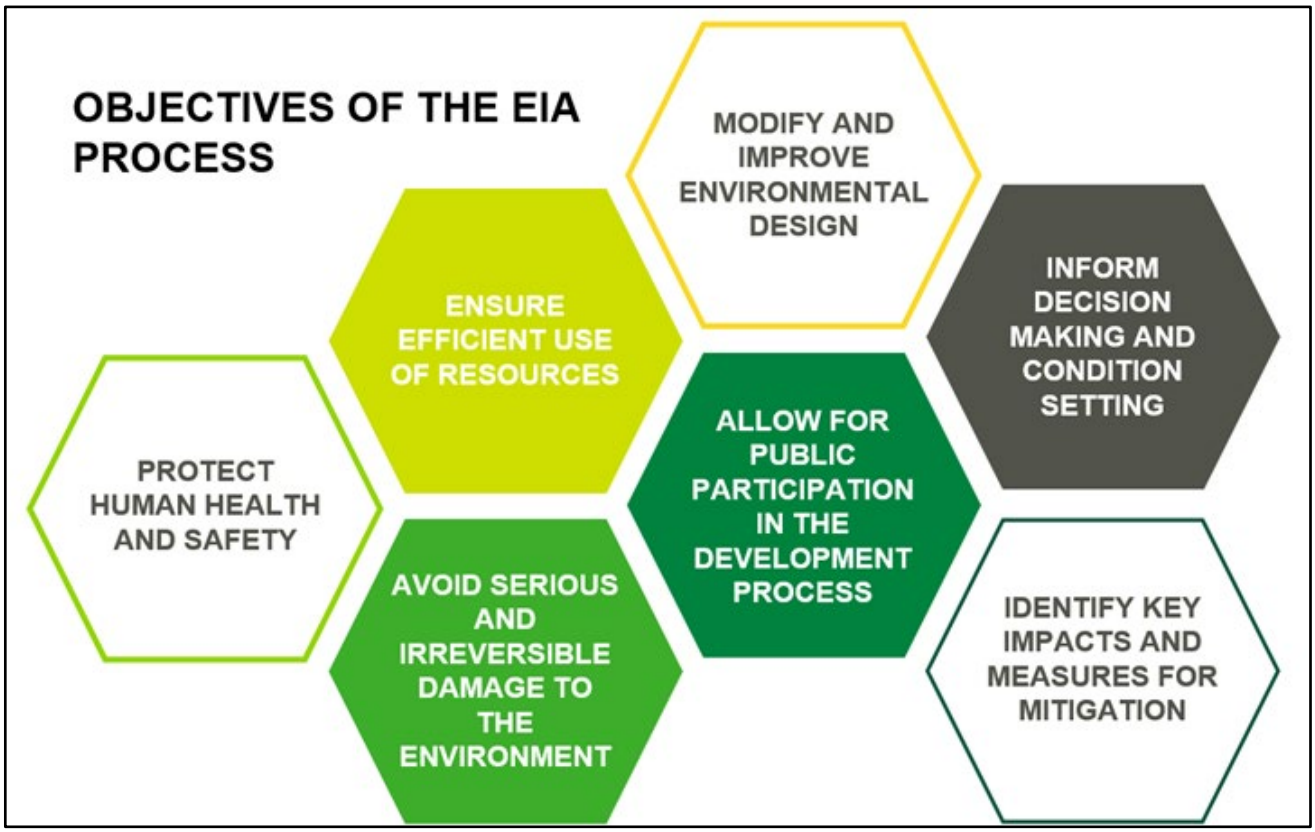

Figure 2.2: Objectives of the EIA Process

The EIA process follows three main stages to the point at which the EIA Report (EIAR) is submitted:

1) Screening – to determine whether a proposed development should be subject to EIA;

2) Scoping – to determine which topic areas (environmental factors) should be included in the EIA (scoped in) and which should be excluded (scoped out); and

3) EIAR Preparation – the stage in which the main body of work is undertaken, resulting in the production of an EIAR.

EIA involves a number of processes, which take place during screening, scoping and the main EIA stages:

1) Identifying and describing relevant features of the proposed development;

2) Identifying and describing relevant features of the baseline environment;

3) Consultation; and

4) Predicting likely impacts and effects of the proposed development on the baseline environment and developing any required mitigation measures.

Details of how the EIA process has been followed for the Proposed Development are set out below.

2.1.1 Legislation and Appropriate Guidance

European Directive and Transposition

The requirement for an Environmental Impact Assessment process arises from European Union (EU) Directives required to be adhered to by member States and transposed into national laws.

The European Union Directive 85/337/EC required that certain private and public projects which are likely to have significant resultant environmental impacts are subject to a formalised Environmental Impact Assessment prior to their consent.

This Directive was subsequently amended by the EU through three amendments: 97/11/EC, 2003/4/EC and 2009/31/EC, which were then codified in Directive 2011/92/EU. Subsequently, on 16 April 2014, Directive 2011/92/EU was amended by Directive 2014/52/EU of the European Parliament and of the Council.

The following is stated by the Department of Housing, Planning and Local Government in the Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment, (August 2018):

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

The 2014/52/EU Directive was transposed into Irish law through European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (SI No. 296 of 2018) which amended the Planning and Development Act, 2000, and the Planning and Development Regulations, 2001. This EIAR has been produced in accordance with these relevant legislative requirements and Statutory Instruments.

The EIA Directive (Directive 2011/92/EU, as amended by Directive 2014/52/EU) consists of 16 no. Articles and 5 no. Annexes that define EIA and the supporting information and processes available and required for EIA determination in the form of reasoned conclusion by the competent authority.

- EIA is mandatory for certain types of projects and for other projects that meet or exceed thresholds as set out in Annexes I and II of the EIA Directive. The development attracts the requirement for EIA as an Annex I project and is therefore subject to an assessment in accordance with Articles 5 through 10.
- Article 5 of the EIA Directive sets down the minimum information to be supplied in an EIAR including data and information to be included by the developer in the EIAR identified in Annex IV of the EIA Directive.

Guidance

The EIAR for the proposed Carmanhall Road SHD 2022 has been undertaken with regard to the above referenced legislation and also with the following guidance:

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

  The classification of effects and their significance has also been carried out based on the above materials (with some modifications to increase clarity) unless this is otherwise stated within the relevant section or chapter.
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Environment, Community and Local Government, 2018).
- Environmental Impact Assessment of Projects Guidance on the Preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU). European Commission of the European Union 2017.

2.1.2 EIAR Structure and Content

The EIAR has been prepared in a 'Grouped Format' structure having regard to the prescribed environmental factors of the EIA Directive and the 2022 EPA Guidance; "*Population and Human Health, Biodiversity, Land, Soil, Water, Air, Climate, Material Assets, Cultural Heritage, Landscape and Interactions*."

In this way, each aspect of the environment is presented as a separate chapter referring to the environment as it existed before development, the Proposed Development, likely impacts, and proposed mitigation measures. The EIAR has therefore been systematically organised to provide the information and environmental aspect chapters identified in Table 2.1.

Table 2.1: Overall Structure of the EIAR

Content	Chapter
Context and Requirement for EIAR	1. Introduction and Background 2. Scope and Methodology
A description of the existing environment	3. Project Description (and each of the technical chapters)
A description of the project	3. Project Description
Identification of experienced / likely significant impacts during construction and operation of the development and a description of the measures employed / envisaged in order to avoid, reduce and, if possible, remedy significant adverse impacts	4. Population and Human Health 5. Ecology and Biodiversity 6. Land, Soils and Geology 7. Water 8. Air Quality and Climate 9. Noise and Vibration 10.Cultural Heritage 11.Traffic and Transport 12. Wind Microclimate 13. Landscape and Visual 14. Material Assets 15. Interactions, Cumulative and Combined Effects 16. Mitigation and Monitoring Measures
Sets down the cumulative and in combination significant effects of the project and considers expected / experienced effects deriving from the vulnerability of the project to risks of major accidents and/or disasters that are relevant to the project concerned	15. Interactions, Cumulative and Combined Effects

A Non-Technical Summary (NTS) accompanies the EIAR and provides a summary of the key findings of the EIA in non-technical language.

Table 2.2 identities the data and information to be included by the developer in the EIAR as described in Annex IV of the EIA Directive, and the location of this information within the document.

Table 2.2: Requirements of 2014/52/EU Annex IV and where these have been addressed in this EIAR.

Item	Requirement of Annex IV item	Reference in EIAR
1	Description of the project, including in particular: a) A description of the location of the project. b) A description of the physical characteristics of the whole project, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases. c) A description of the main characteristics of the operational phase of the project (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used. d) An estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation) and quantities and types of waste produced during the construction and operation phases.	Annex IV 1(a) and 1(b) are addressed in Chapter 3. – 'Project Description' Annex IV 1(c) and 1(d) are addressed in Chapter 3. – 'Project Description', and identified in the relevant technical chapter
2	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.	Chapter 3. – 'Project Description' within the 'Alternatives' section
3	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.	A 'Baseline Conditions' section has been provided in each technical chapter' along with a 'Do-Nothing' scenario without development section.
4	A description of the factors specified in Article 3(1) likely to be significantly affected by the project: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.	Each relevant study area which has been scoped into the EIAR is provided within a dedicated technical chapter. Chapters 4. – 14.

Item	Requirement of Annex IV item	Reference in EIAR
5	A description of the likely significant effects 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 used. h) The description of the likely significant effects on the factors specified in Article 3(1) 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. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project	Annex IV 5 (a), (b) and (c) are addressed in each technical chapter, as appropriate Annex IV 5 (d) is addressed in Chapter 3. (Project Description), Chapter 4. (Pop. and Human Health), and Chapter 10. (Cultural Heritage) Annex IV 5 (e) is addressed in Chapter 15. (Interactions, and Cumulative Impacts). Annex IV 5 (f) is addressed in Chapter 8. (Air Quality and Climate) Annex IV 5 (g) is addressed in each technical chapter, as appropriate Descriptions of effects are identified in each technical chapter, as appropriate. Assessment methodology is identified in each technical chapter, as appropriate, or a common framework and terminology has been identified in Chapter 2. Difficulties encountered in compiling the EIAR have been identified in Chapter 1.

Item	Requirement of Annex IV item	Reference in EIAR
		Transboundary impacts have been considered in Chapter 1.
6	A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.	Assessment methodology is identified in each technical chapter, as appropriate, or a common framework and terminology has been identified in Chapter 2. Difficulties encountered in compiling the EIAR have been identified in Chapter 1.
7	A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases.	The identification of mitigation measures is identified in each technical chapter, as appropriate. These have also been compiled in Chapter 16. Mitigation and Monitoring Measures.
8	A description of the expected significant adverse effects of the project on the environment deriving from the vulnerability of the project to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to Union legislation such as Directive 2012/18/EU of the European Parliament and of the Council or Council Directive 2009/71/Euratom or relevant assessments carried out pursuant to national legislation may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.	The identification of the vulnerability of the project to major accidents and disasters has been considered in Chapter 3.
9	A non-technical summary of the information provided under points 1 to 8.	EIAR Volume 1
10	A reference list detailing the sources used for the descriptions and assessments included in the report.	Final Section of each technical chapter.

2.1.3 EIAR Contributors and Demonstration of Competency and Independence

The EIAR was completed by a project team led by Golder, who also prepared a number of the chapters.

The members of the team and their respective inputs are described in Chapter 1.

In accordance with the EIA Directive, Golder confirm that experts involved in the preparation of the EIAR are fully qualified and competent in their respective field. Each has extensive proven expertise in the relevant field concerned, thus ensuring that the information provided herein is complete and of high quality.

2.2 EIA Stages

2.2.1 Screening

Screening is a procedure used to determine whether a Proposed Development is likely to have significant effects on the environment. The outcome is a decision on whether EIA needs to be undertaken for the Proposed Development, in which case the subsequent stages of scoping and EIAR preparation will be followed.

To determine whether an EIA is required for the Proposed Development, it is necessary to determine whether it is a project listed in one of the Annexes to the Directive 2011/92/EU (as amended by Directive 2014/52/EU).

These Annexes have been transposed into Irish law. The prescribed classes of development which require EIA are outlined in Schedule 5 of the Planning and Development Regulations 2001 (S.I. 600 of 2001, as amended). The Proposed Development is not listed in Part 1 of that Schedule (or Annex 1 of the EIA Directive) and therefore an EIA is not mandatory.

The applicable threshold defined in Schedule 5; Part 2 for the Proposed Development is:

10. Infrastructure projects

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

The Proposed Development provides for 334 no. residential units and therefore falls well below the mandatory threshold requiring the preparation of an EIAR. In the circumstances, although a mandatory EIA is not triggered for the proposed Project, if it is likely to have a significant effect on the environment, having regard to the criteria set out in Schedule 7, an EIA will be required.

The criteria set out in Schedule 7 require regard to be had to:

- The characteristics of the Proposed Development;
- The location of the Proposed Development; and
- The characteristics of potential impacts.

Having regard to those criteria and the matters more particularly set out in Schedule 7, and considering the features of this site, including the proposed size and extent of occupancy, a sub-threshold EIAR has been prepared on a precautionary basis to accompany the strategic housing development (SHD) application to An Bord Pleanála.

2.2.2 Scoping

The scoping stage involves deciding which environmental topics should be covered by the EIA and therefore what information should be included in the EIAR. This involves considering the nature of the Proposed Development and the initial, usually desk based, information that has been obtained on the baseline environment. The topic areas where significant effects may potentially arise (and those where significant effects

are unlikely to arise) are then identified. Methodologies for filling any information gaps and for undertaking the assessment are then developed for each of the topic areas that have been 'scoped in'.

An informal preliminary scoping study was conducted for the proposed masterplan that comprises the proposed Carmanhall Road SHD 2022 development in combination with the Tack Sandyford SHD development. The Preliminary Scoping Report was submitted to An Bord Pleanála along with a request for a Pre-Application Consultation meeting in relation to the Tack Sandyford SHD proposals, and it identified the specialist assessments and appropriate discipline specific best practice guidance to be followed in an EIA of the proposals. It has subsequently been decided to undertake two separate EIA processes, one each for the Carmanhall Road SHD 2022 and the Tack Sandyford SHD, following the methodology outlined in the Preliminary Scoping Report undertaken for the masterplan covering both sites.

As a result of the scoping process the following topics were scoped into the EIA, as it was considered that there was potential for significant environmental effects to arise as a result of the Proposed Development:

- Population and Human Health;
- Ecology and Biodiversity;
- Land, Soils and Geology;
- Water;
- Air Quality and Climate;
- Noise and Vibration;
- Cultural Heritage and Archaeology;
- Traffic and Transport;
- Landscape and Visual;
- Wind Microclimate;
- Material Assets
- Major Accidents and Disasters; and
- Interactions, and Cumulative and Combined Effects.

As a result of the scoping process the following topics were scoped out of the EIA, as it was not considered that there was potential for significant environmental effects to arise as a result of the Proposed Development:

- Human Health Impact Assessment; and
- Socio-Economics.

Human Health Impact Assessment

Potential impacts to human health were identified to be limited and predominantly confined to fugitive emissions during the short-term construction phase of the development. Therefore, a detailed human health impact assessment has been scoped out of this EIAR.

Any health impacts from the construction and operational phases of the Proposed Development have been considered in relation to biophysical factors such as air, noise and water. This has been addressed within the Population and Human Health chapter (which includes daylight and sunlight analysis) and cross-referenced to

the relevant assessment sections elsewhere in the EIAR, (namely Chapter 7. Water, Chapter 8. Air Quality and Climate, Chapter 9. Noise and Vibration and Chapter 11. Traffic and Transportation).

The EIAR conducted assessments of potential health impacts from air, noise and water using appropriate guidance and methods. Effects which are determined to be either '*Slight'* or '*Imperceptible'* (and therefore '*Not Significant'* in accordance with methodology explained in Chapter 2) on the human health of the surrounding receptors were identified as a result of potential construction and operational phase water, air, noise and traffic impacts identified. The potential population and human health impacts of the Proposed Development have been fully and adequately addressed in this EIAR. Any further or more detailed assessment of human health impacts is not appropriate nor required.

Socio Economics

The legislation does not generally require assessment of land-use planning, demographic issues or detailed socio-economic analysis therefore such assessments have not been scoped into the EIAR. The EPA's 2022 'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' identify that such assessment should be avoided in an EIAR, unless issues such as economic or settlement patterns give rise directly to specific new developments and associated effects. As the Proposed Development comprises a contained housing development and it is also not considered that this development will give rise to subsequent developments, the assessment of land-use planning, demographic issues and a detailed socio-economic analysis has been scoped out of this EIAR.

2.2.3 EIAR Preparation

The main EIA stage involves activities such as undertaking surveys to fill gaps in baseline data, undertaking environmental modelling, assessing the nature and significance of effects and preparing the EIAR, including the Non-Technical Summary (NTS).

Minor difficulties encountered in compiling the required information for the EIAR and the main uncertainties involved have been identified in Chapter 1. Any additional topic-specific difficulties are described in the individual topic chapters.

2.3 EIA Processes

2.3.1 Determining the Key Features of the Proposed Development

A description of the Proposed Development is provided in Chapter 3 'Project Description' including information on the site, design, size and other relevant features of the development.

A description of the reasonable alternatives studied by the developer, which are relevant to the Proposed Development and its specific characteristics, is provided in Chapter 3 - Project Description. An indication is provided of the main reasons for the option chosen, taking into account the effects of the development on the environment.

2.3.2 Determining the Baseline

A description is provided within the various topic chapters of the relevant aspects of the current state of the environment (baseline scenario). An outline is also provided of the likely evolution of the baseline environment in the absence of implementation of the Proposed Development (the 'Do-Nothing' scenario). Information on the baseline environment was obtained through desk top review of existing environmental data and, where necessary, the collection of new data through site surveys.

The assessments presented in this EIAR are largely based on the comparison of expected impacts compared with current or recent baseline environmental conditions. This is with the exception of topics such as air quality,

noise, traffic and transport, wind and landscape and visual assessments which factor in future baseline changes. These approaches are explained in further detail in the relevant chapters.

Establishment of the current and future baseline allowed effects to be assessed and reported by comparing a scenario with the Project against one without the Project.

The baseline description provided in the EIAR:

- Includes a description of the site location and the surrounding area as far as environmental effects are anticipated; and
- Defines existing land-uses and environmental receptors/resources relevant to the environmental topic.

2.3.3 Prediction of Impacts and Effects and Development of Mitigation Measures

2.3.3.1 Determining the Extent of the Assessment

It is necessary to define the extent of the EIA in both spatial and temporal terms, and this has been done as described below.

Geographical Extent

The EIAR directly covers the physical extent of the Site as shown in the red line boundary plan (Figure 2.1). Also, many predicted impacts can extend beyond the immediate Site boundary, for example the use of the Site for foraging by a species that is primarily located off-site. Therefore, for certain topic areas a wider 'zone of influence' has been considered, as described in the individual topic chapters.

The geographical extent of the EIA also includes the cumulative impacts from related and unrelated development activities in both the construction and operational phases.

Temporal Extent

Under the current programme, it is expected that the duration of construction will last for approximately 24 months. The operational phase of the development will follow and will be a 'permanent' duration, (those lasting greater than sixty years). A decommissioning phase for the development has not been considered due to the 'permanent' nature of the development. The EIA has been based on these assumptions.

2.3.3.2 Prediction of Impacts and Effects Prior to Mitigation

Forecasting methods are required to identify and assess the significant effects of the Proposed Development on the environment. The forecasting methods used for each technical discipline are detailed in the respective chapter. For several topic areas, forecasting methods have been developed by professional bodies. Where these are available, they have been used in this EIAR, as follows:

- Ecology and Biodiversity – Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland. Chartered Institute of Ecology and Environmental Management (CIEEM), 2018.
- Air Quality – Guidance on the assessment of dust from demolition and construction. Institute of Air Quality Management (IAQM), 2014; and, Land–Use Planning and Development Control: Planning for Air Quality. Environmental Protection UK/Institute of Air Quality Management (EPUK/IAQM), 2017.
- Noise and Vibration – Calculation of Road Traffic Noise. UK Department of Transport, Welsh Office, 1988; ISO 9613: Attenuation of sound during propagation outdoors, Part 1 and Part 2. International Organization for Standardization, 1996; British Standard BS 8233:2014 – Guidance on sound insulation and noise reduction for buildings. British Standards Institute, 2014; British Standard BS 5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites, Parts 1 and 2. British Standards Institute, 2014; British Standard BS 4142:2014+A1:2019 Methods for Rating and Assessing

Industrial and Commercial Sound. British Standards Institute, 2019; and BS7445-1:2003 Description and Measurement of Environmental Noise. Guide to Quantities and Procedures. British Standards Institute, 2003.

- Cultural Heritage - National Roads Authority (NRA), Guidelines for the Assessment of Architectural Heritage Impacts of National Roads Schemes; and, Guidelines for the Assessment of Archaeological Heritage Impacts of National Roads Schemes (no publication date).
- Wind Microclimate - Wind Microclimate Guidelines for Developments in the City of London (August 2019).
- Landscape and Visual Impact – Institute of Environmental Management and Assessment (IEMA) and landscape Institute (UK) 'Guidelines for Landscape and Visual Impact Assessment' (GLVIA-2013).

For topics where there is no topic specific guidance available, a common framework of assessment criteria and terminology has been used based on the EPA's 2022 'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports'.

In this EIA, the topics that utilise the common framework include:

- Population and Human Health;
- Land, Soils and Geology;
- Water;
- Climate;
- Traffic and Transport; and
- Material Assets.

This common framework follows a 'matrix approach' to environmental assessment which is based on the characteristics of the impact (magnitude and nature) and the value (sensitivity) of the receptor. The terms used in the common framework are described below. Details of how these specifically relate to the individual topic areas are provided within the respective topic chapters.

The descriptions for value (sensitivity) of receptors are provided in Table 2.3.

Table 2.3: Environmental Value (Sensitivity) and Descriptions.

Value (sensitivity) of Receptor / Resource	Typical Description
High	High importance and rarity, national scale, and limited potential for substitution.
Medium	Medium or high importance and rarity, regional scale, limited potential for substitution.
Low	Low or medium importance and rarity, local scale.
Negligible	Very low importance and rarity, local scale.

The descriptions for magnitude of impact are provided in Table 2.4.

Table 2.4: Magnitude of Impact and Typical Descriptions

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

The approach followed to derive effects significance from receptor value and magnitude of impacts is shown in Table 2.5. Where Table 2.5 includes two significance categories, the reporting of a single significance category is supported by rationale provided in supporting text. The criteria and terminology in Table 2.5 has been based on and is consistent with the EPA's 2022 EIAR Guidelines. The EPA's 'Significant Effects' and 'Very Significant' categories have been combined into one 'Large' category. Furthermore, the EPA's 'Not Significant' category has been combined with the 'Slight Effects' category. These substitutions provide conservatism by attributing a higher effects category to adverse effects. The removal of the 'significant' and 'not significant' terminology from the matrix stage of the method avoids confusion when an overall significance is attributed to the particular impact.

Table 2.5: Significance Matrix

Environmental Value (Sensitivity)	Magnitude of Impact (Degree of Change)				
		Negligible	Low	Medium	High
	High	Slight	Slight or moderate	Moderate or large	Profound
	Medium	Imperceptible or slight	Slight or moderate	Moderate	Large or profound
	Low	Imperceptible	Slight	Slight	Slight or moderate
	Negligible	Imperceptible	Imperceptible or slight	Imperceptible or slight	Slight

A description of the significance categories used in Table 2.6.

Table 2.6: Significance Categories and Typical Descriptions.

Significance Category	Typical Description
Profound	An effect which obliterates sensitive characteristics.
Large	An effect which, by its character, magnitude, duration or intensity alters a significant proportion of a sensitive aspect of the environment.
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Imperceptible	An effect capable of measurement but without significant consequences.

Effects that are either Large or Profound alter environmental sensitivities and are therefore considered to be *Significant* based on professional judgement. Effects that are Moderate, Slight or Imperceptible are those which at their highest effect are consistent with existing and emerging baseline trends and are considered to be *Not Significant*. The assessment of the significance of environmental effects covered the following factors:

1. The receptors/resources (natural and human) which would be affected and the pathways for such effects;
2. The geographic importance, sensitivity or value of receptors/resources;
3. The duration (long or short term); permanence (permanent or temporary) and changes in significance (increase or decrease);

4. Reversibility - e.g. is the change reversible or irreversible, permanent or temporary;
5. Environmental and health standards (e.g. local air quality standards) being threatened; and
6. Feasibility and mechanisms for delivering mitigating measures, e.g. Is there evidence of the ability to legally deliver the environmental assumptions which are the basis for the assessment.

2.3.3.3 Design and Mitigation

The environmental assessment and design of the Proposed Development incorporated mitigation measures using a hierarchical system as follows:

1. Avoidance and prevention: design and mitigation measures to prevent the effects (e.g. alternative design options or avoidance of environmentally sensitive sites);
2. Reduction: where avoidance is not possible, then mitigation is used to lessen the magnitude or significance of effects; and
3. Remediation: where it is not possible to avoid or reduce a significant adverse effect, these are measures to offset the effect.

The following categories of mitigation have been described in the EIAR:

1. Embedded mitigation: project design principles adopted to avoid or prevent adverse general environmental effects (as described in the 'Project Description, Chapter 3), and including fixed procedural commitments such as the development and adoption of a Construction Management Plan (CMP) incorporating a Construction Environmental Management Plan (CEMP), and other associated management plan documents; and
2. Essential mitigation: measures required to reduce and if possible offset likely significant adverse environmental effects, in support of the reported significance of effects in the environmental assessment (as described in the individual topic chapters).

Any enhancement measures have also been described (measures that are over and above what is required to mitigate the adverse effects of a project), as well as any requirements for monitoring of mitigation measures associated with any significant environmental effects.

2.3.3.4 Prediction of Residual Impacts and Effects

Once the embedded mitigation and essential mitigation measures were developed the assessment process for predicting impacts and effects described above was repeated to determine the residual effects (i.e. the effects remaining after mitigation).

2.3.3.5 Cumulative Effects

The EIA assessed cumulative effects including those from:

1. The Project itself (e.g. numerous different effects impacting a single receptor); and
2. Different projects (together with the Project itself).

The cumulative effects of the project have been assessed with the development of the separate Tack Sandyford SHD development adjacent to the application Site as part of an overarching masterplan development. The assessment considers that, should both SHD applications receive approval to proceed, it is intended that the construction and operational phases for both the Carmanhall Road SHD 2022 development and Tack Sandyford SHD development will run largely in parallel.

The assessment of cumulative effects from other projects included:

1. Establishment of the zone of influence of the Project together with other projects;
2. Establishment of a list of projects which had the potential to result in cumulative impacts, including:

    a. Development projects with valid planning permissions or consent orders, and for which EIA is a requirement; and

    b. Proposals in adopted development plans with a clear identified programme for delivery.
3. Obtaining further information and detail on the list of identified projects to support further assessment.

2.4 Other Relevant Documents

In addition to the EIAR, the following key documents are available as separate reports prepared as part of the wider planning application documentation:

- Appropriate Assessment Screening Report;
- Construction Environmental Management Plan;
- Preliminary Construction Management Plan;
- Operational Waste Management Plan;
- Preliminary Construction Demolition Waste Management Plan, and
- Resource Waste Management Plan for Construction & Demolition Waste.

2.5 References

- Chartered Institute of Ecology and Environmental Management (CIEEM) (2018) 'Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland'. Available at: https://cieem.net/wp-content/uploads/2019/02/Combined-EclA-guidelines-2018-compressed.pdf (Accessed: 19 January 2022).
- City of London (2019) 'Wind Microclimate Guidelines for Developments in the City of London', August 2019.
- Department of Housing, Planning and Local Government (2018) 'Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment'. Available at: https://www.opr.ie/wp-content/uploads/2019/08/2018-Environmental-Impact-Assessment-1.pdf (Accessed: 19 January 2022).
- Environmental Protection Agency (2015) 'Advice Notes for Preparing Environmental Impact Statement - Draft'.
- Environmental Protection Agency (2022) 'Guidelines on the information to be contained in Environmental Impact Assessment Reports'. Available at: https://www.epa.ie/publications/monitoring--assessment/assessment/EIAR_Guidelines_2022_Web.pdf (Accessed: 21 July 2022).
- European Commission (2017c) Environmental impact assessment of projects: guidance on the preparation of the environmental impact assessment report (Directive 2011/92/EU as amended by 2014/52/EU). LU: Publications Office. Available at: https://data.europa.eu/doi/10.2779/41362 (Accessed: 19 January 2022).
- European Union (1985) 'Council Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment'. OPOCE. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:31985L0337&from=EN (Accessed: 19 January 2022).
- European Union (2011) 'Directive 2011/92/EU of the European Parliament and of the Council on the assessment of the effects of certain public and private projects on the environment'. Official Journal of the European Union. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32011L0092&from=EN (Accessed: 19 January 2022).
- European Union (2014) 'Directive 2014/52/EU of the European Parliament and of the Council, amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment'. Official Journal of the European Union. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014L0052&from=EN (Accessed: 19 January 2022).
- Irish Statute Book (2000) 'Planning and Development Act'. Office of the Attorney General. Available at: http://www.irishstatutebook.ie/eli/2000/act/30/enacted/en/html (Accessed: 19 January 2022).
- Irish Statute Book (2001) 'S.I. No. 600/2001 - Planning and Development Regulations, 2001'. Office of the Attorney General. Available at: http://www.irishstatutebook.ie/eli/2001/si/600/made/en/print (Accessed: 19 January 2022).
- Irish Statute Book (2018) 'S.I. No. 296 of 2018 - European Union (Planning and Development) (Environmental Impact Assessment) Regulations'. Office of the Attorney General. Available at: http://www.irishstatutebook.ie/eli/2018/si/296/made/en/print (Accessed: 19 January 2022).
- Landscape Institute (UK) & Institute of Environmental Management and Assessment (IEMA), (2013), 'Guidelines for Landscape and Visual Impact Assessment – 3rd Edition (GLVIA3)' Available at: https://www.iema.net/resources/news/2013/04/11/glvia3-guidelines-now-available (Accessed: 19 January 2022).

3.0 PROJECT DESCRIPTION

3.1 Introduction

This chapter of the EIAR has been prepared by Golder, member of WSP in Ireland ("Golder") on behalf of Atlas GP Ltd, as Applicant for the Carmanhall Road Strategic Housing Development (SHD) 2022, (the 'Proposed Development'), on lands located at the former Avid Technology site at the junction of Blackthorn Road and Carmanhall Road Sandyford, Dublin 18, (the 'Site' / 'Application Site'). It presents a description of the Site and the Proposed Development, including their relationship with the wider area. Descriptions of the development herein should be considered in conjunction with the plans and particulars of the overall masterplan ('Masterplan') that is being prepared for the Application Site in combination with a separate site, which is subject to another SHD application. Please refer to section 3.2.1 for further details of the relationship between the Proposed Development that is the subject of this Environmental Impact Assessment Report (EIAR) and the overall Masterplan.

This chapter provides a description of the development proposals (construction and operational/occupational phases); and explains the assumptions that have formed the basis of the EIA process.

The chapter also provides an outline of the alternatives studied in the progression of the Proposed Development's planning and design, and the consideration given to each.

It also includes an assessment of the expected effects of the vulnerability of the project to the risks of major accidents and disasters which are relevant to the Proposed Development.

3.2 Site Location and Project Overview

The Site is located in south county Dublin, within the administrative area of Dún Laoghaire Rathdown County Council (DLRCC). The Proposed Development is located on the former Avid Technology Site, on the south-west corner of the Carmanhall Road and Blackthorn Road intersection, within the Sandyford Industrial Estate. It has a gentle slope from south to north.

The Application Site consists predominantly of hardstanding within a brownfield area. It falls from north-west to south-east, ranging from 88 m OD to 85 m OD. The total Application Site area is ca. 0.99 ha with ca. 0.73 ha owned by the Applicant. The remaining land outside the ownership line is intended to be developed as streetscape/public realm upgrades subject to consent of DLRCC.

Figure 3.1: Application Site Boundary

The former Avid Technology buildings have been demolished on site to ground level on foot of Reg. Ref. D16A/0158 which also permitted a part-five rising to eight storey apartment building. The development approved under Reg. Ref. D16A/0158, and a subsequent approval for a part-seven rising to nine storey student accommodation development under Reg. Ref. PL06D.303467, will be superseded by the Proposed Development. The Site has been cleared to ground level and is currently vacant.

3.2.1 Wider Masterplan Encompassing the Application Site

McCauley Daye O'Connell (MDO) Architects have developed a masterplan for the Application Site and an adjacent site to the west, which is the former Tack Packing site. A separate SHD application has been prepared for the former Tack Packaging site, known as the 'Tack Sandyford SHD', which is identified below (Figure 3.2) in an image of the Masterplan for the two sites.

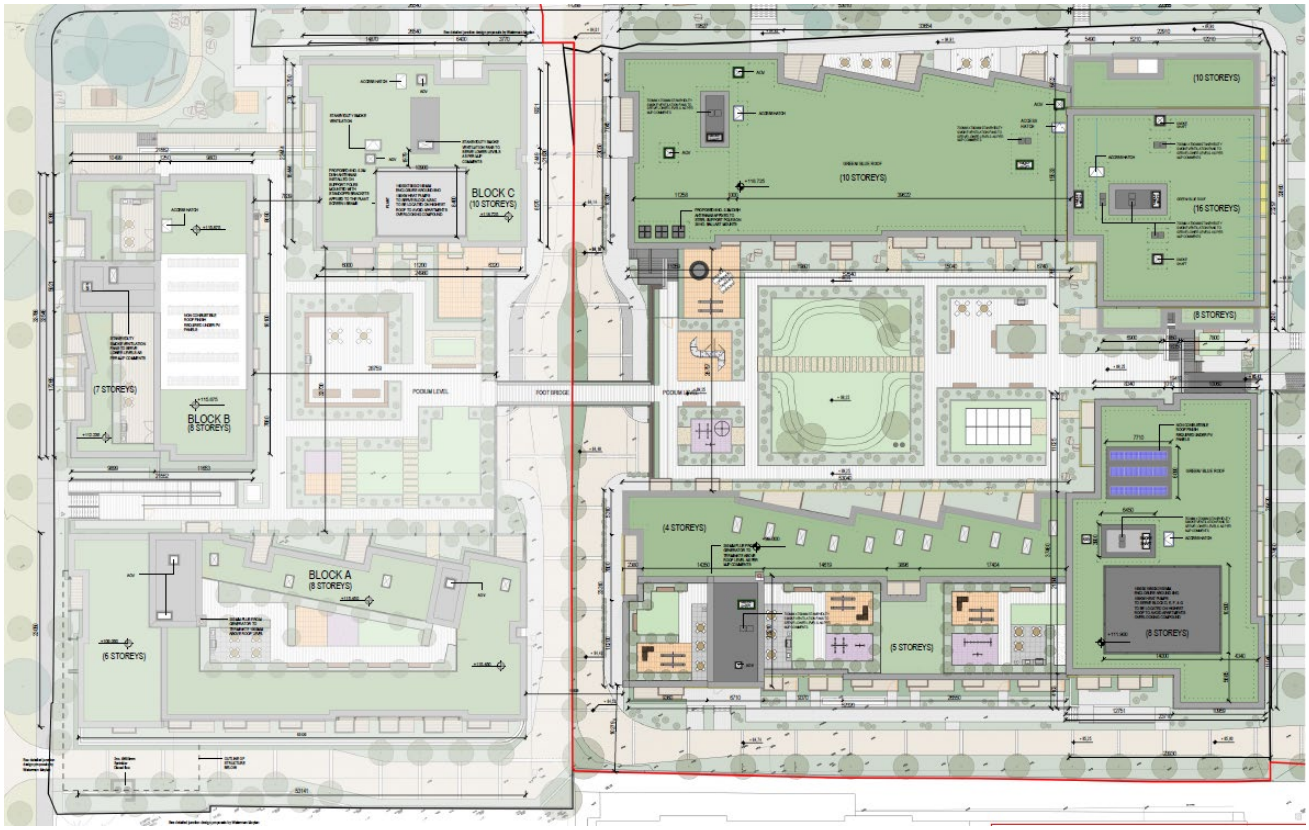

Figure 3.2: Proposed Tack Sandyford SHD development (L, faded) and proposed Carmanhall Road SHD 2022 development (R) complementary masterplan.

3.2.2 Proposed Development Description

The Proposed Development comprises the construction of a 'build-to-rent' housing development, accommodating a total of 334 no. residential units, in four apartment blocks ranging from four storeys to a maximum height of a sixteen-storey tower to be provided within the north-east of the site at furthest proximity from adjoining sites (Figure 3.3).

The four proposed apartment blocks will comprise the following:

Block D: 10 storey facing Carmanhall Road;

Block E: 8–16 storey facing Carmanhall Road/Blackthorn Road;

Block F: 8 storey facing Blackthorn Road; and

Block G: 4–5 storey facing the former Tack packaging site (which is the subject of a separate SHD application, see Section 3.2.1).

New active frontages will be provided to Blackthorne Road and Carmanhall Road. Landscaping plans include a central courtyard and a playground associated with the creche which is to be provided within the north-eastern portion of the Site. The south-east facing central courtyard will be set on a podium at ground floor level between the apartment blocks. It is intended to provide strong visual and physical connections between them. The apartment blocks are designed to be tallest facing the central courtyard and step down towards the site boundaries.

All roofs in the development have been designed as green to reduce storm water run-off and increase biodiversity.

The proposed scheme has a housing density of 457 dwellings per hectare, a plot ratio of 4 and a site coverage of 48%. These figures are calculated based on the application site area of 0.73 ha. More specifically, the 'build-to-rent' housing development will comprise the following mix of units:

Studio Apartment 79 No. Units;

One-Bedroom Apartment 175 No. Units; and

Two-Bedroom Apartment 80 No. Units.

All apartments will have access to private amenity space.

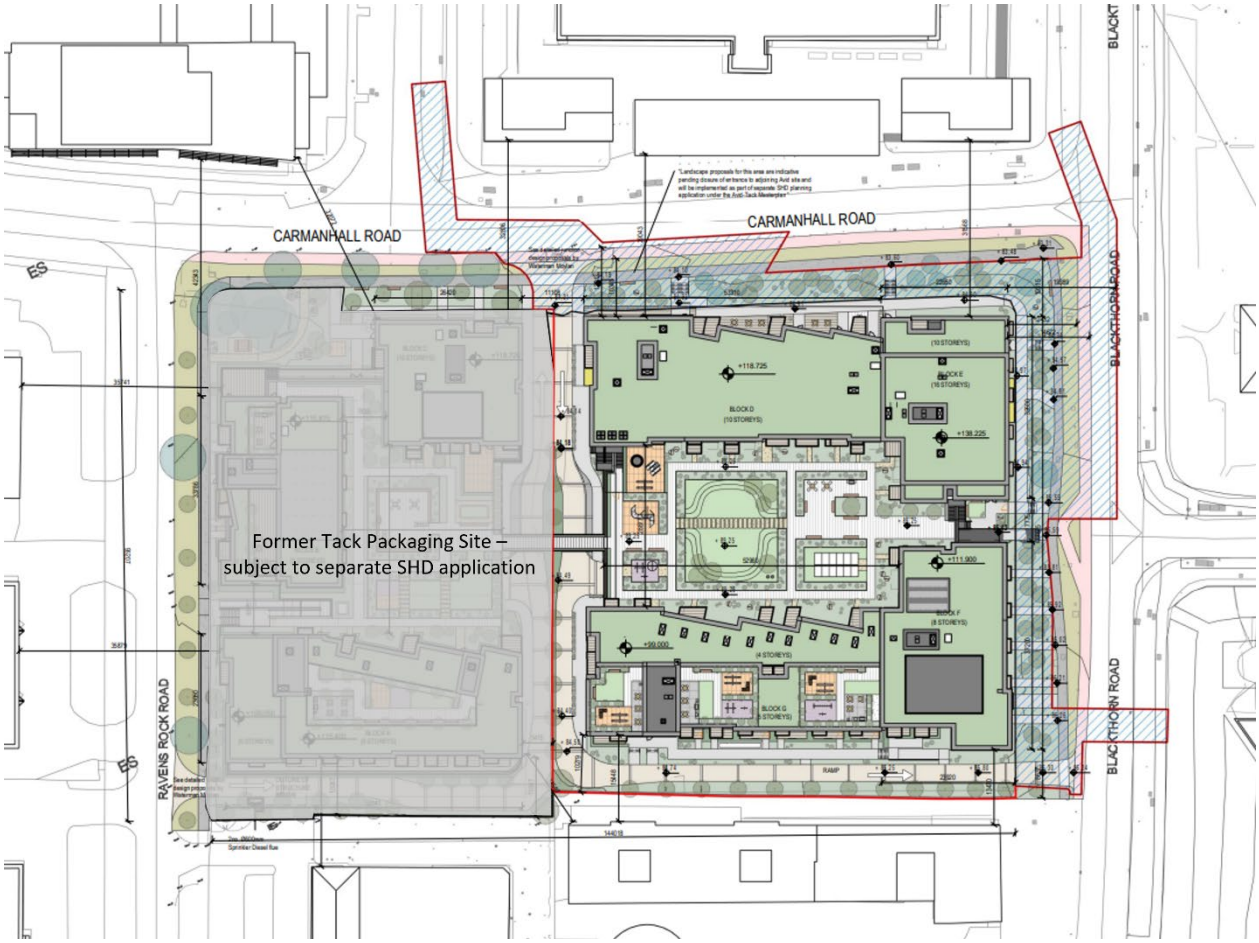

Figure 3.3: Layout of the Proposed Development

All of the apartments will have access to 0.17 ha of communal amenity space, spread over a courtyard at podium level and communal outdoor roof terraces the fourth-floor level of Block G.

It is proposed to provide 893 m^2 of high quality shared residential amenities within the ground and lower ground floor levels of the Proposed Development (including a unit of 146.5 m^2 open to the public, resident's gym, business centre, multipurpose room, staff facilities, multimedia/cinema room, shared working space, concierge, and games room) . These areas will have direct street access to Blackthorne Road, Carmanhall Road, and the street within the development, thereby creating active street frontage onto these streets. The proposed shared residential amenities will include a resident's gym, business centre, multipurpose room, staff facilities, multimedia/cinema room, shared working space, concierge and games room. A creche comprising 272 m^2, which will accord with the Childcare Facilities Guidelines from the Department of Housing, Local Government and Heritage (2020) and will meet all relevant safety/building standards and regulations will be located on the

lower ground floor and ground floor level within the north-eastern part of the Application Site, 58.54 m^2 of associated outside play space will be located adjacent to the south. A formal play area (ca. 92 m^2) and exercise area (ca. 57 m^2) will be located to the northwest of the lawn in the central courtyard. In addition to the amenities provided on site, it is also worth noting that the Application Site is in close proximity to the Dundrum Shopping Centre which also features a variety of amenities and services.

The Proposed Development will be served by ground floor/under croft and basement car park levels, accessible via a new vehicular entrance from Carmanhall Road, providing a total of 125 no. vehicular parking spaces.

Plant and storage are accommodated at both basement and lower ground floor level. A total of 447 bicycle parking spaces are provided within the ground floor/under croft and basement car park levels. Egress will be provided to Carmanhall Road. The road, pedestrian and cycle proposals include improvements to street frontages and the public realm of Carmanhall Road and Blackthorne Road which will be integrated with the proposals for the Sandyford Business District Pedestrian and Cycle Improvement Scheme (described in Chapter 11 of this EIAR). The proposals include all associated infrastructure to service the development including access junctions, footpaths and cycle paths together with a network of watermains, foul water drains and surface water drains. As set out in Section 3.2.1, it is anticipated that the Proposed Development will be delivered in tandem with the adjacent site as part of a wider masterplan. The landscaping proposals, therefore, have been designed in accordance with the overall masterplan vision. Communal open space is to be provided within the Application Site through secure central courtyard gardens set over a podium which will sit above the car park for the Proposed Development, which will be provided within the lower ground and basement levels. Further communal open space is to be provided through the provision of roof gardens. The predominant provision of communal open space within the Proposed Development will be through the Courtyard which will be a semi-private communal courtyard located at the core of the Site.

The proposals also include landscaped private, communal and public open space, ESB substations, lighting, vehicle and cycle parking, site drainage works and all ancillary site development works above and below ground.

3.2.3 Surrounding Environment

As noted, the Application Site is located on the south-west corner of the Carmanhall Road and Blackthorn Road intersection, within the Sandyford Industrial Estate (Figure 3.4). Specifically, it is located on a brownfield site where former commercial premises were recently demolished. The Sandyford Industrial Estate is primarily composed of retail, warehousing units, industrial uses and office buildings. The Beacon Hospital is located further to the west of the Site.

To the west of the Site is the former Tack Packing Site[1] and Mercury Engineering is located to the south west, other businesses such as Chill Insurance, Innopharma Education and Febvre are situated to the south. To the east of the Application Site are the Inverso offices and Medlab Pathology. The site directly north is occupied by a Londis Supermarket and Insomnia Coffee shop. Microsoft occupy a 6-storey block located beyond these shops. To the north-west is a new eight storey office development. The Stillorgan Reservoir, dated from 1860, is located further to the north of the Site.

Carmanhall Road abuts the Application Site's northern boundary and Blackthorn Road abuts its eastern boundary. Existing vehicular access is provided in the north-western corner of the site via a crossover to Carmanhall Road. The site slopes from south to north towards Carmanhall Road.

The site is connected to transport links such as the M50 motorway, the Luas (Stillorgan and Sandyford Luas stops located approximately 350 m north-east of the site), and a number of bus routes such as the No. 11, 47, 75, 114 and 116. The surrounding industrial estate has seen much redevelopment in recent years with a shift

[1] This site is the subject of a separate SHD application as discussed in section 3.2.1

from the previous low-rise, low-density manufacturing sites to higher density medium and high residential, technology and office developments. Sandyford is listed as an area of potential growth in the Dublin Metropolitan Area Strategic Plan (MASP) within the Greater Dublin Area Transport Strategy 2022-2042. As such, the area will form part of orbital core bus corridors, reconfigured Luas lines and an extension to the M50.

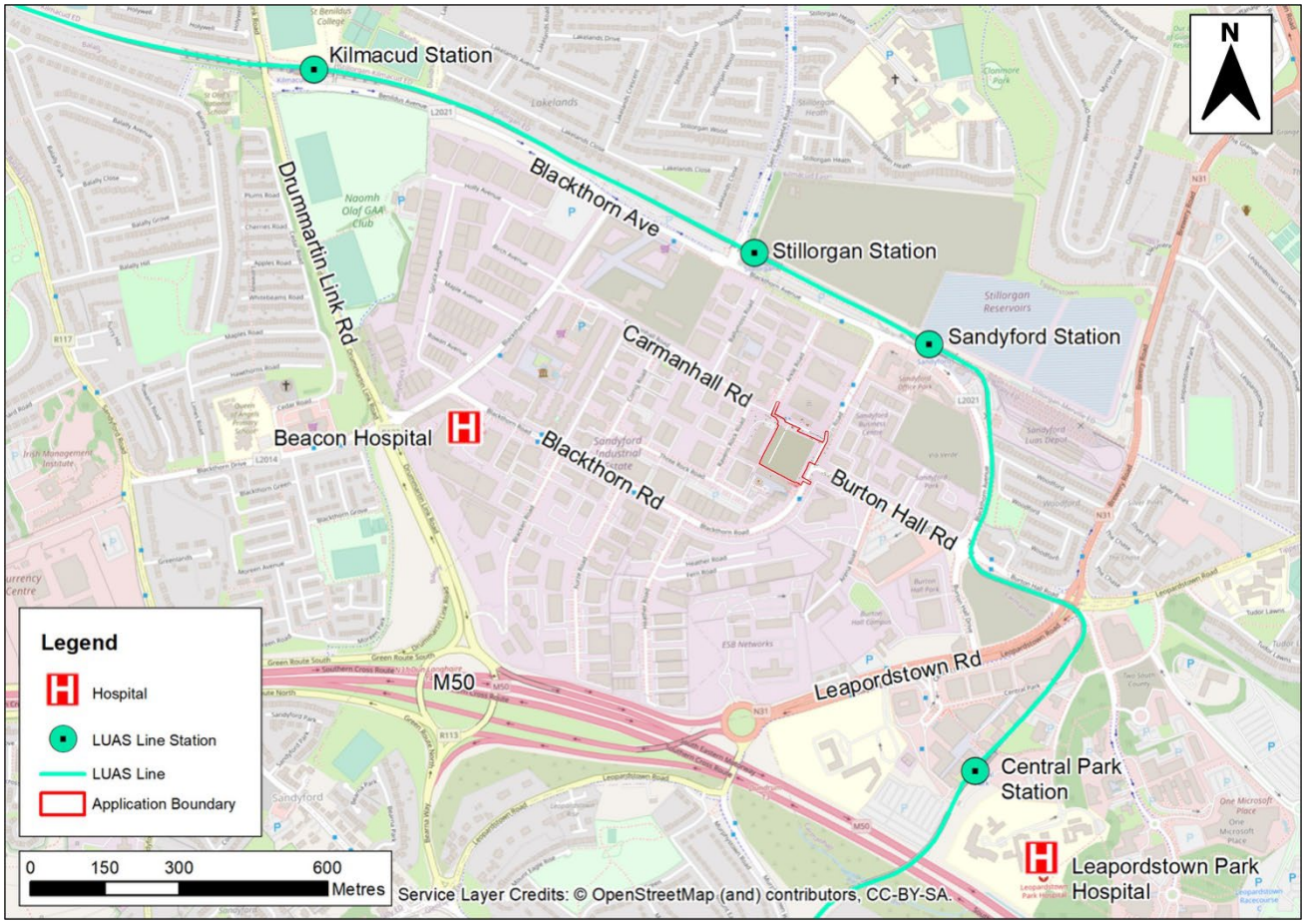

Figure 3.4: Location of the Application Site within the surrounding lands

3.3 Detailed Description of the Proposed Development

3.3.1 Architectural Design

A detailed account of the architectural design of the Proposed Development has been provided in the Architectural Design Statement accompanying this SHD Application, which has been prepared by McCauley Daye O'Connell Architects Limited (MDO). The design of the development was prepared having regard to the feedback received from An Bord Pleanála (The Board) and DLRCC during pre-planning consultations.

The Proposed Development has been designed having regard to the prominent central position of the Application Site in the context of the wider Sandyford Industrial Estate and the vista which the site commands along Burton Hall Road located to the south-east of the site (see Figure 3.4).

The Proposed Development is designed to maximise the use of the land resource at the Site which is well serviced by public transport. Detailed consideration of daylight and sunlight studies and a wind analysis have also informed the design of the building configuration.

The layout of the Proposed Development has been designed to maximise the daylight levels. The proposed development achieves a high compliance rate with 98% of units meeting or exceeding the minimum recommendations for Spatial Daylight Autonomy (SDA) in the new BRE BR 209 guidelines. Compensatory

Design Solutions are provided for any space which does not achieve the 50% SDA for shared Kitchen/Living/Dining (KLD) or for bedrooms, includes compensatory measures in accordance with the requirements of the Sustainable Urban Housing – Design Standards for New Apartments 2020.This analysis has been prepared by IN2 in their Daylight and Sunlight Analysis submitted as part of this SHD application (IN2 2022a).

Height

The building height of the Proposed Development ranges from four to sixteen storeys. The level of the proposed basement has been designed at ca. +82 mOD (meters above ordnance datum) and the lower ground floor level is proposed at +85 mOD. Ground floor level is proposed at ca. +89 mOD, with the ramps to the car park off the new road egressing to Blackthorne Road designed to minimum level of +87 mOD. As current ground elevations are typically around +84.480 mOD to +86.420 mOD, the development of a basement level will involve the excavation of material.

The massing of buildings has been broken down into smaller volumes via vertical splits, material alteration, setbacks of building lines and stepping of building heights. These measures are intended to minimise the visual impact of the blocks whilst creating generous, outdoor terraces for communal use.

Roof, communal terraces and roof garden heights will vary across the Proposed Development depending on the number of storeys and location. The total height of the tallest element of the proposals, located along Carmanhall Road, at the north-east of the Application Site, will be ca. 139.25 mOD (Figure 3.5).

Figure 3.5: Building Height at tallest part of Proposed Development. MDO Architects

Daylight / Sunlight

A Daylight and Sunlight Analysis has been performed for the Proposed Development by IN2 (2022a).

Sunlight availability to the Amenity spaces was assessed against the BRE.209 criterion of achieving at least 2 hours potential sunlight on March 21st to the majority of its area. Compliance was determined for the proposed amenity space with over 50% of the proposed amenity space achieving compliance. The internal daylight analysis was undertaken for all units across the development. Sunlight and shading analysis were also undertaken which demonstrated that the Proposed Development would not negatively impact on existing neighbouring buildings.

The overall assessment confirms that Best Practice Sunlight and Daylight Availability have been ensured for the Proposed Development, with no undue impact on existing neighbouring environment.

All dwellings are designed to maximise daylight and prevent heat loss. The building fabric is highly insulated meeting the requirements of the current Part L of the Building Regulations. The build ups of walls, roofs and floors will be designed to minimise air leakage paths, with the provision of mechanical ventilation with heat recovery to maintain air quality. Lighting will be high efficiency LED throughout. Apartments will achieve a minimum A3 BER rating.

Parking and Access

The Proposed Development will be accessed from a new vehicular entrance via Carmanhall Road. A new vehicular exit will also be provided onto Blackthorn Road. An internal green street boundary will be provided along the boundary with the former Tack Packaging site to the north-west of the Application Site (this site is subject to a separate SHD application).

The Proposed Development will provide for a total of 125 no. vehicular parking spaces, which will include 5 no. mobility parking spaces, no. 7 no. spaces for car sharing (GoCar), 25 no. electric charging spaces, 6 no. motorcycle parking spaces, and 4 no. parking spaces will be allocated within the under-croft parking area for the creche. A set-down space will be located beside the creche (Waterman Moylan 2022).

Bicycle parking is accommodated at lower ground floor level with 418 no. bicycle parking spaces. A further 29 no. residential short stay bicycle parking are provided at the same level bringing the total bicycle parking provision for the development to 447 no. secure, covered bicycle parking spaces. Even though both bicycle stores are located within the proposed car park, they have a direct access from outside, from Blackthorn Road or inner lane. The general locations of these parking facilities have been identified in Figure 3.6.

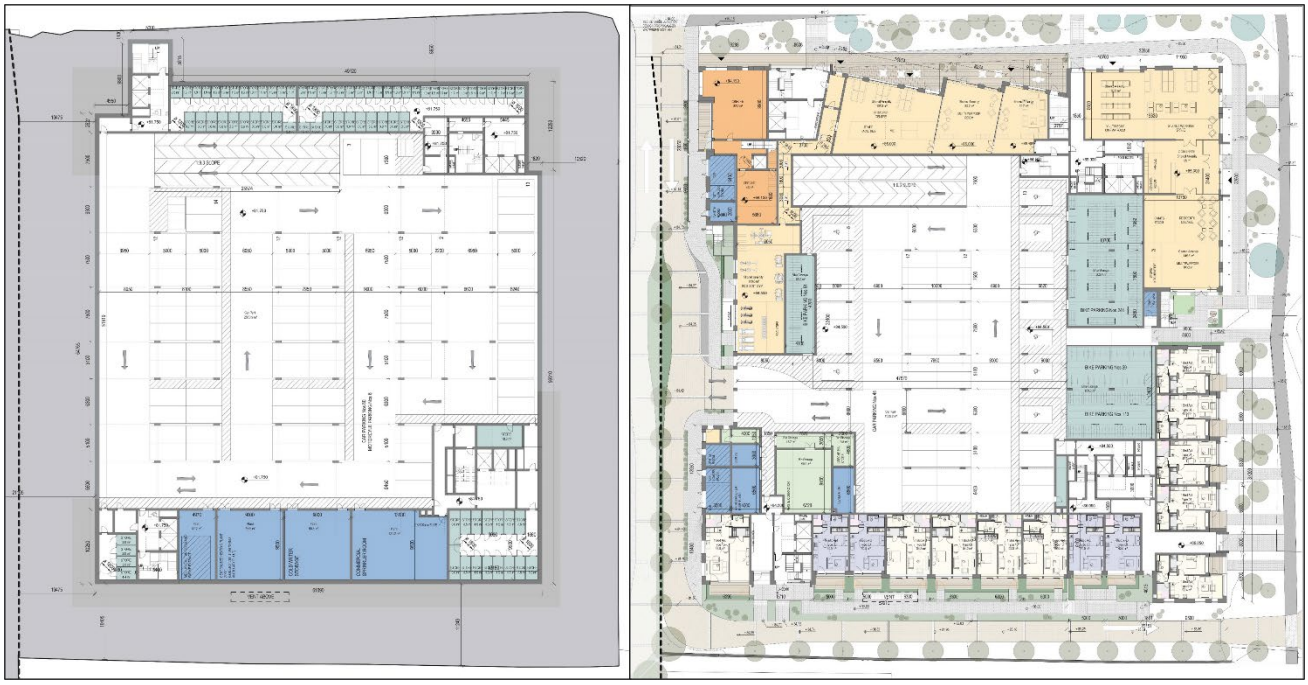

Figure 3.6: Car and Bicycle parking layout. Basement (left) and Lower Ground floor (right).

The vehicular circulation within the site will be limited. The proposed car parking on the site has been designed to have three main positive impacts:

Increase in the usage of cycling and public transport;

Minimal increase in traffic to the area; and

Reduction of the size of the basement, making the construction process more sustainable.

The mix of uses on site in such a well-connected location, ensures the need for cars is minimised, allowing more space in the scheme for public space and residents' amenities.

The internal roads through the car park are to be 6.0 m wide to ensure that there is sufficient aisle width to facilitate 90° parking and two-way traffic movements through the Application Site.

Car park entrances and exits and routes through it have been designed to cater for a 10.2 m bin lorry.

Access to the car park will be from Carmanhall Road, on the northeast corner of the Application Site. Access for all vehicles to/from the car parks at lower ground and basement are through controlled lifting barriers at each of the accesses.

In accordance with Design Manual for Urban Roads & Streets (DMURS), sightlines of 45m are required having regard to the speed limit along Carmanhall Road (50 km/hr). This visibility splay requirement will be achieved at the subject site access from a 2.4 m setback.

It is proposed that this access point is also used for the construction phase of the Proposed Development. Any amendments to this arrangement during that phase will be identified in the Main Contractor's Construction Management Plan and agreed with DLRCC.

Materials

Brick is proposed as a principal material within the scheme and will aid the development in settling well within its surroundings. The use of brick will maintain a high-quality appearance throughout the lifespan of the

proposed buildings due to being both durable and low maintenance. Figure 3.7 shows the materials to be used in the Proposed Development.

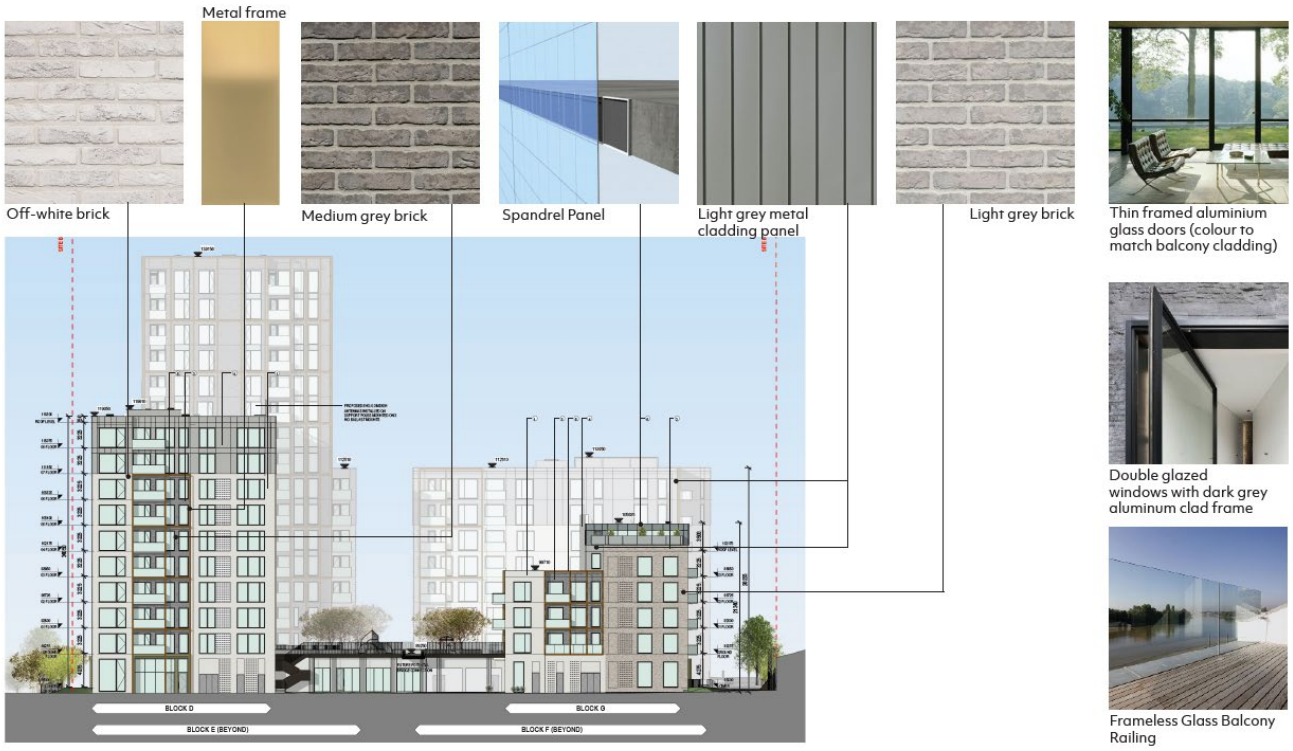

Figure 3.7: Material Selection for the Proposed Development

3.3.2 Landscape Design

The Site contains a number of existing trees, chiefly along north and east boundaries. An arboricultural assessment has been undertaken to inform the landscaping proposals and is submitted with this SHD application (Northern Tree Services, 2022). The assessment documented 2 trees on the Site and a 16 on public (DLRCC) lands in the vicinity of the site. The planting strategy of the Proposed Development intends to retain as much of the existing landscape to the Site's periphery as possible and identifies where trees will be retained.

Figure 3.8 contains an extract from the Landscape Design Statement that has been submitted in support of this SHD application. It shows the proposals for the trees that will be retained within the Proposed Development's landscaping scheme, as well as those that will require to be removed. The Landscape Plan for the Proposed Development presents planting proposals to mitigate for the removal of existing trees and the arboricultural assessment outlines measures to ensure the protection of higher value trees (see Chapter 5 of this EIAR). The levels along the road/ footpath interface, have been designed to maximise vegetation retention and it is proposed to retain a significant proportion of this soft landscape.

Figure 3.8: Existing tress to be removed and retained and proposed new street trees. Works and upgrades in the land outside the ownership line are subject to consent of DLRCC. Niall Montgomery and Partners (2022).

The intention of the Landscaping Plan for the Proposed Development is to work with the grades, eliminate railings and ramps and minimize walls and cut and fill. The planting strategy intends to retain as much of the existing landscape to the Site's periphery as possible, and to tie in with the character and wildflower/ perennial mix. The use of native tree and shrub planting and wildflower meadow grass areas to respond to, support and promote the national pollination plan will have a positive net gain for biodiversity.

The Landscape Plan has also been designed with the desire to enhance pedestrian permeability through the Site, with a hierarchy of primary and secondary walking routes along the boundaries of the Proposed Development Site and tertiary routes facilitated between the blocks. The communal open space will include opportunities for play, exercise, allotment gardens, semi covered areas and passive recreation with BBQ, sitting and lawns.

The proposed landscape design will consist of a number of elements, which, as a result of the architectural shape of the Proposed Development, will be spread across different levels. While the landscaping proposals

have been designed for the Proposed Development as a stand-alone site, consideration has been given to how this would ultimately tie into the wider masterplan with the Tack Sandyford SHD proposals should these be permitted.

Figure 3.9 shows the Landscape Plan for the Proposed Development. The Herbaceous Planting (2) and Wildflower Verges (1) indicated along the main vehicular access from Carmanhall Road represents the north-eastern boundary of the Application Site, with a Pedestrian Path (3). A Shared Surface (4) and Internal Street (13) are present at the interface of the Proposed Development with the separate SHD application boundary for the Tack Sandyford SHD site to the west.

The podium garden will be the predominant provision of private communal open space to serve the development. Where located over a basement podium slab, the courtyard will act as a green roof with hard and soft landscaping constructed over a surface water storage mat providing interception, filtration and attenuation of surface water. Where located on grade, surface water will drain to ground through direct infiltration.

Lawn (10) and Play (6) areas are located at roof level at Block G located in the south-west of the site.

Figure 3.9: Landscape Plan (Niall Montgomery and Partners, 2022)

3.3.3 Proposed Works to Communal Public Area and Public Roads

The road, pedestrian and cycle proposals include improvements to street frontages and the public realm of Carmanhall Road and Blackthorn Road which will be integrated with the proposals for the Sandyford Business District Pedestrian and Cycle Improvement Scheme (described in Chapter 11 of this EIAR). The proposals include all associated infrastructure to service the development including access junctions, footpaths and cycle paths together with a network of watermains, foul water drains and surface water drains.

The well-connected location of the Application Site means the need for cars is minimised, allowing more space in the scheme for public space and interaction of residents. The proposed design of access to the public areas provides security by introducing a large proportion of active frontage and the passive supervision provided by the residential units above.

The design of an enclosed communal amenity space within the Proposed Development and the public space associated with the adjacent roads provides the opportunity for passive supervision of the public realm and these shared spaces reduce the opportunities for unsupervised areas where anti-social behaviour could occur.

3.3.4 Site Services and Connections

Utilities

New infrastructure connections have been considered in the design of the Proposed Development (IN2 2022b).

In terms of electrical supplies to the Site, two new ESB sub-stations are to be located within block G and block D respectively. The sub-stations have been sized to accommodate the full load of the proposed development including all necessary plant and both current and future Electric Vehicle charging.

The utility strategy for the Proposed Development is a centralised heating plant option. Heat will be generated by Air Source Heat Pumps on the roof. A gas connection is not required for the Site; however, the centralised system provides versatility to pursue other technologies so the building can meet future benchmarks or carbon target.

It is proposed to provide a new Landlord comms room in the undercroft parking area where all incoming Telecoms providers will terminate their incoming cables. All existing EIR Cable connections shall be removed from the site and a new fibre cable connection shall be provided. There is currently a 1 No. Ø110mm duct serving the site which shall need to be removed to commence the construction phase of project. There is currently a Virgin Media connection to the site that will be disconnected and removed prior to construction of the new development commencing. There is Virgin Media network ducting in the pavement to the east and west of the proposed development. A new Virgin media chamber shall be required. This will be connected with a new duct to the undercroft car park for future incoming telecom services.

Foul Water

Separate storm and foul water connections have been confirmed by Irish Water as being feasible (Irish Water, letter reference CDS21008079, dated 25 January 2022). The surface and storm water from the site will be discharged into the existing storm water network after flowing through the proposed petrol interceptor, where hydrocarbons are removed. Foul water will be discharged via a new connection to the existing 225 mm diameter clay wastewater sewer in Arkle Road, as recommended in the confirmation of feasibility from Irish Water (Irish Water, letter reference CDS21008079, dated 25 January 2022). The Carmanhall Road SHD 2022 Site will discharge foul water independently for the adjacent Tack Sandyford SHD Site.

Potable Water

The Proposed Development will also require a potable water supply connection to the local network to service the 334 No. residential units and other communal facilities within the Proposed Development. As per the foul

water pre-connection enquiry submitted, Irish Water issued a Confirmation of Feasibility for the Proposed Development.

Surface Water

Water supply for the Proposed Development is intended to be from the mains. Irish Water has indicated that this is possible without an upgrade to the existing infrastructure (Irish Water, letter reference CDS21008079, dated 25 January 2022). Connections would be to the east on Blackthorn Road (Waterman Moylan EAR Report, 2022). It is proposed that surface and stormwater discharge from the Proposed Development will be to the existing surface water sewer on Carmanhall Road/Blackthorn Road.

Foul water will be discharged via a new connection to the existing 225 mm diameter clay wastewater sewer in Arkle Road, as recommended in the confirmation of feasibility from Irish Water (Irish Water, letter reference CDS21008079, dated 25 January 2022). The foul and water supply design has been submitted to Irish Water and has been accepted with no objections to the proposals (see Chapter 7 -Water). The proposed footpaths within the Development Site will drain to the surface water network via surface water drains. A proposed green roof system (comprising 82.8% of roof area) will provide additional storage volume throughout the Site. All surface water from the Site will discharge to the public network after flowing through the proposed petrol interceptor, where hydrocarbons will be removed.

3.3.5 Operational Management of the Proposed Development

A Property Management Strategy Report has been prepared by Aramark (Aramark 2022b) and submitted with this SHD application. The report recommends that an experience property management agent would be appointed to manage the estate and common areas on behalf of the landlord. This will ensure that the Proposed Development is appropriately managed and maintained to a high level in line with the planning application for this scheme. The property management agent will oversee administration in relation to insurance and services such as suppliers, parking and security. A property management team would be based within a designated management office and concierge suite on-site.

A designated management office and concierge suite is proposed, which will focus on management of the residential management and the overarching management of the scheme, with an emphasis on security, surveillance of vehicular & pedestrian access, waste marshalling area, parcel deliveries, car parking, events management and community and stakeholder engagement. A Residential Concierge Team is proposed with service hours of 08h00 – 20h00 weekdays and 09h00 to 14h00 on weekends. The responsibilities of the property management team would include:

Site security;

Payment for utilities;

Cleaning of communal internal and external common areas;

Waste management, which will inspection and communication with residents regarding appropriate waste disposal;

Health and safety, which includes the development of an occupier’s handbook and general risk assessments and method statements to manage the Site’s activities and hazards;

Maintenance of open and communal landscaped areas;

Access control and security;

Water management, including legionella risk assessments and testing;

Management of fire risks, including documented risk assessments, prevention equipment and evacuations;

Parking and mobility management; and,

Ensuring that the appropriate standards for resident behaviour are upheld, creating a secure and friendly environment.

3.3.6 Operational Waste

An Operational Waste Management Plan (OWMP) has been prepared for the Proposed Development and has been submitted as part of this SHD application (AWN Consulting 2022).

The OWMP details how waste will be managed during the operational phase so as to ensure that the development's waste is managed appropriately and in accordance with applicable legislation, DLRCC plans and policies and regional waste management targets.

This plan also specifies the waste infrastructure and storage areas required for effective waste management, segregation and collection services for the development. The Proposed Development's operational waste management practices will undergo periodic review by the management company. Such reviews will ensure that practices and systems undergo continual improvement and that the Proposed Development is assisting appropriate targets in accordance with further local and regional waste objectives.

3.3.7 Proposed Development Construction and Phasing

It is anticipated that the construction of the Proposed Development will be conducted in a single phase over a period of approximately 24 months, from the commencement of the construction works to final completion. Should the SHD application for the Tack Sandyford SHD and the SHD application for the Carmanhall Road SHD 2022 proposals be successful, the two sites would be developed in tandem in a single phase also of approximately 24 months. It is expected that a detailed Construction Programme will be prepared by the main contractor for the works.

The proposed sequencing of the construction phase of the Proposed Development is as follows:

Initial set-up of Site, including security and construction compound;

Identifying and locating above and below ground utilities and services at the Site and its surroundings;

Removing limited on-site vegetation and demolition of existing buildings;

Site preparation, including the stripping of soils, tarmac/asphalt surfaces, segregation, stockpiling and export from site;

Development of the Proposed Development's foundations and substructure. Activities at this stage include the use of rebar, concrete formwork and pour;

Development of the Proposed Development's superstructure. Activities at this stage include the use of rebar, concrete formwork, pour and blockwork;

Construction of the superstructure's external envelope and façade;

Internal finishing, including the mechanical and electrical fit out; and

External landscaping, including roof top gardens and perimeter planting.

It is anticipated that no driven (percussive) piling will be undertaken. Secant piling are expected to be required around the basement construction and will be installed by rotary methods or by Continuous Flight Auger methods (CFA) of piling.

3.3.8 Construction Management Plans

Construction Environmental Management Plan

A Construction and Environment Management Plan (CEMP) has been prepared to accompany this SHD Application. This will be a live document and will be further developed by the Main Contractor for the construction activities associated with the Proposed Development.

The aim of the CEMP is to define the organisation structure, responsibilities, practices, procedures, processes and resource to allow the management of the construction of the development in general accordance with the ISO14001 (EMS) Standard.

The CEMP outlines the developer's and the appointed Main Contractor's approach to avoid wherever practicable, environmental risk; to reduce consumption of resources; to restrict the production of waste; and to promote good relationships with interested parties and the general public.

The CEMP would be a living document that would be updated according to changing circumstances on the Project and to reflect current construction activities. The CEMP can be used to develop method statements for specific components of work.

The contractor will be responsible for ensuring that the contents of the CEMP are satisfactorily circulated and explained to relevant staff for implementation during construction.

Construction Health and Safety Management

Works during the construction phase of the Proposed Development will be carried out in accordance with the Safety, Health and Welfare at Work (Construction) Regulations 2013 (S.I. No. 291 of 2013), as amended.

A Construction Stage Health and Safety Plan will be developed by the Main Contractor's Project Supervisor Construction Stage (PSCS). This will be a live document for the management of health and safety at the development site. The document will evolve with the ongoing works at the Site and change depending on hazards and risks associated with the works.

The PSCS will be an appropriately qualified and competent person or organisation appointed by the developer and shall be responsible for conducting the relevant duties under the Safety, Health and Welfare at Work (Construction) Regulations. This will enable the developer to meet the relevant requirements of these Regulations.

Construction Traffic Management Plan

The Main Contractor will develop a detailed Construction Traffic Management Plan (CTMP) for the Proposed Development. This will support the plans and provisions in the CMP where construction activities interact with public roads or have the potential to interact with public roads.

The CTMP will be developed in consultation with all relevant authorities and submitted to DLRCC for approval prior to the commencement of the construction phase.

Construction and Demolition Waste Management Plan

A Resource Waste Management Plan (RWMP) for Construction and Demolition Waste has been prepared to accompany this SHD Application. The Waste Management Act (1996, as amended) contains key legal obligations for the management of wastes and makes provisions in relation to the prevention and control of waste.

The Act also provides for a general duty on all parties not to hold, transport, recover or dispose of waste in a manner that causes or is likely to cause environmental pollution.

The RWMP will be updated by the Main Contractor in accordance with their proposed construction methodology and will conform to the Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects (Department of Environment, Heritage and Local Government, July 2006; or as updated). This plan will be available on site for the relevant parties enacting the plan during the construction phase.

3.3.9 Construction Site Working Hours

In accordance with the DLRCC 2022-2028 County Development Plan (CDP), the working hours of the construction site would be: 07h00 hours to 19h00 hours Monday to Friday; and 08h00 hours to 14h00 hours on Saturdays. No work will be carried out on Sundays or bank holidays and the Site will remain secure when construction is not taking place. No work, or other activity that could reasonably be expected to cause annoyance to residents in the vicinity (including deliveries), will take place on site between 19h00 hours and 08h00 hours.

Special construction operations may be identified by the Main Contractor as the Project progresses and may need to be carried out outside these hours to minimise disruption to the surrounding area. The Main Contractor will consult on and agree such construction operations with DLRCC in advance.

3.4 Planning Policy and Need for the Proposed Development

The National Development Plan 2021-2030 sets out the investment priorities that will underpin the successful implementation of the National Planning Framework, including the development of the necessary housing stock. The Plan states:

> *'Supporting the growth projected in the NPF requires capital investment. Ireland needs to prepare to support an additional 1 million people living in the country by 2040 compared to 2016 and with that, there is a need to create 660,000 additional jobs and at least 550,000 more homes.'*

The Proposed Development is considered to reflect the type of sustainable development which is sought throughout National Policy regarding the appropriate development of under-utilized sites. Moreover, the National Development Plan demonstrates the Government's commitment to meeting Ireland's infrastructure and investment needs over the next ten years, through a total investment estimated at €165 billion over the period. This includes investment in high quality integrated public and sustainable transport systems. Sandyford is listed as an area of potential growth in the Dublin Metropolitan Area Strategic Plan (MASP) within the Greater Dublin Area Transport Strategy 2022-2042. As such, the area will form part of orbital core bus corridors, reconfigured Luas lines and an extension to the M50.

The DLRCC County Development Plan 2022-2028 (in force from 21 April 2022), (Section 2 of the Plan) identifies the DLRCC Core Strategies for the medium to long term for the various towns, villages and rural areas within the overall administrative area.

The central focus of the Core Strategy is on residential development and in ensuring that there is an acceptable balance between the supply of zoned, serviced land for residential development and the projected demand for new housing, over the lifetime of the Plan. The Application Site is included within Zone 5 of the Sandyford Urban Framework Plan (SUFP) which is included in the CDP as Appendix 16. It is covered by DLRCC County Development Plan 2022-2028 Objective A2, which seeks to provide for the creation of Sustainable Residential Neighbourhoods and to preserve and protect residential amenity in Zone 5 of the Sandyford Business District. Zone 5 consists of areas where residential development should be the primary land use and the environment is to be designed to be conducive to the development of sustainable residential neighbourhoods. The Plan

identifies three distinct areas within the Sandyford Business District, of which the Carmanhall Road Neighbourhood is one. The zoning of the Application Site in the SUFP is 'Zone 5: Residential', shown in Figure 3.10.

DLRCC have identified Specific objectives in relation to the creation of Sustainable Residential Neighbourhoods, that preserve and protect residential amenity in Zone 5 of the Sandyford Business District. A Specific Local Objective, SLO 52, has been included in the SUFP to facilitate the provision of a community facility at ground floor level along the eastern outer edge of the Carmanhall Residential Neighbourhood, along Blackthorn Road (see Section 4.3.2 of CDP Appendix 16).

The purpose of the Proposed Development is to provide a high-density residential development with residential and local community amenity spaces within the environs of the Sandyford Industrial Estate. The Application Site is designed to 'provide for the creation of sustainable residential neighbourhoods and preserve and protect residential amenity' which is the applicable A2 zoning objective for the lands. It is considered that the extent of Proposed Development allows for the efficient use of the site with the associated amenities provided at ground floor level and providing an active frontage for the benefit of the adjoining public realm along Carmanhall Road and Blackthorn Avenue.

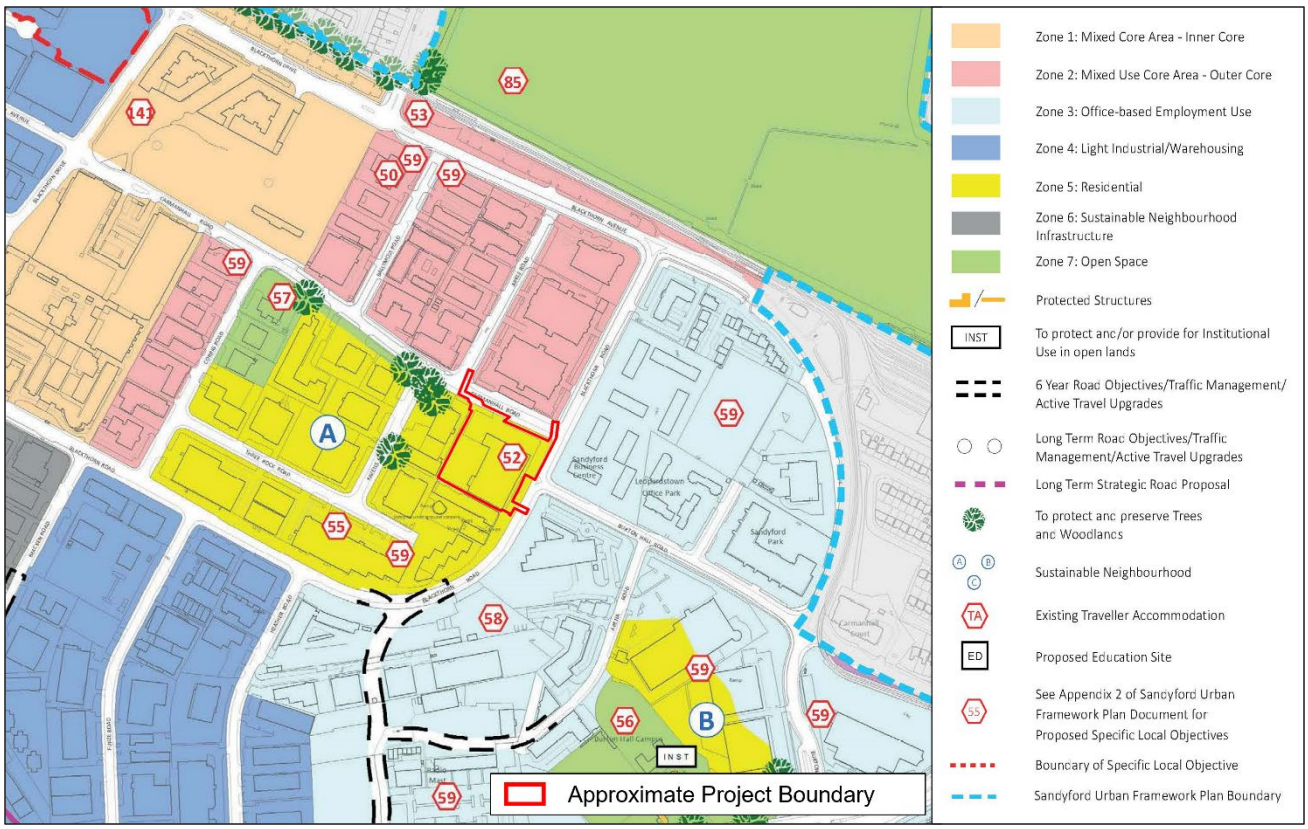

Figure 3.10: Extract from Map 1 of Appendix 16 (Sandyford Urban Framework Plan) from the DLRCC County Development Plan 2022-2028. Application Site boundary indicated in Red.

The provisions within the NDP and National Planning Framework for the development on brownfield sites in close proximity to cities and urban centres, provides additional justification for the need for the Proposed Development. Further justification of this need and specific planning and policy objectives are provided in the MacCabe Durney Barnes Planning Report and Statement of Consistency (2022), which has been prepared and submitted in the SHD Application for the Proposed Development.

3.5 Project Alternatives

Annex IV (2) of the EIA Directive (Directive 2011/92/EU, as amended by Directive 2014/52/EU), identifies that all Environmental Impact Assessment Reports should 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.'*

This section outlines the potential Project alternatives that have been considered in relation to environmental, planning and development factors of the Carmanhall Road SHD 2002.

The principal alternatives assessed during the design and planning of the Proposed Development were alternative design layouts for a residential development at the Application Site. The following subsections include consideration of previous alternative development, alterative location, alterative technology/processes, alternative design of development and size and scale (including height of the blocks), alternative phasing of development, and alternative mitigation measures. The 'do nothing' alternative is also considered.

3.5.1 Previously Granted Alternative Development

There are three previously granted alternative developments which were consented for the Application Site since 2016. These are:

ABP Ref: ABP-310104-21 – Permission refused by An Bord Pleanála on 30 April 2021 for a Build-To-Rent residential development within a new part six, part eight, part nine, part eleven storey rising to a landmark seventeen storey over basement level apartment building (40,814 m^2) comprising 428 no. apartments (41 no. studio, 285 no. one-bedroom, 94 no. two-bedroom and 8 no. three-bedroom units) of which 413 no. apartments have access to private amenity space, in the form of a balcony or lawn/terrace, and 15 no. apartments have access to a shared private roof terrace (142 m^2) at ninth floor level

ABP Ref. 303467-19 – Permission granted by An Bord Pleanála on 30 April 2019 for a student accommodation development comprising the construction of 122 no. apartments, providing 817 no. student bed spaces, with associated residents' facilities (inclusive of 101 m^2 entrance/reception; 297 m^2 gym; 119 m^2 café/lounge and 85 m^2 laundrette) in 1 no. block of 7-9 storey height with 57 no. vehicular and 586 no. cycle parking spaces.

Reg. Ref. D16A/0158 – Permission granted by Dun Laoghaire-Rathdown County Council on 01 September 2016 for a development comprising the demolition of existing buildings and the construction of 147 no. apartments with associated residents' facilities (inclusive of 216 m^2 crèche; 46 m^2 gymnasium; 93 m^2 media suite; and 141 m^2 café) in 2 no. blocks of 5-8 storey height with 151 no. vehicular and 158 no. cycle parking spaces.

The proposed development has been designed to address previous feedback from An Bord Pleanála and Dun Laoghaire Rathdown under decision ABP-310104-21 (former Avid site) (MacCabe Durney Barnes Planning and Development Consultants, 2022). With regards An Bord Pleanála's decision to refuse the 2021 application, this current planning application has been composed to specifically address the following items:

1) Having regard to the proposed quantum and resulting form of development, in particular the enclosed nature of the scheme layout and height on this restricted site (i.e. substandard quality of communal open space, inadequate range and extent of resident support facilities and amenities serving the entire development).

2) That the proposed development would materially contravene the height and density provisions of the Dun Laoghaire-Rathdown County Development Plan 2016-2022, including the Sandyford Urban Framework Plan, by failing to meet the criteria set out in Section 3.2 and Specific Planning Policy Requirement 3 of the Urban Development and Building Height Guidelines for Planning Authorities.

The current Proposed Development differs from the 2019 application in that private residential accommodation is now proposed in place of student accommodation. The current Proposed Development retains the provision of ancillary communal facilities, with an extent of shared communal/community infrastructure facilities, to present a range of active uses at ground floor level to the adjoining streets.

It is considered that the Proposed Development provides additional positive social effects in relation to the previous planning applications through its increased efficiency in use of the Site and its size and scale. Furthermore, the Proposed Development is designed to provide a high standard of accommodation and amenity for future occupants and the local community.

The current proposal comprises a multi-storey over basement building and is considered appropriate on the basis of the accessibility to high-quality public transport links. The building is to be sited within a prominent location in the context of Sandyford Industrial Estate and will contribute to the urban character and public realm quality of the immediate surrounds through attractive visual design.

A further development (Reg. Ref. D05A/0239) was consented on 28 July 2005 for a development comprising the demolition of existing buildings and the construction of 265 no. apartments and 2,175 m^2 of ground level retail/commercial floorspace in 4 blocks of 3-13 storey height with 337 no. vehicular and 348 no. cycle parking spaces. It is considered that there are significant changes in Irish society behaviours and national objectives since the consent of this Project in 2005; such as the economic downturn after 2008 and the more recent pressure on national housing stock and improvements in infrastructure such as roads, rail transport and services.

3.5.2 Alternative Location

Alternative locations for the Proposed Development were not considered during the development stage of this Project. The justification for this is owing to the zoning and residential objectives for the Site identified in the DLRCC Sandyford Urban Framework Plan 2022-2028 (Appendix 16) which align with the use of the Site for residential purposes and the DLRCC Sandyford Urban Framework Plan 2022-2028 was subject to and informed by a Strategic Environmental Assessment.

Furthermore, there are positive environmental effects in the development of a brownfield site when compared to developing a greenfield site elsewhere. This rationale is mirrored in the focus of the Project Ireland 2040 - National Planning Framework, and NDP 2021-2030.

Therefore, the scale and nature of the Proposed Development is considered appropriate for the Application Site and its regional and local location.

3.5.3 Alternative Technology/Processes

Given the nature of the Project (residential) and the rationale for the Proposed Development, reasonable alternative technologies or processes were not assessed. However, an energy analysis was carried out as part of the development design and is submitted within the SHD Application (IN2 2022c).

Energy analysis was undertaken to demonstrate compliance to relevant building regulations, technical guidance, and the EU Directive for Near Zero Energy Buildings (NZEB). The report then examines the methodology in terms of Primary Energy, Renewable Technologies, and the alternatives between Centralised and Decentralised plant. The report illustrates how electrically based technologies (Air Source Heat Pumps,

Photovoltaic panels etc.) are increasingly favoured options and that the centralised system provides versatility to pursue other technologies so the building can meet future benchmarks or carbon target (IN2 2022c).

Waterman Moylan carried out a Sustainable Urban Drainage Systems (SuDS) Assessment to inform the surface water drainage design (Waterman Moylan 2022). SuDS collectively refers to surface water drainage methods that take account of quantity, quality and amenity issues. Issue that may have been overlooked, or considered in less detail, with more traditional design approaches to surface water management. They are typically made up of one or more structures, built to manage surface water run-off though source control (e.g. conveyance and infiltration of run-off) or site control (e.g. reduction in volume and rate of surface run-off, with some additional treatment provided). The assessment considered the use of all appropriate SuDS measures as part of the site SuDS strategy and was carried out by in compliance with the requirements of the DLRCC County Development Plan 2022-2028, the guidelines set by the Greater Dublin Strategic Drainage Study (GDSDS) and CIRIA documents. SuDS Measures proposed include permeable asphalt, green roofs/green podium, filter drains, attenuation tank and hydro-brake, petrol interceptors, bio-retention tree pits, and rain gardens.

3.5.4 Alternative Design of Development and Size and Scale

By email correspondence dated 29th November 2021, Dun Laoghaire Rathdown County Council Planning Department advised that a section 247 meeting would not be facilitated and the applicant could proceed to lodge a Pre-Application Consultation request with An Bord Pleanála (The Board) (MacCabe Durney Barnes Planning and Development Consultants, 2022).

A tripartite pre-planning meeting took place, under the provisions of Section 5 of the Planning and Development (Housing) and Residential Tenancies Act 2016 between the Applicant, The Board, and Dún Laoghaire Rathdown County Council in relation to the Proposed Development on 27 April 2022. The following issues were discussed:

Density;

Scope of planning application and relation with adjoining Tack site;

Masterplan;

Planning permission (expired);

Density;

Height;

Civil engineering;

SUFP policies;

Creche;

Residential amenity space; and,

Access and parking.

Following this, An Bord Pleanála issued an Inspector's Report outlining issues for further consideration and amendment in order to constitute a reasonable basis for an SHD application for the Proposed Development. The pre planning consultation process facilitated an addition design review opportunity which took into account the feedback of a range of departments within the planning authorities. This SHD application is made pursuant to An Bord Pleanála's Pre-Application Consultation Opinion of 19/5/22 under Ref. ABP-312265-21 (MacCabe Durney Barnes Planning and Development Consultants, 2022).

The proposed development has also been designed to address previous feedback from An Bord Pleanála and Dun Laoghaire Rathdown under PAC Reference ABP-308186-20 (former Tack Packaging site) (MacCabe Durney Barnes Planning and Development Consultants, 2022). This is considered to be appropriate as the two separate planning applications were conceived as co-ordinated and complementary SHD planning applications in association with Sandyford Environmental Ltd. for the adjoining Tack Site, prepared by the same design team.

Environmental considerations have been incorporated at the core of the design with weekly design team meetings being held to ensure that feedback from all the environmental specialists would be continually taken into the evolution of the proposals. The proposed design of the lower ground floor and basement elements of the proposals has been responsive to existing level differences, seeking to reduce the need for excavation and disposal of material from the Site. Opportunities to enhance the environmental value of the Site have been sought through the incorporation of embedded mitigation measures as set out in each of the technical chapters. The Proposed Development itself seeks to be a coherent response to enhance brownfield land use, maximising its potential for residential and communal use and designing for positive wind microclimate and daylighting/sunlighting relationships with neighbouring buildings) (MacCabe Durney Barnes Planning and Development Consultants, 2022).

3.5.4.1 Alternative building height

In the evolution of the design of the proposed scheme, has considered the alternative of including a medium height block as part of the scheme. From a design perspective, a strong rationale is presented in the siting of the taller block of 16 storeys at the corner of Carmanhall Road and Ravensrock Road. The Sandyford Urban Framework Plan 2022-28 envisages that block should have a height of 9 storeys. However, national planning policy and guidelines consider it is appropriate to locate high density developments in sustainable urban locations.

It is therefore important that the EIAR considers the height alternative is duly considered under key environmental criteria; namely micro-climate, daylight/sunlight and visual assessment. This alternative provides consideration whether the 16 storey block has a potential impact on communal space, residential amenity, adjoining sites and micro-climatic effects.

In the context of strategic policy, Project Ireland 2040 - National Planning Framework (2018), the location of higher residential buildings is appropriate in close proximity to the Luas light rail stop and significant employment opportunities in the Sandyford Business District. National Policy Objective 11 states 'there will be a presumption in favour of development that can encourage more people and generate more jobs and activity within existing cities, towns and villages, subject to development meeting appropriate planning standards and achieving targeted growth.'

National Policy Objective 13 considers that high buildings are appropriate in urban areas providing the environment is suitably protected. The Guidelines on Sustainable Development in Residential Urban Areas Urban Development (2009) and Building Height Guidelines for Planning Authorities (2018) also set out relevant policy criteria that support higher densities and height in appropriate locations. Housing for All – A New Housing Plan for Ireland (DHLGH 2021) stresses it is government policy to Increasing New Housing Supply in all residential sectors.

The Architectural Design Statement (MDO Architects) notes '*The design as proposed reinforces the existing street pattern creating legible well defined public and private spaces, responds to the existing and proposed development and creates a design with variety of form and scale by varying the height and form of the buildings. This design is composed of seven (five individual) blocks arranged around an open central landscaped courtyard, one of the blocks is 4/5 storeys to provide required sunlight into the communal courtyard, three of the buildings are 6/8 storeys, two are 8/10 storeys (some with mezzanine) and one of 8 stepping up to 16 storeys to create a taller building element at the street corner, similar to the previously granted permission on this site.*

The design celebrates the corner of Ravens Rock Road and Carmanhall Road, formed by the pocket park, punctuates this corner and creates an identity, interest and variation in the heights of the urban forms.'

The MDO statement further highlights "The form of the building has been designed and modulated to maximise the daylighting, views and amenity and permeability within the development, in the apartments, the courtyards and roof terraces."

In terms of visual impact the height has been considered by Macroworks in Chapter 13. In terms of micro-climate, a detailed analysis by Bfluid is in Chapter 12. The impact on sunlight and daylight of this alternative has also been considered in detail by IN2 (2022a).

3.5.5 Alternative Phasing of Current Development

The Proposed Development is expected to be constructed in one phase over approximately 24 months.

Given the scale of the Application Site's area, completing the entire development in a number of phases would not be a practical alternative. An alternative approach to phasing has been considered in terms of the potential to develop the adjacent former Tack Packing Site in tandem with the Proposed Development as part of the proposed masterplan set out in Section 3.2.1. In either scenario (assuming relevant planning permission is obtained), it is anticipated that the most environmentally and economically advantageous option would be to carry out development in a single phase, thereby not introducing new receptors within construction areas.

This approach to the development's construction provides benefits through efficient environmental management of the single construction phase.

3.5.6 Alternative Mitigation Measures

The mitigation measures identified in the chapters of the EIAR and consolidated in Chapter 16.0 (Mitigation and Monitoring Measures) are deemed appropriate for the Proposed Development. Limited consideration to alternative mitigation was given as the measures represent commonly employed best-practice for similar developments.

3.5.7 'Do-Nothing' Alternative

Given the specific local area objectives for the Site, if the Application Site was not developed (i.e. the 'Do-Nothing' Alternative), it is assumed that it would remain as an undeveloped vacant site. It is considered that the potential negative environmental impacts would be nil and the current baseline conditions would prevail. The socio-economic benefits of the Proposed Development, however, would not be realised and the need for this Project, in line with the requirements of the County Development Plan and the Sandyford Urban Framework Plan would not be met. Should the Application Site become occupied by a replacement commercial user it would represent an opportunity for low density use of the Site with limited opportunities for employment creation and landscaping.

Failure to develop the Application Site has a potential negative impact on the regional and local planning objectives, therefore a 'No Project' alternative is not considered to be a reasonable alternative.

Should the Site not be developed in this central location within the Sandyford Business Park it would likely result in residential units being located further from the Business District, and potentially on lands with fewer surrounding services and amenities. This would have negative impacts in terms of spatial pattern and distribution and may add to the exacerbation of traffic and transportation on key commuter routes to the area.

3.5.8 Current Design

Through the design, planning and consultation process, the Project team have examined various reasonable alternative designs to the Proposed Development. The current design, technology, location, size and scale of the Proposed Development represent the preferable alternative.

Further to this, the proposed scheme has been designed having regard to the amenities of adjoining sites, providing for appropriate setbacks and lower height built-form elements adjacent to the same with the higher built form elements being provided along the north-eastern site boundary to provide for maximum separation distance.

It is considered that the Proposed Development, comprising 334 no. residential units at this Application Site within Sandyford Industrial Estate and within proximate distance of Dublin City Centre, presents an appropriately scaled residential development on appropriately zoned land.

It is considered that the Application Site, being located within close proximity to an employment centre of significant scale and served by multiple public transport links to Dublin city centre, has the capacity to accommodate the residential accommodation and respond to the current housing shortage.

3.6 Major Accidents and Disasters

The EIA Directive (Directive 2011/92/EU, as amended by Directive 2014/52/EU) requires that an assessment is made to *'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'*.

The consideration of major accidents and disasters seeks to assess the relevant accidents and disasters which the Proposed Development is vulnerable to, and the relevant accidents and disasters that the Proposed Development could give rise to. In its current (vacant, low rise commercial buildings) state there is a low risk of potential for the occurrence of major accidents, hazards or disasters to occur at the Application Site, and it is not located in an area prone to natural disasters. There are no upper or lower tier Seveso establishments within 5 km of the Site.

3.6.1 Potential Receptors for Major Accident and Disaster Risks

Relevant receptors during the construction phase of this project are likely to include: personnel working within the Site, the partly constructed development, persons who may be working at or visiting adjacent properties, adjacent properties themselves, and waterbodies which may be contaminated from events on site.

Relevant receptors during the operational phase of the Proposed Development are likely to include: future residents and workers within the Proposed Development, the Proposed Development itself, persons who may be working at or visiting adjacent properties, adjacent properties themselves, and waterbodies, and waterbodies which may be contaminated from events on site.

The technical assessments undertaken as part of the EIA process have not identified any further receptors.

3.6.2 Guidance in Relation to Major Accidents and Disasters

A review of the potential risks arising from the Proposed Development has been undertaken following guidance outlined in the following documents:

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

Guidance on Assessing and Costing Environmental Liabilities (EPA, 2014); and

Guide to Risk Assessment in Major Emergency Management (Department of the Environment, Heritage and Local Government, DoEHLG, 2010).

The likelihood of occurrence of each of the risks / hazards identified has been assessed in accordance with the criteria identified in DoEHLG2010 guidance. The DoEHLG 2010 guidance sets out criteria for ranking risk likelihood on a five-level scale from '*Extremely Unlikely'* to '*Very Likely'* as set out in Table 3.1

Table 3.1: DoEHLG, 'A Guide to Risk Assessment in Major Emergency Management' (2010), Risk Likelihood Classification.

Ranking	Likelihood	Description
1	Extremely Unlikely	May occur only in exceptional circumstances; once every 500 or more years
2	Very Unlikely	Is not expected to occur; and/or no recorded incidents or anecdotal evidence; and/or very few incidents in associated organisations, facilities or communities; and / or little opportunity, reason or means to occur; may occur once every 100-500 years.
3	Unlikely	May occur at some time; and /or few, infrequent, random recorded incidents or little anecdotal evidence; some incidents in associated or comparable organisations worldwide; some opportunity, reason or means to occur; may occur once per 10-100 years.
4	Likely	Likely to or may occur; regular recorded incidents and strong anecdotal evidence and will probably occur once per 1-10 years
5	Very Likely	Very likely to occur; high level of recorded incidents and/or strong anecdotal evidence. Will probably occur more than once a year.

The DoEHLG 2010 Guidance also sets out criteria for ranking risk classification on a five-level scale from '*Minor*' to '*Catastrophic*' Table 3.2.

Table 3.2: DoEHLG, 'A Guide to Risk Assessment in Major Emergency Management' (2010), Risk Classification Table.

Rank	Classification	Impact	Description
1	Minor	Life, Health, Welfare	Small number of people affected; no fatalities and small number of minor injuries with first aid treatment.
		Environment	No contamination, localised effects
		Infrastructure	<€0.5M.
		Social	Minor localised disruption to community services or infrastructure (<6 hours).
2	Limited	Life, Health, Welfare	Single fatality; limited number of people affected; a few serious injuries with hospitalisation and medical treatment required. Localised displacement of a small number of people for 6 - 24 hours. Personal support satisfied through local arrangements.
		Environment	Simple contamination, localised effects of short duration
		Infrastructure	€0.5-3M
		Social	Normal community functioning with some inconvenience.
3	Serious	Life, Health, Welfare	Significant number of people in affected area impacted with multiple fatalities (<5), multiple serious or extensive injuries (20), significant hospitalisation. Large number of people displaced for 6-24 hours or possibly beyond; up to 500 evacuated. External resources required for personal support.
		Environment	Simple contamination, widespread effects or extended duration.

Rank	Classification	Impact	Description
		Infrastructure	€3-10M.
		Social	Community only partially functioning, some services available.
4	Very Serious	Life, Health, Welfare	5 to 50 fatalities, up to 100 serious injuries, up to 2000 evacuated.
		Environment	Heavy contamination, localised effects or extended duration.
		Infrastructure	€10 - 25M.
		Social	Community functioning poorly, minimal services available.
5	Catastrophic	Life, Health, Welfare	Large numbers of people impacted with significant numbers of fatalities (>50), injuries in the hundreds, more than 2000 evacuated.
		Environment	Very heavy contamination, widespread effects of extended duration.
		Infrastructure	>€25M
		Social	Serious damage to infrastructure causing significant disruption to, or loss of, key services for prolonged period. Community unable to function without significant support.

The DoEHLG guidance presents a matrix for estimating an overall risk potential of a project based on the identified risk / hazard 'likelihood' and 'consequence' as set out in Table 3.3). This matrix enables an assessment to be made of whether a project can be classified as '*Low'* risk, '*Moderate'* risk and '*High'* risk.

Table 3.3: Matrix for Determining Significance of Effect

		Consequence				
		1 Minor	2 Limited	3 Serious	4 Very Serious	5 Catastrophic
Likelihood	5 Very Likely	Low	Moderate	High	High	High
	4 Likely	Low	Moderate	Moderate	High	High
	3 Unlikely	Low	Low	Moderate	Moderate	High
	2 Very Unlikely	Low	Low	Low	Moderate	Moderate
	1 Extremely Unlikely	Low	Low	Low	Low	Low

	Consequence				
	1 Minor	2 Limited	3 Serious	4 Very Serious	5 Catastrophic
DoEHLG 2010 Classification	Normal Emergency	Major Emergency			

A review of the Proposed Development has been undertaken following the DoEHLG 2010 guidance on risk likelihood and risk consequence in order to assess the overall risk potential of the project in accordance with Table 3.1 to Table 3.3.

3.6.3 Risk Identification

The following potential risks have been identified in relation to the vulnerability of the Proposed Development and the potential of the Proposed Development itself to cause major accidents and disasters.

Table 3.4: Potential Risks for Major Accidents and Disasters

Potential Risk	Possible Cause	How this has been Addressed
Spills and Potential Pollution Events	Pollution incidents during construction phase (e.g., hydrocarbon spills) to ground and watercourses.	EIAR Land, Soils and Geology and Water chapters have determined that with the implementation of appropriate mitigation, which includes best practice construction management, there will be a 'not significant' effect of activities on the surrounding environment. CEMP Appropriate mitigation of this risk will include the implementation of a Construction Environmental Management Plan.
Flooding	Tidal, Fluvial, Foul Water, Surface Water, Ground Water & Human / Mechanical Error	Flood Risk Assessment A Flood Risk Assessment (FRA) has been carried out to accompany the SHD application (Waterman Moylan, 2022). Flood Risks with these possible causes were assessed in the context of receptor, likelihood and consequence. All sources of flooding have been categorised as Low risk. The FRA notes that available future scenario models including climate change allowances, do not predict an increase in flood extent onto the site. The FRA concludes that there will not be an increase in flood risk as a result of the Proposed Development.
Fire / Explosion	Fire due to vehicle collisions on Site or from damage to / contact with unmapped underground services and utilities, such as the electricity and gas supply networks. Internal / external fire.	EIAR Locations of underground services and utilities have been outlined in Material Assets chapter and works around these services will be governed by relevant health and safety guidance, legislation and the Construction Management Plan. With this mitigation, it is considered that there will be an imperceptible impact to these

Potential Risk	Possible Cause	How this has been Addressed
		services and a not significant risk of a major accident to occur as a result. Preliminary Fire Safety and Access & Use Strategy This report by Maurice Johnson & Partners demonstrates that the proposed design is in substantial compliance with Part B (Fire Safety) & Part M (Access & Use) of the Building Regulations and that it will be possible in due course to obtain a Fire Safety and Disability Access Certificate without giving rise to changes that would require planning permission Risk Assessment Risk Assessment will be carried out by an independent and comprehensive Fire Risk Assessor.
Interaction with the Public and Roads	Construction activities that interact with the public domain and the road network. During these times there is potential for activities to result in a road collision or incident with another vehicle.	CMP These works are required to be carefully planned and appropriate provisions will be identified in the appointed Main Contractor's CMP. These provisions should ensure that potential impacts are imperceptible.
Debris Falls	Construction activities carried out at height, whether that is on scaffolding working platforms or by tower cranes.	CMP The CMP and the Construction Health and Safety Management Plan will identify such activities and plan accordingly to ensure that there are no adverse impacts.
Aircraft Collision	Cranes colliding with an aircraft during the construction / operational phase.	The Irish Aviation Authority (IAA) will be notified on the submission of the SHD application to ABP and consultation with the IAA will be carried out prior to construction. All requirements of the IAA will be fully complied with, including site / structure, lighting / beacons, crane operation.

It is considered that the potential risks identified in Table 3.4 above can be regarded as '*Very Unlikely'* to occur in accordance with the DoEHLG (2010) Guidance:

> *'not expected to occur; and/or no recorded incidents or anecdotal evidence; and/or very few incidents in associated organisations, facilities or communities; and / or little opportunity, reason or means to occur; may occur once every 100-500 years'.*

Given the nature and scale of the Proposed Development, it is not expected any of the identified risks would have 'Very Serious' or 'Catastrophic' consequences, therefore the assessment of the potential risks concludes that the project has a low risk potential.

3.6.4 Do-Nothing Scenario

If the Proposed Development were not to proceed, the subject site would remain in its existing vacant form and there would be no increase in the risk of major accidents occurring.

3.6.5 Cumulative Effects

There were no likely risks of a major accident or disaster identified in respect of the Proposed Development, and subsequently there were no cumulative effects identified either.

3.7 Decommissioning of the Proposed Development

Given the permanent nature of the Proposed Development, no plans or provisions are proposed for the future decommissioning of the Site. The Proposed Development will provide for residential units which are envisaged to become permanent features of the Sandyford Business Park.

A Building Lifecycle Assessment Report has been prepared by Aramark (Aramark 2022a) and included in the overall SHD Application. The report describes the building materials proposed for use in the construction of the Proposed Development which have been identified to achieve a durable standard of quality that will not require regular fabric replacement or maintenance outside general day to day care.

The choice of high quality and long-lasting materials, as well as both soft and hardscape in the public, semi-public and private realm will also contribute to lower maintenance costs for future residents and occupiers of the Proposed Development.

3.8 References

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4.0 POPULATION AND HUMAN HEALTH

4.1 Introduction

This Chapter of the EIAR has been prepared by Golder, a member of WSP in Ireland (Golder) for the Carmanhall Road Strategic Housing Development (the 'Proposed Development'). This Chapter describes the human environment and identifies and assesses any construction and operational related impacts from the activities on lands located at the former Avid Technology International site on Carmanhall Road, Sandyford Industrial Estate, Dublin 18, (the 'Site' / 'Application Site'). The human environment and potential impacts on the 'quality of life' as a consequence of the Proposed Development are discussed under the following headings:

- Populations and social patterns;
- Economic patterns (activity and employment);
- Amenity;
- Land-use;
- Human health; and
- Health and safety.

As well as considering impacts on population and human health in the EIAR, interactions between humans and other facets of the environment are considered in relation to assessments in other relevant sections, including:

- Ecology and Biodiversity (Chapter 5.0);
- Land, Soils and Geology (Chapter 6.0);
- Water (Chapter 7.0);
- Air Quality and Climate (Chapter 8.0);
- Noise and Vibration (Chapter 9.0);
- Wind Microclimate (Chapter 12.0); and
- Landscape and Visual (Chapter 13.0).

Construction and operational related impacts from the Proposed Development in relation to Traffic and Transport are addressed in Chapter 11.0 of this EIAR (Traffic and Transport). Impact in relation to other built services (such as electricity, telecommunications, water supply and foul water capacity) are addressed in Chapter 14.0 (Material Assets).

This chapter has been prepared by Rhian Llewellyn (MGeol, PhD), she is a Practitioner Member of the Institute of Environmental Management and Assessment with over 6 years' experience in environmental assessment.

4.1.1 Project Description

The development will consist of 334 Build to Rent residential apartment units within 4 no. apartment blocks and as follows:

- *79 No. Studio*
- *175 No. 1 bed*
- *80 No. 2 bed*

- *All residential units provided with private balconies/terraces to the north/south/east and west elevations*
- *Crèche 272 sq.m.*

- *Residential amenity spaces 893 sq.m. (including a unit of 146.5 sqm open to the public, resident's gym, business centre, multipurpose room, staff facilities, multimedia/cinema room, shared working space, concierge, and games room)*
- *Height ranging from 5 to 16 storeys (over basement)*
- *Landscaped communal space in the central courtyard*
- *Provision of a new vehicular entrance from Carmanhall Road and egress to Blackthorn Road*
- *Provision of pedestrian and cycle connections*
- *125 No. Car Parking, 6 No. Motorcycle Parking and 447 cycle spaces at ground floor/under croft and basement car park levels*
- *Plant and telecoms mitigation structures at roof level*

The development also includes 2 no. ESB substations, lighting, plant, storage, site drainage works and all ancillary site development works above and below ground.

4.2 Legislative and Policy Context

Legislative Requirements

Annex IV of the Directive 2011/92/EU (as amended by Directive 2014/52/EU, together the 'EIA Directive') contains the framework for the assessment of certain plans/projects on the environment and requires that the developer provide a description of the factors (specified in Article 3(1)) which are likely to be significantly affected by the project, including a study of the potential impacts to population and human health.

The EIA Directive was transposed into Irish law by way of statutory instruments, in particular through the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (SI No. 296 of 2018) which amended the Planning and Development Act, 2000, and the Planning and Development Regulations, 2001. This EIAR has been produced in accordance with these relevant legislative requirements and Statutory Instruments.

Policy Context

Dún Laoghaire-Rathdown County Council (DLRCC) has adopted policies within the 2022-2028 County Development Plan in relation to the protection of populations, health and amenity from planned projects. The Council acknowledges that factors such as air pollution, water pollution, nuisance noise and vibrations can negatively affect human health and ecosystems. Such policies within the CDP include:

Policy EI14: Air and Noise Pollution - *It is Council policy to implement the provisions of national and EU Directives on air and noise pollution and other relevant legislative requirements in conjunction with other agencies as appropriate. (Consistent with RPO 10.10 of the RSES); to maintain and manage a Dublin County ambient air quality monitoring network in conjunction with the EPA and TII and to make available to the public the resulting air quality measurements via the EPA website www.epa.ie/air/quality; and to support the implementation of objectives of the 'Dublin Agglomeration Environmental Noise Action Plan 2018-2023'.*

Policy EI16: Water Pollution - *It is Council policy to implement the provisions of water pollution abatement measures in accordance with National and EU Directives and other legislative requirements in conjunction with other agencies as appropriate.*

The DLRCC County Development Plan contains the 'Sandyford Urban Framework Plan' (Appendix 16), this local plan was included in the CDP by way of a variation and is now incorporated within the Plan. Specific to the Proposed Development Site the plan contains Specific Local Objective (SLO) 141, which seeks to assist in

the completion of the unfinished block at Carmanhall Road/Blackthorn Drive to a maximum of 110 residential units.

SLO 113 - *To facilitate completion of the unfinished Block and allow consideration of a maximum of 110 residential units.*

The Proposed Development Site is also covered by SLO 52.

SLO 52 - *To facilitate the provision of community infrastructure at ground floor along the eastern outer edge of the Carmanhall residential neighbourhood along Blackthorn Road, to create active street frontage and to ensure the appropriate provision of social and community infrastructure to serve the needs of the resident and employee population.*

Furthermore, Objectives 'A2 1-5' are objectives of the Council to provide for the creation of Sustainable Residential Neighbourhoods and to preserve and protect residential amenity in Zone 5 of the Sandyford Business District. Zone 5 consists of areas where residential development should be the primary land use and the environment is to be designed to be conducive to the development of sustainable residential neighbourhoods. The Plan identifies three distinct areas within the Sandyford Business District, of which the Carmanhall Road Neighbourhood is one.

4.3 Assessment Methodology and Significance Criteria

4.3.1 Technical Scope

This assessment has been made with guidance from the 'Guidelines on the information to be contained in environmental impact assessment reports', published by the Environmental Protection Agency (EPA) in May 2022 (EPA, 2022). These guidelines were prepared by the EPA with a view to facilitating compliance with EIA Directive (2014/52/EU).

The EPA's 2022 'Guidelines on the information to be contained in environmental impact assessment reports' suggest the following subheadings under which to arrange issues; *"Employment, Settlement patterns, Land use patterns, Demographic trends, Human Health (considered with reference to other headings such as water and air), Amenity (e.g. effects on amenity uses of a site or of other areas in the vicinity may be addressed under the factor of Landscape)."*

Having regard to the above guidance, particularly the EPA's 2022 'Guidelines on the information to be contained in environmental impact assessment reports', and the characteristics and context of the lands that are the subject of this application, this EIAR chapter aims to identify the likely significant effects that the development may have on 'quality of life', and these are discussed under the following headings:

- Populations;
- Employment;
- Amenity;
- Land Use;
- Human health; and
- Health and safety.

4.3.2 Prediction of Impacts and Effects Prior to Mitigation

This chapter of the EIAR describes the likely significant direct effects of the Proposed Development on the human environment. The potential indirect/secondary, cumulative, do-nothing, worst case, indeterminable,

irreversible, residual, and synergistic effects of the Proposed Development are also described, where appropriate. The extent, context and frequency of effects has also been considered in the assessment process.

Prediction methods are required to identify and assess the significant effects of the development on the environment. The predictive method used for this assessment is a common framework of assessment criteria and terminology based on the EPA's 2022 'Guidelines on the information to be contained in environmental impact assessment reports', with some adjustments to improve clarity.

This common framework follows a 'matrix approach' to environmental assessment which is based on the characteristics of the impact (magnitude and nature) and the value (sensitivity) of the receptor. The terms used in the common framework are described below. Details of how these specifically relate to the human environment are based on the UK's Design Manual for Roads and Bridges (Volume 11, Section 3, LA112, Revision 1, Sustainability and environment. Appraisal. Population and human health). The sensitivity of communities and populations has been included and has been conservatively attributed a 'High' sensitivity. These descriptions for value (sensitivity) of receptors are provided in Table 4.1 and Table 4.2.

Table 4.1: Environmental value (sensitivity) and descriptions.

Value (sensitivity) of Receptor / Resource	Typical Description
High	High importance and rarity, national scale, and limited potential for substitution.
Medium	Medium or high importance and rarity, regional scale, limited potential for substitution.
Low	Low or medium importance and rarity, local scale.
Negligible	Very low importance and rarity, local scale.

The environmental sensitivity descriptions have been assigned to receptor groups as appropriate for the assessment on the human environment. These descriptions and rankings have been provided below in Table 4.2.

Table 4.2: Environmental Value (Sensitivity) and Descriptions for Assessment Groups.

Group	Receptor / Resource	Designated Value (sensitivity) of Receptor / Resource
Populations / Communities	All individuals located in a particular location (this can be local, regional or at a national scale), and groups of people living in the same place or having a particular characteristic in common.	High
Private Dwellings	Residential property.	High
Community land and facilities, and other lands	Designated local green space / valued community facility.	High
	Undesignated local green space / non-essential community facility.	Low
	Derelict or unoccupied buildings or lands.	Low
Local Businesses	Businesses where viability is likely to be permanently jeopardised by a short disruption to access or worsening of trading conditions.	High

Group	Receptor / Resource	Designated Value (sensitivity) of Receptor / Resource
	Businesses where profitability may be harmed by a short or medium-term disruption to access or worsening of trading conditions.	Medium
	Businesses that could continue to operate without substantial harm if affected by a disruption to access or worsening of trading conditions.	Low
	Businesses that could continue to operate relatively unharmed if affected by a disruption to access or worsening of trading conditions.	Negligible
Non-motorised users	All non-motorised users utilising roads and networks, including pedestrians, cyclists, horse-riding, etc.	High
Human health	Health receptor that would be likely or expected to be directly affected. Receptor is well placed to take advantage of beneficial impacts, and/or is not well placed to deal with any adverse impacts.	High
	Health receptor that would be likely to be indirectly affected. Average ability to maximise beneficial impacts or cope with adverse impacts.	Medium
	Health receptor that would be unlikely to be affected. Receptor is not well placed to take advantage of beneficial impacts, and/or is well placed to deal with any adverse impacts.	Low
	Health receptor that would be unlikely to be affected or effects would be temporary in nature, or which would be anticipated to have a slight or no effect on human health.	Negligible
Vehicle travellers	Public transport, motor vehicles.	Low

The descriptions for magnitude of impact are provided in Table 4.3. The numerous descriptions for both the adverse and beneficial magnitudes of impact provided below reflect the diverse range of receptor groups which may be impacted.

Table 4.3: Magnitude of impact and Typical Descriptions.

Magnitude of Impact (change)		Typical Description
High	Adverse	■ Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements; ■ An impact that is expected to have considerable adverse socioeconomic effects. Such impacts will typically affect large numbers of businesses, workers or residents; ■ Very large damage to local business which may compromise its viability; ■ Adverse health impact to a large number of people and adverse impact affecting sensitive population groups.
	Beneficial	■ Large scale or major improvement of resource quality; extensive restoration; major improvement of attribute quality; ■ An impact that is expected to have considerable beneficial socioeconomic effects. Such impacts will typically affect large numbers of businesses, workers or residents; ■ Very large direct or indirect benefits for local business;

Magnitude of Impact (change)		Typical Description
		■ Beneficial health impact to a large number of people and beneficial impact affecting sensitive population groups.
Medium	Adverse	■ Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements; ■ Moderate magnitude impacts will typically be long-term in nature, resulting in the permanent change of the study area's baseline socio-economic conditions; ■ Moderate to large damage to local business, but with changes to management it should remain viable; ■ Adverse impact affecting moderate number of people. Adverse impact affecting some sensitive population group(s).
	Beneficial	■ Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality; ■ Moderate magnitude impacts will typically be long-term in nature, resulting in the permanent change of the study area's baseline socio-economic conditions; ■ Moderate to large benefits for local business; ■ Beneficial impact affecting moderate number of people. Beneficial impact affecting some sensitive population group(s).
Low	Adverse	■ Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements; ■ An impact that is expected to have a minor socio-economic effect. Such impacts will typically have a noticeable effect on a limited number of businesses, workers or residents, and will lead to a permanent (but not drastic) change to the study area's baseline socio-economic conditions; ■ Slight to moderate damage to local business, but with minor changes to management it should remain viable; ■ Adverse impact affecting low-moderate number of people. Adverse impact affecting few sensitive population groups.
	Beneficial	■ Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring; ■ An impact that is expected to have a minor socio-economic effect. Such impacts will typically have a noticeable effect on a limited number of businesses, workers or residents, and will lead to a permanent (but not drastic) change to the study area's baseline socio-economic conditions; ■ Slight to moderate benefits for local business; ■ Beneficial impact affecting low-moderate number of people. Beneficial impact affecting few sensitive population groups.
Negligible	Adverse	■ Very minor loss or alteration to one or more characteristics, features or elements; ■ An impact that is expected to affect a small number of businesses, workers or residents. Or an impact that may affect a larger number of receptors but without materially changing the study area's baseline socio-economic conditions. Such impacts are likely to be temporary in nature; ■ The identified impacts are predicted to have little or no damage to local business; ■ No or non-perceptible impact to health, population or sensitive groups.
	Beneficial	■ Very minor benefit to or positive addition of one or more characteristics, features or elements; ■ An impact that is expected to affect a small number of businesses, workers or residents. Or an impact that may affect a larger number of receptors but without materially changing the study area's baseline socio-economic conditions. Such impacts are likely to be temporary in nature; ■ The identified impacts are predicted to have little or no benefit to local business; ■ No or non-perceptible impact to health, population or sensitive groups.

The approach followed to derive effects significance from receptor value and magnitude of impacts is shown in Table 4.4. Where Table 4.4 includes two significance categories, evidence is provided in the topic chapters to support the reporting of a single significance category.

Table 4.4: Significance Matrix

	Magnitude of Impact (Degree of Change)				
Environmental Value (Sensitivity)		**Negligible**	**Low**	**Medium**	**High**
	High	Slight	Slight or moderate	Moderate or large	Profound
	Medium	Imperceptible or slight	Slight or moderate	Moderate	Large or profound
	Low	Imperceptible	Slight	Slight	Slight or moderate
	Negligible	Imperceptible	Imperceptible or slight	Imperceptible or slight	Slight

A description of the significance categories used is provided in Table 4.5. The criteria and terminology in the table has been based on and is consistent with the EPA's 2022 EIAR Guidelines. The EPA's '*Significant Effects'* and '*Very Significant'* categories have been combined into one '*Large*' category. Furthermore, the EPA's '*Not Significant*' category has been combined with the '*Slight Effects*' category. These substitutions provide conservatism by attributing a higher effects category to adverse effects. The removal of the '*significant'* and '*not significant'* terminology from the matrix stage of the method avoids confusion when an overall significance is attributed to the particular impact.

Table 4.5: Significance Categories and Typical Descriptions.

Significance Category	Typical Description
Profound	An effect which obliterates sensitive characteristics. Only adverse effects are usually assigned this level of significance. These factors are key issues in the decision-making and consent process. These effects are generally, but not exclusively, associated with sites or features of international, national or regional importance which are likely to suffer a most damaging impact and loss of resource integrity. However, a major change in a site or feature of local importance may also be included in this significance category.
Large	An effect which, by its character, magnitude, duration or intensity alters a significant proportion of a sensitive aspect of the environment. These can be beneficial or adverse effects and are considered to be very important issues which are likely to be substantial in the decision-making process.
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends. These are beneficial or adverse effects which may be important but are not likely to be central to decision-making or consent. The cumulative effects of these factors may influence consent or decision-making if they should lead to an increase in the overall adverse effect on a particular resource or receptor.

Significance Category	Typical Description
Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities. These beneficial or adverse effects may be raised as local factors. They are unlikely to be critical in the decision-making process but are important in enhancing the subsequent design of the project.
Imperceptible	An effect capable of measurement but without significant consequences. No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

The approach to assigning significance of effect included reasoned argument and the professional judgement of competent experts. The assessment of the significance of environmental effects covered the following factors:

1. The receptors/resources (natural and human) which would have been affected and the pathways for such effects;
2. The geographic importance, sensitivity or value of receptors/resources;
3. The duration (long or short term); permanence (permanent or temporary) and changes in significance (increase or decrease);
4. Reversibility - e.g. is the change reversible or irreversible, permanent or temporary;
5. Environmental and health standards (e.g. local air quality standards) being threatened; and
6. Feasibility and mechanisms for delivering mitigating measures, e.g. Is there evidence of the ability to legally deliver the environmental assumptions which are the basis for the assessment?

Effects that are either *Large* or *Profound* alter environmental sensitivities and are therefore considered to be *Significant* based on professional judgement. Effects considered to be *Moderate*, *Slight*, or *Imperceptible* are those which at their highest effect are consistent with existing and emerging baseline trends and are considered to be *Not Significant*.

4.3.3 Information Sources

Information for the assessment of potential impacts on populations and human health was obtained by means of a desk-based review, and included the following sources:

Sources of information used consist of site visits (between December 2021 and February 2022), inspection of the surrounding area, a desktop review of previous assessments of the development in historic planning applications, government surveys and local authority plans.

- Census Returns (Central Statistics Office (CSO), 1991, 1996, 2002, 2006, 2011, 2016 and 2022 Census);
- ESRI Quarterly Economic Commentary;
- Dún Laoghaire Rathdown County Development Plan 2022-2028;
- Regional Planning Guidelines for the Greater Dublin Area, 2010-2022;
- Department of Health, Key Trends in Ireland, 2021;
- Department of Communications, Climate Action and Environment, Climate Action Plan 2021;
- Project Ireland 2040 National Development Plan 2018—2027;
- Field surveys of the Application Site;
- Department of Communication, Climate Action and Environment (DCCAE) Eircode maps; and
- Aerial and ordnance survey maps of the area.

The EPA's 2022 'Guidelines on the information to be contained in environmental impact assessment reports' identify that the legislation does not generally require assessment of Land Use planning, demographic issues or detailed socio-economic analysis, which should be avoided in an EIAR, unless issues such as economic or settlement patterns give rise directly to specific new developments and associated effects. As such, assessments of these topics have not been conducted as the development is not considered likely to have impacts on the land use planning within the locality, nor is it likely to affect the local demographics or socio-economic dynamics of the area. However, baseline information on the local area has been provided to show its context to, and comparison with, the region (county) and national average. In addition, information on industrial land use in proximity to the Site has been included. The land-uses identified include similar industry to the Proposed Development, EPA regulated and licenced facilities (such as waste or IPC/IE sites) and upper or lower tier SEVESO sites.

A Social and Community Audit in the vicinity of the Site has been carried out by MacCabe Durney Barnes (MDB) Consultants and has been submitted in the SHD application.

4.3.4 Temporal Scope

Under the current programme, it is expected that the duration of construction will last for approximately 24 months. The duration of the construction phase is therefore classified as 'short-term' by the EPA's 2022 'Guidelines on the information to be contained in environmental impact assessment reports', (one to seven years).

The operational phase of the development will follow and will be a ‘permanent’ duration (those lasting greater than sixty years).

A decommissioning phase for the development has not been considered due to the ‘permanent’ nature of the development. The EIAR has been based on these assumptions.

4.3.5 Geographical Scope

The EIA directly covers the physical extent of the Site as shown in the red line boundary plan (Figure 4.1). As predicted impacts on the human environment can extend beyond the immediate Site boundary, a wider ‘zone of influence’ has been considered.

The geographical study area for the assessment covers the development area and a buffer zone of 500 m from the development boundary. The buffer area has been identified based on the UK’s Design Manual for Roads and Bridges (Volume 11, Section 3, LA112, Revision 1, Sustainability and environment. Appraisal. Population and human health).

In the assessment of cumulative impacts, the geographical extent of the EIAR has been extended as appropriate to include the relevant related or unrelated development activities.

The study area defined for the population and demographic trends is the Electoral Division (ED) of Dundrum – Balally. The Application boundary in context to the boundary of the Dundrum - Balally ED has been illustrated in Figure 4.2.

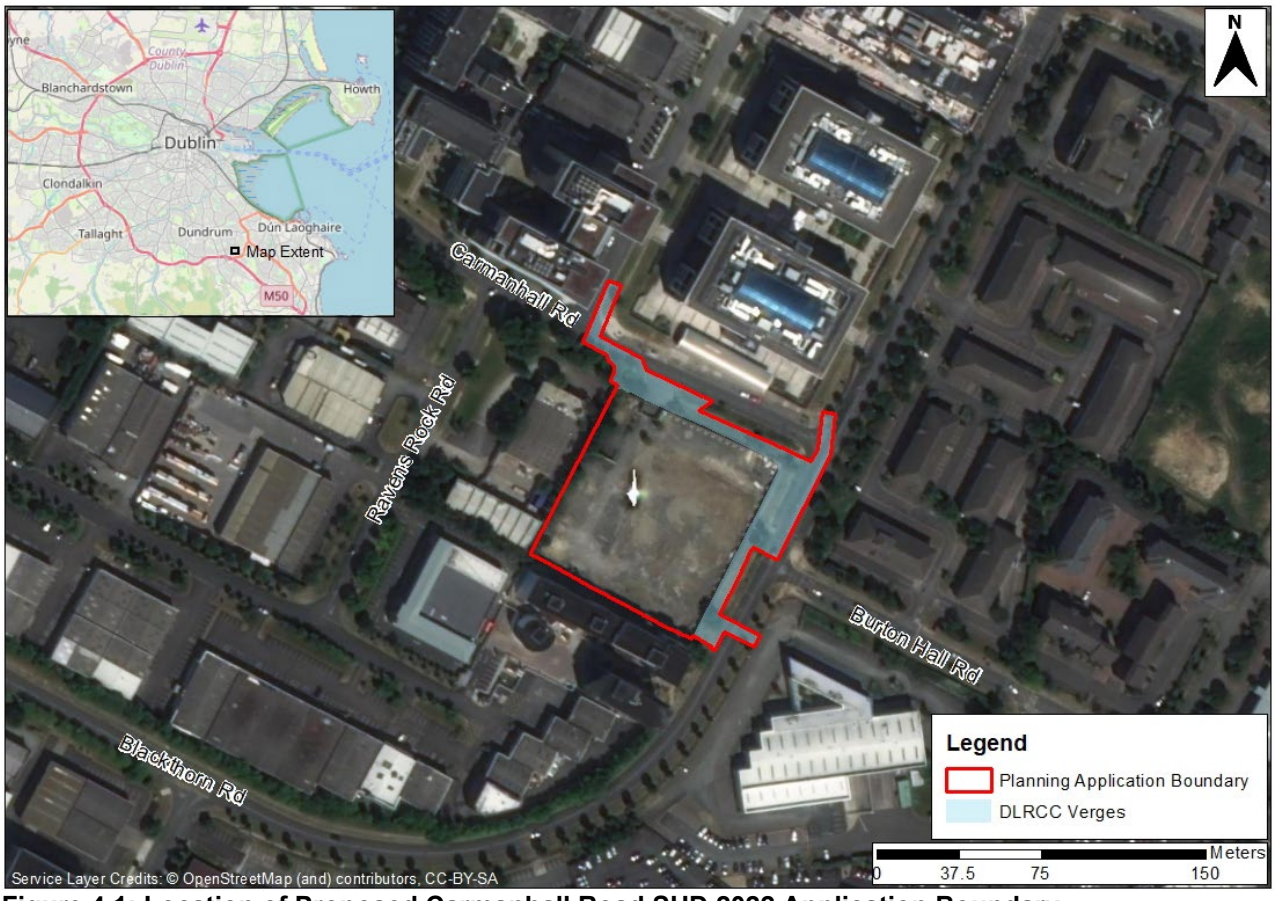

Figure 4.1: Location of Proposed Carmanhall Road SHD 2022 Application Boundary

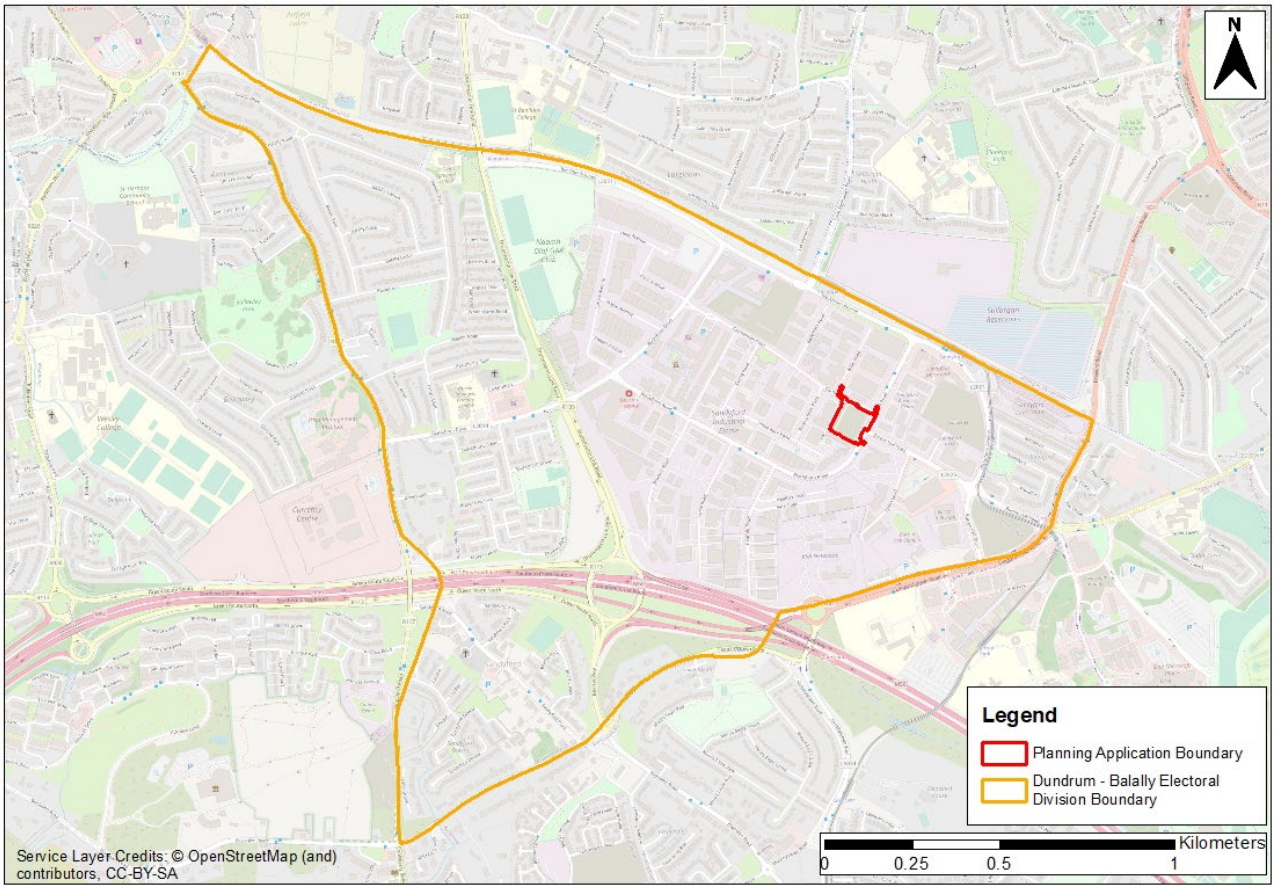

Figure 4.2: Location of the Application Boundary and Dundrum-Balally ED

4.4 Surrounding Environment

The Site is located in south county Dublin, within the administrative area of Dún Laoghaire Rathdown County Council. Specifically, the Proposed Development Site is located on a brownfield site where former commercial premiseshave been demolished. The site lies within the Sandyford Industrial Estate which is composed of retail, warehousing units, industrial uses and office buildings.

Carmanhall Road abuts the site's northern boundary and Blackthorn Road abuts the site's eastern boundary. The site immediately south of the subject site is occupied by a four-storey office building and the site immediately west is the proposed Tack Packaging Sandyford SHD site. Vehicular access is provided in the north-western corner of the site via a crossover to Carmanhall Road. The site slopes from south to north towards Carmanhall Road.

The site is well serviced by public transport. It is located approximately 350 metres to the south-west of the Sandyford Luas stop which is located on Blackthorn Avenue and Bus Route Nos. 11, 47, 75, 114 and 116 all operate via Blackthorn Road.

4.5 Baseline Conditions

4.5.1 Population and Social Patterns

Population Change, 2006 - 2016

Table 4.6 summarises population statistics for the State, Leinster, Dún Laoghaire-Rathdown and the Dundrum-Balally ED. Also included are the numbers of usual residents in Dún Laoghaire-Rathdown and Dundrum-Balally ED for this period. The percentage population increase has been calculated between the Census periods of 2006 to 2011 and 2011 to 2016. Generally consistent increases in population were observed in Dún Laoghaire-

Rathdown (DLR) over the Census periods of 2006 to 2011 and 2011 to 2016. Lower rates of population increase were observed from 2011 to 2016, than from 2006 to 2011, in the Dundrum-Balally ED, owing to the larger rate of population increase seen around 2006 during the economic boom and development at that time.

Although lower rates of population increases were seen between 2011-2016 in Dundrum-Balally ED, these were still larger than those recorded regionally and nationally for the same periods. These population increases can be attributed to the continued development occurring in the area over this period.

Table 4.6: Population Dynamics from 2006 to 2016, (Central Statistics Office)

Area	2006	2011	2006 to 2011 % Increase	2016	2011 to 2016 % Increase	2022	2016 to 2022 % Increase
State	4,239,848	4,588,252	8.2%	4,761,865	3.8%	5,123,536	7.6
Leinster	2,295,123	2,504,814	9.1%	2,634,403	5.2%	-*	-*
DLR	194,038	206,261	6.3%	218,018	5.7%	-*	-*
DLR - Usual Residents	190,421	202,569	6.4%	213,519	5.4%	-*	-*
Dundrum-Balally	4,894	7,049	44.0%	8,035	14.0%	8,936	11.2
Dundrum-Balally – Usual Residents	4,828	6,898	42.9%	7,851	13.8%	-*	-*

* Data not yet available

Population Age Distribution

Table 4.7 summarises the percentage population distribution by age for the State, DLR and the Dundrum-Balally ED. The population age distribution percentages have been calculated for the Census periods of 2011 and 2016.

It is indicated from the comparison of age profiles that the Dundrum-Balally ED has a higher percentage of persons under the age of 45 compared with the averages for DLR and the State as a whole.

Moreover, the Dundrum-Balally ED has a lower percentage of older persons in the age brackets of 45 to 64 and older than 64 compared with the average for DLR and the State.

These statistics suggest that the Dundrum-Balally ED contains a larger portion of persons under the age of 45.

Table 4.7: Population Age Distribution, 2011 and 2016 (Central Statistics Office).

Year	Area	% Persons Aged 0-14	% Persons Aged 15-29	% Persons Aged 30-44	% Persons Aged 45-64	% Persons Aged 65+
2011	State	21.3	20.5	23.7	22.7	11.7
2016	State	21.1	18.4	23.3	23.8	13.4
2011	DLR	18.2	21.7	21.9	23.8	14.5
2016	DLR	18.4	20	21.9	23.9	15.9

Year	Area	% Persons Aged 0-14	% Persons Aged 15-29	% Persons Aged 30-44	% Persons Aged 45-64	% Persons Aged 65+
2011	Dundrum-Balally ED	15.1	27.8	26.8	19.1	11.2
2016	Dundrum-Balally ED	16.6	23.3	30.7	17.3	12.2

Population Density

Table 4.8 summarises population densities for the State, Leinster, DLR and the Dundrum-Balally ED. The population densities have been calculated for the Census periods of 2006, 2011 and 2016.

As would be expected with increasing populations, the population densities also increased in all of the areas over the Census periods. The population density of Dundrum-Balally ED increased from 1949.8 persons per km^2 in 2006 to 3202.8 persons per km^2 in 2016. This increase corresponds to the development growth within the area over this same period.

Table 4.8: Population Density (persons per square kilometre) from 2006 to 2016 (Central Statistics Office).

Area	Size km^2	Population Density 2006	Population Density 2011	Population Density 2016
State	70,273	60.3	65.3	67.8
Leinster	19,800	115.9	126.5	133.1
DLR	125.8	1542.4	1639.6	1733.1
Dundrum-Balally ED	2.51	1949.8	2808.4	3202.8

Households

Table 4.9 summarises the number of households and persons per household for the State, DLR and the Dundrum-Balally ED. The statistics have been calculated for the Census periods 2011 and 2016.

It can be noted that the average size of households in Dundrum-Balally ED and DLR are below the average household sizes identified in the State for the same periods.

Table 4.9: Households from 2011 to 2016 (Central Statistics Office).

Area	2011			2016		
	No. of Households	No. of People	Average No. Persons per Household	No. of Households	No. of People	Average No. Persons per Household
State	1,654,208	4,510,409	2.73	1,702,289	4,676,648	2.75
DLR	75,819	202,594	2.67	78,601	213,468	2.72
Dundrum-Balally ED	2,716	6,907	2.54	3,119	7,895	2.53

Commuting

Table 4.10 summarises the commuting times per person aged 5 years or over to work, school or college for DLR and the Dundrum-Balally ED. The statistics have been calculated for the Census periods 2011 and 2016.

It is considered that the large majority of persons commuting for less than 1 hour are travelling towards Dublin or working within the DLR area.

The majority of persons commuting for longer times are likely to be travelling out of the Dublin and greater Dublin area.

Table 4.10: Commuting Times for Percent of People (aged 5 years and over) in DLR and Dundrum-Balally ED (Central Statistics Office).

Journey Time	DLR 2011 (%)	DLR 2016 (%)	Dundrum-Balally ED 2011 (%)	Dundrum-Balally ED 2016 (%)
Under 15 mins	23.7	22.0	26.0	21.5
¼ hour - under ½ hour	33.3	30.8	34.1	31.1
½ hour - under ¾ hour	24.2	24.6	23.1	24.9
¾ hour - under 1 hour	8.6	9.7	8.7	9.8
1 hour - under 1 ½ hours	5.3	6.6	4.8	6.0
1 ½ hours and over	0.8	1.1	0.8	1.6
Not stated	4.1	5.1	2.6	5.0

4.5.2 Economic Patterns

Principal Status

Table 4.11 summarises the employment status of the persons aged 15 years or older in DLR and the Dundrum-Balally ED. As identified in Table 4.7, this equates to 81.7% of the DLR population in 2016, and 83.5% of the Dundrum-Balally ED population for the same year.

Between the periods of 2011 and 2016 it is evident that the percentage of those 'Unemployed having lost or given up previous job' has decreased within the respective populations (Table 4.11).

Table 4.11: Principal Status of Persons 15 years and older in DLR and Dundrum-Balally ED, 2011 and 2016 (Central Statistics Office).

Status	DLR	DLR	Dundrum-Balally ED	Dundrum-Balally ED
	2011 (%)	2016 (%)	2011 (%)	2016 (%)
At work	51.9	53.9	60.1	59.7
Looking for first regular job	0.6	0.5	0.4	0.5
Unemployed having lost or given up previous job	6.0	3.8	7.5	5.1
Student	14.5	14.4	10.3	13.1
Looking after home/family	9.2	7.8	7.5	6.0
Retired	15.2	17.0	11.4	13.1
Unable to work due to permanent sickness or disability	2.5	2.3	2.7	2.2
Other	0.2	0.3	0.1	0.3

Employment Industry

Table 4.12 summarises the percentage of persons aged 15 years or older per employment industry in the State, DLR and the Dundrum-Balally ED. Given that this ED is situated within Dublin, it is expected that the percentage of the population involved in agriculture, forestry and fishing would be less than the national and county averages.

Employment industries where the percentage of persons in Dundrum-Balally ED are above the national average include commerce & trade and transportation & communications. Other identified employment industries are considered to be similar to the national average.

Table 4.12: Percentage Persons in Work by Industry, 2016 (Central Statistics Office).

Industry	State (%)	DLR (%)	Dundrum-Balally ED (%)
Agriculture, forestry and fishing	4.4	0.23	0.30
Building and construction	5.1	3.06	2.93
Manufacturing industries	11.4	6.44	6.50
Commerce and trade	23.9	34.85	35.38
Transport and communications	8.5	11.94	17.50
Public administration	5.3	4.39	3.08
Professional services	23.5	24.64	19.55
Other	17.8	14.43	14.75

Economic Activity

The Economic and Social Research Institute's (ESRI's) quarterly economic commentary (December 2021) identifies strong growth performance and better-than-expected improvement in the domestic labour market. Unemployment levels are predicted to continue to fall in 2022, and this combined with strong growth is expected to ease Covid-19 related pressures on public finances considerably.

Significant risks in relation to Brexit, the possibility of additional public health restrictions arising as a result of Covid strains and high inflation are identified and these need to be considered alongside the overall robust pace of growth.

Local Employment Centres

As previously described, the Proposed Development is situated within the Sandyford Business Park, which is part of the 'Sandyford Business District' (SBD). This district is comprised of Stillorgan Business Park, Sandyford Business Park, Central Park and South County Business Park which is noted by the Sandyford Business District to hold 26,000 employees in approximately 1,000 companies and is also home to ca. 5,000 residents[1].

[1] Sandyford Business District website, https://www.sandyford.ie/media-centre, accessed 9 March 2022

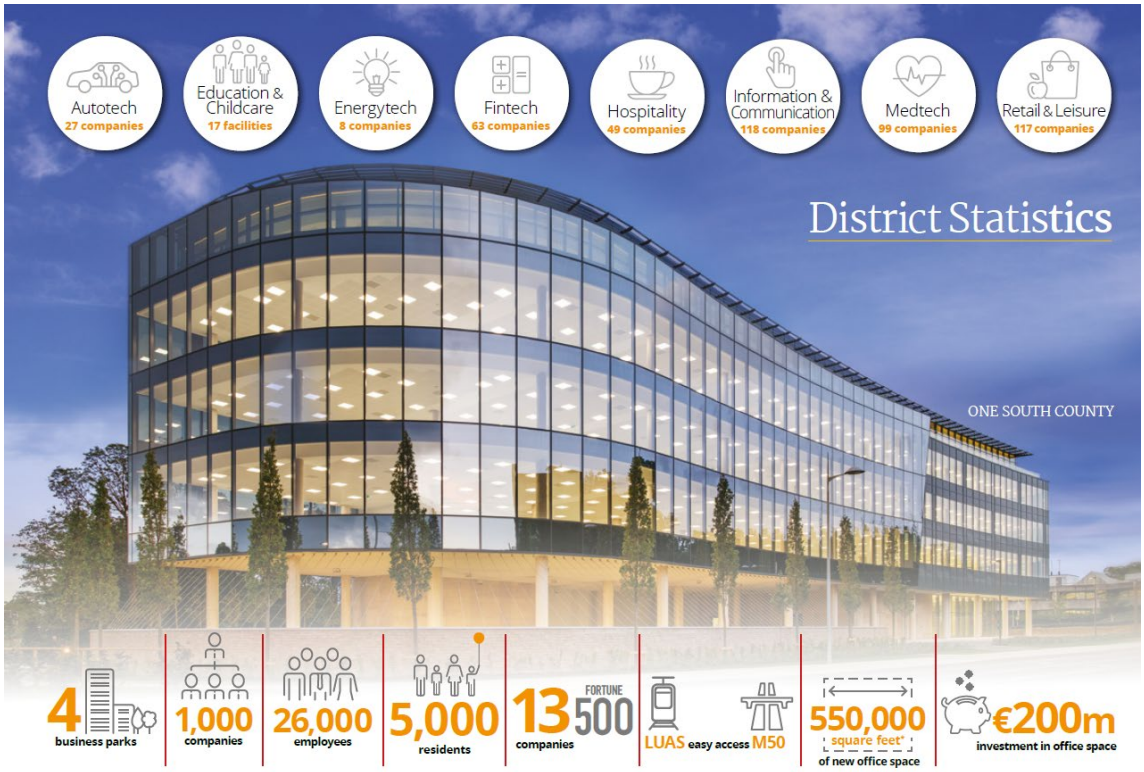

Figure 4.3: Sandyford Business District Statistics (Source: Sandyford Business District Review 2020)

The Application Site is also well positioned in the Dublin area and this location in a regional context has continued to have influence on its economic activity. Public transport linkages within the area and the adjacent M50 motorway provide vital linkages and strengthen the status of the employment and residential areas and also help attract economic investment and activity.

This is strengthened by the location of the Luas tram system with direct access to the city centre and intervening suburbs. This accessibility increases the attractiveness of the Sandyford Business Park as a commuter destination providing the context to the residential expansion of the Site.

4.5.3 Local Services and Amenity

Sandyford and the surrounding area contain numerous local services, public amenities, recreational clubs/areas, hospitality, retail, leisure locations and areas of tourism value.

Retail

As noted, the Site lies within the SBD which encompasses a wide range of local businesses that include cafés, restaurants, childcare facilities, gyms and public transportation. There are numerous shopping hubs in close proximity to the Site, including the Beacon South Quarter which is located in Sandyford. Other retail areas include Dundrum shopping Centre, Carrickmines, Blackrock and Stillorgan Village.

Sport and Recreation

There are a number of sport clubs in the wider mixed use urban centre, however these are located ca. 1 km from the Site boundary. These clubs include the Naomh Olaf GAA Club and the Stillorgan RFC training pitches ca. 1 km to the north-west of the Site. The Kilmacud Crokes GAA grounds are located ca. 1 km to the east of the Site. A number of other residential amenity parks are also located in the vicinity of the Proposed Development.

The Leopardstown Racecourse and Golf Centre are located ca. 1.5 km to the south-east of the Site.

Further indoor and outdoor recreation and sport facilities within 2 km of the Proposed Development include:

- The Wall Climbing Gym, Bouldering & Rock Climbing – 200 m;
- Sandyford Men's Shed, Activities for Adult/Retired Men including Gardening, Woodwork – 150 m;
- Janz Gymnastics Club, Gymnastics – 200 m;
- Gracie Barra Sandyford, Brazilian Jiu-Jitsu – 300 m;
- Headon Boxing Academy, Boxing – 250 m;
- Jump Zone Sandyford, Trampolining and Dodgeball – 500 m;
- Trojan Gymnastic Club, Gymnastics – 700 m;
- Public Basketball Court, Basketball – 850 m;
- Genesis Hockey Club, Lady's Hockey – 750 m;
- St Mary's Boys Football Club, Schoolboy's Football – 800 m;
- Leopardstown Tennis Club, Tennis – 1.1 km; and
- Balally Celtic Football Club, Schoolboy's Football – 1.3 km.

All of these clubs and amenity areas are located on the northern side of the M50 motorway.

There are a number of public parks and sport fields in the vicinity of the business park, however there are no public parks in close proximity to the Proposed Development. The closest is a Pocket Park, as described in the DLRCC Development Plan, is located adjacent to Blackthorn Road c. 120 m to the south of the site (NMP, 2022).

Religious Centres

There are several religious centres in the immediate area which are principally of Christian denomination. Centres within 2 km of the Proposed Development include:

- Church of the Ascension of The Lord, Catholic Christian services – 1.1 km; and
- St. Laurence O'Toole, Catholic Christian services – 1.4 km.

4.5.4 Land Use

The total Application Site area is ca. 0.99 ha with ca. 0.73 ha owned by the Applicant. It consists predominantly of hardstanding within a brownfield area. As noted previously, the lands are situated within the SBD and the DLRCC administrative area. The DLRCC Development Plan 2022-2028, identifies the Site to be 'Objective A2' lands, which are lands to '*provide for the creation of Sustainable Residential Neighbourhoods, and preserve and protect residential amenity in Zone 5 of the Sandyford Business District'.* This area of land is centrally located within the SBD adjacent to the Mixed-Use Core Area, thus reducing the need to travel and enhancing the viability of retail facilities and services and the vitality of the area as a whole.

Lands surrounding the development are predominantly commercial in nature and comprise retail, warehousing units, industrial uses and office buildings.

There are no waste licenced facilities within 1 km of the Proposed Development site. There is one IPC/IE Licenced facility located within 1 km of the Proposed Development; Sleever International Ltd (P0674-01), are involved in the manufacture of gravure printed shrink sleeves for various companies. The facility is located ca. 490 m to the south of the Proposed Development.

Sleever International Ltd have operated under their current licence since 2004. They are licenced under the First Schedule of the EPA Acts 1992 (as amended) as they carry out 'the use of coating material in processes with a capacity to use at <15 tonnes per year".

There are no Section 4 Discharges within 1 km of the Site. There are no upper or lower tier Seveso establishments within 5 km of the Site.

4.5.5 Human Health

Table 4.13 summarises the general health of persons by percentage for the State, DLR and the Dundrum-Balally ED for the 2016 and 2011 census periods.

In the 2016 Census there was a greater percentage of persons in the Dundrum-Balally ED (90.0 %) and DLR (89.9%) who classified themselves as being in 'Good' or 'Very Good' health in comparison with the average for the State (87.0%). In 2011, this figure was comparatively slightly higher in the State, DLR and Dundrum-Balally ED.

The percentage of persons who classified themselves as being in 'Bad' or 'Very Bad' health in the State, DLR and Dundrum-Balally ED was relatively consistent for the 2016 and 2011 period; between 1.2 and 1.6 %).

Table 4.13: General Health Percentage of the Population (Central Statistics Office)

General Health	2016 State (%)	2016 DLR (%)	2016 Dundrum-Balally ED (%)
Very good	59.4	65.6	62.3
Good	27.6	24.4	27.8
Fair	8.0	6.4	6.5
Bad	1.3	1.0	1.1
Very bad	0.3	0.2	0.2
Not stated	3.3	2.5	2.1
General Health	**2011 State (%)**	**2011 DLR (%)**	**2011 Dundrum-Balally ED (%)**
Very good	60.3	65.5	62.8
Good	28.0	25.0	28.7
Fair	8.0	6.4	6.4
Bad	1.2	1.0	1.0
Very bad	0.3	0.2	0.3
Not stated	2.2	1.8	0.8

4.5.6 Health and Safety

The Application Site is a brownfield site where previous commercial premises were demolished. There is hoarding erected and a secure entrance currently protecting the Site.

4.6 Potential Effects

This section considers the potential impacts that may occur on population and human health as a result of the Proposed Development during construction stage, operational stage and also any potential impacts in a 'Do Nothing' scenario if the development were not to proceed.

The occurrence of unplanned events (accidents and disasters) such as fire has been considered and impact on the surrounding population and human health has been considered in Chapter 3 (Project Description) of this EIAR.

As identified in guidance documents from the European Commission and the Department of Housing, Planning and Local Government (DHPLG) the assessment of impacts on population and human health should focus on health issues and environmental hazards resulting from other environmental factors (those identified in Article 3(1) of the EIA Directive), and does not require a wider consideration of human health effects which do not relate to those factors. The EPA's 2022 'Guidelines on the information to be contained in environmental impact assessment reports' also identify that '*the assessment of impacts on population & human health should refer to the assessments of those factors under which human health effects might occur, as addressed elsewhere in the EIAR e.g. under the environmental factors of air, water, soil etc'.*

4.6.1 Population and Social Patterns

4.6.1.1 Construction Phase

Local Populations

Employee numbers associated with the construction phase of the Proposed Development will depend on construction methods, phasing and the main contractor's final construction plan. However, it is anticipated that the construction phase will provide for the temporary employment of ca. 250-350 construction staff as the project progresses.

Local population growth in the Dundrum-Balally ED based on the number of construction workers who will move to and reside there during the temporary construction phase is considered to be very low, with a resultant impact that is negligible. It is anticipated that workers will travel from existing population centres in the Greater Dublin Area. Therefore, there is anticipated to be negligible potential for growth in local population due to the construction phase.

The local population of the Dundrum-Balally ED are valued with a 'High' sensitivity. The magnitude of impact is considered to be 'Negligible' and 'Beneficial'. This has resulted in a *Slight* significance in the short-term (one - seven years), which is an effect which causes a noticeable change in the character of the environment without affecting its sensitivities.

Population Dynamics

Similarly, it is considered that there will be a 'Negligible' and 'Beneficial' effect on other population factors such as population age distribution, population density, household composition or commuting patterns as a result of the construction phase of the Proposed Development, thereby resulting in a *Slight* significance of impact in the short-term (one - seven years).

Construction Phase Nuisance on Populations

Environmental impacts from the construction phase of the Proposed Development have the potential to affect local populations and social patterns of the surrounding area (including daytime working population using local services on break periods). Such potential construction impacts from the Proposed Development include nuisance from noise, construction dusts (from site activities and bare ground), landscape and visuals impacts, and impacts to groundwater and surface waters. The potential extent of these will have a limited zone of influence surrounding the Site. These potential impacts have been assessed in the respective chapters of: Land, Soils and Geology (Chapter 6), Water (Chapter 7), Air Quality and Climate (Chapter 8), Noise (Chapter 9); and Landscape and Visual (Chapter 13). Traffic has the potential to impact receptors at a greater distance from the site, however given the road infrastructure surrounding the Site and the limited number of journeys associated with the construction phase this is expected to be negligible and short-term. The effects of these impacts have been assessed in Traffic and Transport (Chapter 11).

The local population of the Dundrum-Balally ED are valued with a 'High' sensitivity. Based on the assessment of environmental impacts (identified above) in other chapters of this EIAR it is considered that the magnitude of impact is 'Low' and 'Adverse'. This results in a *Slight* adverse effect in the short-term (one - seven years), which

is an effect which causes a noticeable change in the character of the environment without affecting its sensitivities.

Mitigation Measures

Relevant mitigation measures relating to Population and Human Health in the context of environmental factors have been assessed in separate chapters in this EIAR. The potential impacts arising during the construction phase can be addressed by good construction practices and mitigation measures which have been defined in the development's Construction Environmental Management Plan and Construction Management Plan.

No specific mitigation measures are deemed necessary to protect local populations and population dynamics.

4.6.1.2 Operational Phase

Local Populations

During the operational and occupational phases of the Proposed Development it is considered that the creation of 334 residential dwelling units and public and communal open space in the Proposed Development will have a positive effect on the local population.

The addition of 334 residential dwelling units to the Dundrum-Balally ED will increase the population and population density of the ED. The inclusion of public space in the Proposed Development has advantages in terms of creating areas of the development that can be used by the wider local area. Given the balanced approach and public aspects it is considered that there are minor beneficial socio-economic effects. Such impacts will have a noticeable effect on a limited number of businesses, workers or residents, and will lead to a permanent (but not drastic) change to the study area's baseline socio-economic conditions. The population and local community receptor are valued with a 'High' sensitivity, and it is considered that the magnitude of impact is 'Low'. This results in a *Slight* permanent significance, which is an effect which causes a noticeable change in the character of the environment without affecting its sensitivities.

Population Dynamics

Operational effects associated with population age distribution, household composition and commuting patterns of the Dundrum-Balally ED ('High' sensitivity receptor) will be 'Negligible' and 'Beneficial'. It is considered that changes in these population factors will be consistent with emerging baseline trends within the ED, and will have a *Slight* effect.

Mitigation Measures

Given the beneficial effects identified, no mitigation measures are considered to be required to protect local populations and population dynamics from potential impacts.

4.6.1.3 Do-Nothing Scenario

In the event that the Proposed Development does not proceed, a new residential and amenity opportunity would not be provided at the Site. The population and social patterns of the study area would remain as they are currently. Such neutral effects of the Do-Nothing scenario are considered to be *Imperceptible* which includes no effects.

4.6.2 Economic Patterns

4.6.2.1 Construction Phase

The construction phase of the development will provide short term, beneficial effects in local economic activity through the creation of direct employment in the construction sector. Construction workers will be directly employed at various stages of the Proposed Development's ca. 24-month construction phase. The construction of the development will also service indirect employment in the local construction industry and local community.

The local businesses which may be affected are considered to have a 'Low' sensitivity. It is considered that the magnitude of impact is also 'Low', as there will be minor socio-economic effects, and such impacts will only have an effect on a limited number of businesses or workers. This results in a *Slight* short-term beneficial effect for the local economy (noticeable short-term change in the character of the environment without affecting its sensitivities; and will have beneficial local effects).

As noted in Section 4.6.1.1, nuisance arising to local businesses and Population and Human Health in the context of environmental factors has been assessed in separate chapters of this EIAR.

Mitigation Measures

Given the potential beneficial effects on the local economy and employment during the construction stage no mitigation measures are deemed to be required by the subject site during the assessment period.

4.6.2.2 Operational Phase

The Proposed Development will provide 334 residential units. The increase in residents will result in the contribution of additional revenue to the local economy through these residents' demand for local services. The provision of additional accommodation within the SBD will also have indirect benefits for the SBD as an employment centre.

The local businesses which may be affected are considered to have a 'Low' sensitivity. It is considered that the magnitude of impact is 'Medium'; which is higher than that identified during the construction phase as the greater demand for services will be from the new residential population who will be based within the Site.

This results in a *Slight* permanent beneficial effect for the local economy (noticeable change in the character of the environment without affecting its sensitivities; and will have beneficial local effects).

Mitigation Measures

The increased population at the Proposed Development will support businesses in the local economy. Therefore, as a result of the beneficial permanent effects no mitigation measures have been proposed.

4.6.2.3 Do-Nothing Scenario

The site is currently vacant and provides only limited employment to security personnel and when maintenance is required. In a Do-Nothing scenario the services required to maintain the site would remain consistent. Such neutral effects of the Do-Nothing scenario are considered to be *Imperceptible* which includes no effects.

4.6.3 Local Services and Amenity

4.6.3.1 Construction Phase

During the construction phase of the development potential impacts to local amenity, services and recreation areas surrounding the development may result from noise, construction dusts (from site activities and bare ground) and associated construction traffic.

Mitigation measures related to the management of nuisance dusts and noise have been discussed in Chapter 8 (Air Quality and Climate) and Chapter 9 (Noise and Vibration). Potential negative effects have been identified in these assessments to be short-term in duration and 'not significant' in nature once the appropriate mitigation measures have been implemented during the construction process.

The impacts of construction traffic have been assessed in Chapter 11 (Traffic and Transport). The construction traffic will have a not significant impact on the local road network and will be directed via designated construction traffic routes using the regional road network. The Main Contractor's construction phasing and final Construction Traffic Management Plan will seek to minimise the impact on local residents and will ensure that the adjoining road network remains operational at all times.

Mitigation Measures

Relevant mitigation measures for the impacts of the development's construction phase on local services and amenities in the context of environmental factors have been assessed in separate chapters of this EIAR. The potential effects arising during the construction phase can be addressed by good construction practice and mitigation which has been defined in the development's Construction Environmental Management Plan (CEMP).

4.6.3.2 Operational Phase

During the operational phase the Proposed Development will include a public space which will provide additional amenity to the local area. This will result in beneficial effects on the local population and community.

Existing services and amenities within the SBD and surrounding area will benefit from the increase in population at the Proposed Development.

The local amenity which may be affected is considered to have a 'Low' sensitivity. It is considered that the magnitude of impact is 'Medium'. This results in a *Slight* permanent beneficial effect for local amenity (noticeable change in the character of the environment without affecting its sensitivities; and will have beneficial local effects).

Mitigation Measures

The increased population at the Proposed Development will support local amenity. Therefore, as a result of the beneficial permanent effects no mitigation measures have been proposed.

4.6.3.3 Do-Nothing Scenario

In the event that the Proposed Development does not proceed the amenity of the study area would remain as it is currently. Such neutral effects of the Do-Nothing scenario are considered to be *Imperceptible* which includes no effects.

4.6.4 Land Use

4.6.4.1 Construction Phase

The construction phase of the Proposed Development will consist of site clearing, excavation and construction works, and has the potential to impact adversely and result in the temporary degradation of the local environment on a short-term basis. These potential impacts have been assessed in the respective chapters of this EIAR. Construction works will take place in accordance with an agreed CEMP.

Construction works will take place in accordance with the CEMP submitted with this SHD Application; and also, in accordance with a final Construction Management Plan (CMP) to be agreed by DLRCC and the appointed Main Contractor. A preliminary Construction Management Plan (pCMP) has been completed for this SHD application for the Proposed Development. Ultimately, this pCMP will evolve into the finalised Construction Management Plan (CMP) to be prepared by the Main Contractor.

Given the short-term nature of the land-use changes during the construction phase, and the requirement of this phase to achieve the operational/occupational goal, it is considered that there will be a 'Negligible' and 'Adverse' impact on the current unoccupied lands, which have a 'Low' sensitivity land use. This will result in an *Imperceptible* effect during the construction phase.

Effects on surrounding amenity, and local businesses have been assessed elsewhere in this chapter. Furthermore, the potential environmental effects of the construction phase have been addressed elsewhere in this EIAR.

Mitigation Measures

The CEMP will set out the Contractor's overall management and administration of the construction project with regards to environmental impacts. The CEMP is an evolving document and is initially prepared during the pre-construction phase. The CEMP is then amended to incorporate commitments included in the statutory approvals and then during the construction phase where the effectiveness of site management practice can be reviewed and included. The Construction Management Plan that will be implemented by the Main Contractor will include measures, in particular in relation to traffic, which will protect local land uses as appropriate.

4.6.4.2 Operational Phase

National and local government planning policy performs an important role in guiding and facilitating changes in land-use which can influence settlement patterns, thus affecting populations. Planning policy ensures these changes are appropriate to the existing and emerging social, economic and environmental conditions of a given area. The primary consideration relating to land-use change is whether the Proposed Development conforms with land-use policy in the DLRCC County Development Plan 2022-2028. A Planning Report and Statement of Consistency has been prepared by MDB Planning and is submitted with this SHD application, which provides a detailed review of the Proposed Development and how it relates to planning policy.

As identified, the DLRCC Development Plan (2022-2028) defines the Site as 'Objective A2' lands, which are lands to '*provide for the creation of Sustainable Residential Neighbourhoods, and preserve and protect residential amenity in Zone 5 of the Sandyford Business District*'. The nature and composition of the development are considered to be sustainable and will provide residential amenity within the area.

Additionally, A Specific Local Objective, SLO 52, has been included in the Sandyford Urban Framework Plan 2022-2028 to facilitate the provision of a community facility at ground floor level along the eastern outer edge of the Carmanhall Residential Neighbourhood, along Blackthorn Road (see Section 4.3.2 of DLRCC Development Plan 2022-2028 Appendix 16).

The provision and conformity of the residential land-use with the defined objectives for the Site are considered to have a 'High' sensitivity. It is considered that the magnitude of impact is 'Medium', and 'Beneficial'; owing to the nature of the development, resulting in the permanent change of the study area's baseline socio-economic conditions and higher density of development in comparison to the baseline or Do-Nothing scenario. This is considered a *Moderate* permanent beneficial significance for the land-use at the Site, given that is in keeping with recent development trends in the area as well as national and local objectives for the development of Sandyford.

Mitigation Measures

The beneficial changes in land-use at the Proposed Development Site will support objectives in the DLRCC Development Plan (2022-2028). Therefore, as a result of the beneficial permanent effects no mitigation measures have been proposed.

4.6.4.3 Do-Nothing Scenario

In the event that the Proposed Development does not proceed the land-use within the Site would remain as it is currently. Such neutral effects of the Do-Nothing scenario are considered to be 'Imperceptible' which includes no effects.

4.6.5 Human Health

4.6.5.1 Construction and Operational Phase

Air Quality

Potential air quality impacts to human health from the Proposed Development have been assessed in Chapter 8 (Air Quality and Climate) of the EIAR. The factors relevant to human health considered in the assessment are the generation of construction dust, NO_2, PM_{10} and $PM_{2.5}$.

Construction Dust – For the construction phase, a qualitative assessment of dust impact (deposited dust and human health) has been undertaken in line with IAQM 'Guidance on the assessment of dust from demolition and construction' (IAQM 2014; Chapter 8 Air Quality and Climate, Appendix 8.1 Construction Dust Assessment). While dust deposition will arise from the deposition of dust in all size fractions, the ambient dust relevant to human health outcomes will be that measured as PM_{10}. PM_{10} concentration in the vicinity of the development site may become elevated as a result of dust generating activities, including exhaust emissions from non-road mobile machinery and vehicles accessing the Site. The assessment identified that there are residential properties (high receptor sensitivity) located within 350 m of the development boundary, but due to their distance from the boundary these generate a low sensitivity classification. This classification takes a worst-case approach and assesses effects based on the closest (commercial and industrial) receptors within 20 m of the development boundary or the construction route. To define the risk of human health impacts, the assessment combines the dust emission magnitude with the sensitivity of the area to determine that prior to mitigation human health is low for earthworks, construction, and trackout activities associated with the Site. A 'Low' magnitude of impact has been attributed to the construction dust and will have no or a non-perceptible impact to the 'High' sensitivity populations or groups. This will result in a *Slight* short-term adverse effect.

Construction Traffic – With regards to emissions from construction traffic, due to the size of the development it is not anticipated that the maximum number of Heavy Duty Vehicle (HDV) (>3.5 tonnes) Annual Average Daily traffic (AADT) movements during the construction period, will be above the threshold (100 AADT) for a quantitative assessment of construction traffic referred to in the IAQM 2017 planning guidance (Table 6.2 of that guidance document) or the 200 HDV AADT screening criteria defined in the Design Manual for Roads and Bridges (DMRB) (LA105 Air Quality, 2019). A 'Negligible' magnitude of impact has been attributed to the construction traffic as it is below the screening threshold and will have no or a non-perceptible impact to the 'High' sensitivity populations or groups surrounding the development. This will result in a *Slight* short-term adverse effect.

Operational Traffic – A quantitative operational phase assessment of effects from road traffic emissions has been undertaken using the latest version (version 5.0.0.1) of CERC ADMS-Roads dispersion modelling software, in accordance with IAQM 2017 Guidance, to determine the potential effects of NO_2, PM_{10} and $PM_{2.5}$ at nearby sensitive receptors within the Air Quality Study Area. The assessment quantified total pollutant concentrations for the following scenarios:

- Scenario 001: 2022 Baseline;
- Scenario 002: Future 2026 Without Proposed Development; and
- Scenario 003: Future 2026 With Proposed Development.

With the Proposed Development in the future 2026 scenario all cases the predicted change in air quality concentrations of NO_2, PM_{10} and $PM_{2.5}$ is negligible. A 'Negligible' magnitude of impact of these concentrations will have no or a non-perceptible impact to the 'High' sensitivity populations or groups surrounding the development. This will result in a *Slight* adverse effect and therefore not significant.

The above air quality assessments have been carried out using appropriate guidance and methods. Effects which are determined to be not significant were identified for construction dust, NO_2, PM_{10} and $PM_{2.5}$ generated by the Proposed Development; it is therefore considered that further assessments of human health with regards to air quality are not required.

Noise and Vibration

Noise and vibration from construction activities at the Proposed Development can have indirect impacts to surrounding residential developments through annoyance and effects on mental health. Potential noise and vibration impacts from the Proposed Development have been assessed in Chapter 9 (Noise and Vibration) of the EIAR. The factors relevant to human health considered in the assessment are the generation of construction noise and impact at off-site receptors; and the impacts of noise at Noise Sensitive Receptors (NSRs) during the operational phase.

Construction Noise – NSRs were identified in the assessment, the closest residential receptor is located 100 m to the north of the Proposed Development. However, noise effects arising at off-site NSRs have been evaluated using Bloom Health (150 m west) as a worst-case proxy. Noise effects associated with the proposed construction activities during weekday daytimes and Saturday mornings have been evaluated against threshold noise levels which have been derived from measured baseline noise levels in accordance with BS5228. For these times a *High adverse* impact magnitude has been identified. However, with appropriate construction mitigation measures as outlined in Chapter 9 and Chapter 16 of this EIAR, it has been concluded that the short-term activities will result in a low magnitude impact to the 'High' sensitivity populations or groups surrounding the development. This will result in a *Slight* short-term adverse effect and is therefore not significant.

Operational / Occupational Noise – During the baseline noise survey, the dominant noise source across the Site was determined to be road traffic on Blackthorn Road, Ravens Rock Road and Carmanhall Road. Noise effects during occupation of the Proposed Development will therefore predominantly arise from road traffic. Predicted road traffic noise levels within proposed residential dwellings via closed-window transmission are evaluated against BS8233 target internal noise levels.

During the daytime and the night-time period, predicted noise levels within rooms in the most-exposed façades of proposed dwellings overlooking Blackthorn Road marginally exceed the target internal noise levels, via closed-window transmission. The resultant impact magnitude at these NSRs is *'low adverse'* and the effect significance is '*slight'*. At all other NSRs during the daytime period, and at all NSRs during the night-time period the impact magnitude is 'no change / none' and the effect significance at high sensitivity NSRs is 'neutral'.

Noise effects during the occupation phase are therefore '*not significant'.*

Where predicted levels within proposed dwellings on the most-exposed façades are above the target levels during the daytime period, we note that actual levels on most floors will be lower, and that the lower floors will be most affected. Target levels may be met by the specification of glazing with increased sound attenuation on the lower floors on façades overlooking Blackthorn Road.

The resultant impact magnitude is no change / neutral. A 'negligible' magnitude of noise impact will impact 'High' sensitivity residents of the Proposed Development. This will result in a *Slight* short-term adverse effect and is therefore not significant.

Construction activities are not anticipated to generate significant off-site vibration effects, and no receptors with high sensitivity have been identified within close proximity to the Proposed Development, therefore evaluation of construction phase vibration and resultant impacts on human health have been scoped out of the assessment.

The above noise assessments have been carried out using appropriate guidance and methods. Effects which are determined to be not significant were identified for construction phase noise impacts on NSRs surrounding

the Proposed Development, and for NSRs within the Proposed Development during the operational Phase, it is therefore considered that further assessments of human health with regards to noise are not required.

Water

Potential water impacts from the Proposed Development have been assessed in Chapter 7 (Water) of the EIAR. Potential source of impacts to human water users and their health from the Proposed Development were identified during the **construction phase** and include:

- Drilling and piling activities and/or disturbance of unidentified previously contaminated material introducing substances to groundwater resulting in poorer groundwater quality for groundwater users; and
- Wheel wash waste discharges resulting in poorer water quality for water users.

The combined mitigation (embedded and additional) identified included: a pre-construction water feature survey, no planned discharges to ground, following appropriate site management and practice detailed in CMP/CEMP, and consented discharges to the water environment or sewer where proposed. A 'Negligible' magnitude of impact was identified which may impact 'High' sensitivity human water users. This will result in a *Slight* adverse effect during the short-term construction stage.

During the **operational phase** the Proposed Development will be connected to a mains water supply. The potential impact from sanitary waste will be mitigated by connection to mains sewer, parking places (with associated oil/water interceptor) will be for parking only, and the landscaping/surfacing will be designed to provide attenuation and filtering. It is assumed that residential users will not grow vegetables in the ground in the shared areas at ground level. With this mitigation the predicted potential magnitude of impact on water quality is negligible (adverse). With 'High' sensitivity human water users this will result in a *Slight* adverse effect during the operational stage.

The above assessments have been carried out using appropriate guidance and methods. Effects on the water environment and the health of human water users was identified to be not greater than *Slight* and is therefore Not Significant. It is considered that further assessments of human health with regards to water are not required.

Daylight / Sunlight

A Sunlight and Daylight Analysis has been performed for the Proposed Development by IN2 (2022). The Sunlight and Daylight Analysis was carried out to inform the design of the Proposed Development in accordance of the requirements of An Board Pleanala's Opinion and is submitted within the wider SHD pack. Sunlight availability was assessed against the BRE.209 criterion for amenity spaces where compliance is achieved when over 50% of the proposed outdoor amenity space receives at least 2 hours potential sunlight on March 21st to the majority of areas. All areas are in excess of 50% sunlight availability and are therefore considered fully compliant with BRE.209 criteria. This indicates that the spaces are suitable for outdoor activities like sitting out and children's play (mainly during the warmer months) during the **operational phase** (IN2, 2022).

With regards to the effects of outdoor sunlighting in amenity spaces on human health, the populations living within the Proposed Development are of 'High' sensitivity due to being a 'health receptor that would be likely or expected to be directly affected. The receptor is well placed to take advantage of beneficial impacts, and/or is not well placed to deal with any adverse impacts and the magnitude of potential impact is considered Negligible Beneficial due to there being 'No or non-perceptible impact to health, population or sensitive groups' and compliance with BRE.209 criteria. This will result in a *Slight* effect.

An internal sunlight and daylight analysis was undertaken for all units across the development (IN2, 2022). The analysis determined that 96% of rooms achieve the minimum recommendations set out in the BRE guidelines for Spatial Daylight Autonomy using median daylight factors. The proposed development achieves a high compliance rate for sunlight availability to a dwelling with 98% of units meeting or exceeding the minimum recommendations set out in BRE guidelines. This indicates that acceptable levels of natural light in new apartment developments have been achieved, noting natural lighting contributes to the liveability and amenity enjoyed by apartment residents during the **operational phase** (IN2, 2022).

With regards to the effects of indoor sunlighting and daylighting on human health, the populations living within the Proposed Development are of 'High' sensitivity due to being a 'health receptor that would be likely or expected to be directly affected. The receptor is expected to be either 'well placed to take advantage of beneficial impacts, ornot well placed to deal with any adverse impacts. The magnitude of potential impact is considered Negligible Beneficial due to there being 'No or non-perceptible impact to health, population or sensitive groups' and compliance with BRE.209 criteria. This will result in a *Slight* effect.

On the basis that all existing buildings surrounding the proposed development are commercial buildings, which have no expectation or requirement for sunlight or daylight[2] (IN2 2022), an assessment of the potential effects to nearby buildings from changes to daylight and sunlight availability arising from the construction and operation of the Proposed Development has been scoped out of this impact assessment.

Additionally, there are no neighbouring amenity areas, gardens etc. that can be impacted from an over shadowing point of view and therefore an assessment of the potential effects to such areas from changes to shading arising from the construction and operation of the Proposed Development has been scoped out of this impact assessment (IN2, 2022).

Mitigation Measures

It is considered that with the employment of effective construction management practices the environmental impacts and emissions from the Proposed Development will not have a significant effect on human health in the local environs during construction. The Main Contractor's management practices will include the implementation of the final CMP, and CEMP, as well as the implementation of mitigation measures identified in Chapter 16 of this EIAR.

Potential effects on human health resulting from the Proposed Development take into consideration any embedded design and commonly undertaken good practice mitigation. These considerations are proposed in the Property Management Strategy Report (Aramark, 2022) which accompanies this SHD application. It is considered that with the employment of effective operational management practices the environmental impacts and emissions from the Proposed Development will not have a significant effect on human health in the local environs during operation.

4.6.5.2 Do-Nothing Scenario

In the event that the Proposed Development does not proceed the human health of the study area would remain as it is currently. Such neutral effects of the Do-Nothing scenario are considered to be *Imperceptible* which includes no effects.

[2] IN2 (2022) Sunlight and Daylight Analysis was prepared using the industry best practice guideline for daylight and sunlight, the BRE publication 'Site Layout Planning for Daylight and Sunlight – A guide to good Practice (Second Edition)'

4.6.6 Health and Safety

4.6.6.1 Construction Phase

The management and phasing of the construction activities have the potential to affect the health and safety of persons working at the site, local residents, local road users and other members of the public who may interact with the site. These groups are identified as populations / communities, and non-motorised users in Table 4.2 and for the purpose of this assessment the persons working at the construction site are considered a population group with a 'High' sensitivity as well.

These health and safety considerations and hazards present during the construction phase will be managed by the appointed main contractor and their nominated 'Project Supervisor Construction Stage' (PSCS). The PSCS duties will consist of the management and co-ordination of health and safety matters during the construction phase. The PSCS role will remain in place at the site from the beginning of works until the project has been completed.

The development of a Construction Management Plan and associated site health and safety management plans will ensure that hazards which may affect any relevant parties during the construction phase are appropriately mitigated. This plan will ensure that hazards affecting relevant persons will be assessed and eliminated or mitigated accordingly.

The appointed main contractor will implement a Construction Traffic Management Plan to manage instances where construction traffic may affect local road users. Methods and approaches in this plan will be agreed with DLRCC as appropriate.

The main contractor's Construction Management Plan will also contain provisions for site security. These provisions will detail appropriate measures to ensure access is restricted to authorised personnel only. Hoarding and fencing will be erected along boundaries as appropriate.

With these measures in place there will be a 'Negligible' magnitude of impact which will have no or a non-perceptible impact to the 'High' sensitivity populations or groups. This will result in a *Slight* short-term adverse effect.

COVID-19

The outbreak and management of the COVID-19 pandemic has been evolving rapidly. Employers and their workplaces have been required to manage the situation dynamically in response to changes in government protocols and public health advice. Works carried out on Site throughout the construction stage of the Proposed Development may be subject to changing restrictions and guidance measures to control the spread of the disease.

Specific measures to protect human health cannot be identified at this stage of the consent process given frequent changes in the management of the disease witnessed over the past year. However, to effectively manage the Site the main contractor will develop dedicated site protocols and standard operating procedures which will equip them to manage and respond to changes in COVID-19 protocols on the construction site for the duration of the pandemic.

Prior to commencement, the main contractor would ensure that the project's health and safety documentation align with the measures as outlined in the Construction Industry Federation's (CIF; December 2020) 'Construction Sector C-19 Pandemic Standard Operating Procedures' and the COVID-19 Specific National Protocol for Employers and Workers, general / standard health and safety requirements, considering the constraints of COVID-19.

With such measures in place there will be a 'Negligible' magnitude of impact on the 'High' sensitivity group of persons working at the construction site. This will result in a *Slight* short-term adverse effect.

Mitigation Measures

The appointed main contractor will appoint a PSCS. A Construction Management Plan will be developed and implemented along with the associated site health and safety management plans and construction traffic management plan.

It is assumed that the main contractor and PSCS will document a specific COVID-19 plan in line with the CIF plan, Health and Safety Authority (HSA) advice, and in consultation with the Client. The subsequent plan would consider and address the levels of risk associated with the project and tasks that workers perform on site.

Given the size and scale of the Proposed Development (and depending on risk levels at the time of commencement), the PSCS, in consultation with other contractors, would appoint a COVID-19 Compliance Officer, as necessary.

4.6.6.2 Operational Phase

Health and safety considerations have been built into the design of the development. The property management company will be the responsible party to ensure the Proposed Development is managed and maintained appropriately throughout its operation/occupation.

A Property Management Strategy Report has been provided in the SHD application (Aramark, 2022). The report sets out the management strategy for the development in its operational phase in order to demonstrate how the property management and public realm maintenance will be maintained to appropriate standards, including Health and Safety. A Preliminary Fire Safety, and Access and Use Strategy Report has been submitted with this SHD application, (Maurice Johnson & Partners (MJP, 2022). The design of the Proposed Development has been subject to Fire Safety Certificate and Disability Access Certificate applications based on the appropriate design guidance identified in the MJP report. The Property Management Strategy Report (Aramark, 2022) also identifies relevant operational fire protection management for the Proposed Development.

The residents occupying the Proposed Development have 'High' environmental sensitivity. The in-built design mitigation will ensure that a low-moderate number of people would be impacted, ('Low' magnitude). This will result in a *Slight* permanent adverse effect.

It is considered that there will be a 'Negligible' magnitude of impacts from IE/IPC Licenced facilities surrounding the Proposed Development on the 'High' sensitivity population residing within the Proposed Development. This will result in a *Slight* permanent adverse effect.

Wind Microclimate

The potential impacts from the Proposed Development on pedestrian safety and comfort have been assessed in Chapter 12 of this EIAR. This assessment has taken into account the existing topography and developments surrounding the Site.

The assessment identified that the wind conditions both within and outside of the Application Site following implementation of the Proposed Development ranged from "calmer than required for the intended pedestrian use" to "suitable for the pedestrian use intended". It is concluded that road and pedestrian circulation areas within the Application Site will experience benefits to the wind microclimate as a result of the proposals and the area to the north of the Application Site will experience beneficial, calmer conditions while other areas (south, east and west) will remain unchanged from the "calmer than required for the intended pedestrian use" conditions currently experienced.

COVID-19

The appointed property management company will be required to comply with latest guidance from the government and public health bodies for controlling COVID-19 transmission within the building. Depending on the level of restrictions being implemented the management company may be required to:

- Provide clear communication to residents. Provide information by posting visual displays advising occupants on the importance of physical distancing and safe hygiene practices within the building;
- Follow appropriate cleaning requirements. Clean routinely and frequently touched surfaces and objects within the development;
- Consider the installation of hand sanitiser stations;
- Encourage occupants and staff to practice social distancing;
- Consider closure of common areas, as appropriate, which do not support residents' basic needs; and
- Consider whether it is possible to identify vulnerable or isolated occupants.

The management company would seek further advice from relevant government departments including The Housing Agency's (June 2020) 'Guidance for Multi-Unit Developments and Residential Owners' Management Companies during Coronavirus (COVID-19)', as appropriate.

Residents occupying the Proposed Development would be expected to be directly affected by any improper management of the development with regards to COVID-19, therefore they have 'High' environmental sensitivity. Impacts would affect a low-moderate number of people and are considered 'Low' and 'Adverse'. It is considered that this would result in a *Slight* impact.

Mitigation Measures

It is considered that with the effective implementation and management plans and procedures identified above, further mitigation measures will not be required.

4.6.6.3 Do-Nothing Scenario

Should the Proposed Development (or a similar residential development) not be permitted, the Applicant would need to ensure that keep the unoccupied buildings in existence on the Site were kept secure. Such neutral effects of the Do-Nothing scenario are considered to be *Imperceptible* which includes no effects.

4.7 Mitigation and Management

The potential impacts identified to arise during the construction phase of the Proposed Development are not complex and can be addressed by good construction practice that includes, in particular, the mitigation measures set out in the Main Contractor's Construction Management Plan, and associated Construction Environmental Management Plan and Construction Traffic Management Plan. Mitigation measures have been compiled and are collated in Chapter 16 of this EIAR.

During the operational stage of the development proposed in-built design mitigation will reduce the risks associated with safety for the residents, e.g. fire safety, traffic safety. Further mitigation measures will be implemented, managed and maintained by the building's Management Company. The operational management of the Proposed Development is documented in a Property Management Strategy Report (Aramark, 2022) which accompanies this SHD application. This report provides for the operational maintenance of items including the building's waste services, utilities, health and safety, water, fire protective equipment and measures and security.

4.7.1 Monitoring

Any monitoring necessary for the protection of populations and human health during the construction phase has been identified in respective chapters of this EIAR (Land, Soils and Geology, Water, Air Quality, and Noise and Vibration).

Further monitoring in respect to site health and safety during the construction stage is identified in the preliminary Construction Management Plan and would be provided for by the Main Contractor in their Construction Management Plan prior to construction.

During the operational phase the Management Company will be responsible for the ongoing maintenance and monitoring within the Proposed Development. This will include, but is not limited to, the regular monitoring of site-specific risk assessments and method statements, fire safety features and strategies and water systems (including updating the site's Legionella Risk Assessment and water testing).

4.8 Residual Effects

With the proposed construction site management and the implementation of the CEMP it is anticipated that residual effects on the local population and receptors during the construction phase will be no greater than Slight and therefore **Not Significant**.

During the operational phase of the Proposed Development, it is considered that anticipated that any residual adverse or beneficial effects will be no greater than Slight and therefore **Not Significant**.

4.9 Difficulties Encountered

There were no particular difficulties encountered during the production of the Population and Human Health chapter of the EIAR. It is note that, at the time of writing, the most recently available published national census data from the Central Statistics office is from 2016. This is not considered a significant data limitation as data is drawn from multiple, and more recent, sources to determine the current and temporal trends in baseline conditions.

4.10 Cumulative Effects

The effects of the Proposed Development are considered cumulatively with other reasonably foreseeable developments in the local area in Chapter 15 – Interactions, Cumulative and Combined Effects.

4.11 Summary and Conclusions

This assessment considers the potential impacts and effects on population and human health that can be reasonably foreseen as consequences of the normal construction and operation of the Proposed Development during the construction and after-use phases.

The main receptors identified that required to be assessed were the population at and immediately adjacent to the Proposed Development and human health that could be secondarily affected by the Proposed Development.

Known design and construction management mitigation measures were accounted for in an assessment of initial impacts and effects. Where additional mitigation measures could be incorporated to reduce the initial impacts and effects, these were identified and included in an assessment of residual impacts and effects.

In summary, the significance of residual effects on population and human health resulting from the different potential sources of change are predicted to be no higher than slight adverse and, therefore, not significant in terms of this assessment.

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5.0 ECOLOGY AND BIODIVERSITY

5.1 Introduction

This Chapter of the EIAR has been prepared by Golder (a member of WSP) for the Carmanhall Road Strategic Housing Development 2022 (the 'Proposed Development').

This assessment presents details of ecology and biodiversity features which are, or have the potential to be, constraints to the Proposed Development. This chapter evaluates the importance of the ecological resources present and defines the degree of significance of potential impacts resulting from the Proposed Development, on lands located at the former Avid Technology International site on Carmanhall Road, Sandyford Industrial Estate, Dublin 18, (the 'Site' / 'Application Site'). The report also identifies appropriate mitigation measures and defines residual impacts. The temporal scope of the assessment covers the construction and after-use project phases. The cumulative effects have been considered and addressed during both phases for the Proposed Development and the abutting development, Tack Sandyford SHD, which will be developed concurrently should permissions be granted for both developments. A decommissioning phase for the Proposed Development has not been considered due to the permanent residential occupancy of the development. When it is demolished, it is assumed that the legislation, guidance and good practice at that time would be followed and the effects are likely to be similar to the construction effects.

A stage 1 screening for Appropriate Assessment has been prepared by Golder and is included within the Application Pack. This Appropriate Assessment Screening Report concludes that no significant impacts would be likely to occur to Natura 2000 sites as a result of the Proposed Development.

The following ecology and biodiversity assessment was prepared by Freddy Brookes (MSc). Freddy is a Member of the Chartered Institute of Ecology and Environmental Management (MCIEEM) and has more than 16 years' experience. In addition, this report references the accompanying Ecological Report: O'Donnell Environmental, 2022 (Appendix 5.1). An Arboricultural Assessment prepared by Northern Tree Services (NT) (2020), and a Landscape Design Statement and associated drawings prepared by Niall Montgomery + Partners Landscape Architects ("NMP") (2022) as submitted as part of the proposal.

5.1.1 Project Description

The development will consist of 334 Build to Rent residential apartment units within 4 no. apartment blocks and as follows:

- *79 No. Studio*
- *175 No. 1 bed*
- *80 No. 2 bed*

- *All residential units provided with private balconies/terraces to the north/south/east and west elevations*
- *Crèche 272 sq.m.*
- *Residential amenity spaces 893 sq.m. (including a unit of 146.5 sqm open to the public, resident's gym, business centre, multipurpose room, staff facilities, multimedia/cinema room, shared working space, concierge, and games room)*
- *Height ranging from 5 to 16 storeys (over basement)*
- *Landscaped communal space in the central courtyard*
- *Provision of a new vehicular entrance from Carmanhall Road and egress to Blackthorn Road*

- *Provision of pedestrian and cycle connections*
- *125 No. Car Parking, 6 No. Motorcycle Parking and 447 cycle spaces at ground floor/under croft and basement car park levels*
- *Plant and telecoms mitigation structures at roof level*

The development also includes 2 no. ESB substations, lighting, plant, storage, site drainage works and all ancillary site development works above and below ground.

5.2 Legislative and Policy Context

This section addresses the legislation and guidance that has been considered when preparing this chapter, and key policy context relevant to biodiversity. The overarching EIA legislation under which this assessment is required is addressed separately in Chapter 2 (Scope and Methodology).

Legislation

- The Planning & Development Act 2000 as amended;
- The Wildlife Act 1976 as amended by the Wildlife (Amendment) Act, 2000 (as amended) hereafter referred to as the Wildlife Acts;
- The EIA Directive (Directive 2011/92/EU as amended by Directive 2014/52/EU);
- Planning and Development Regulations, 2001-2022;
- European Communities (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018);
- European Commission (EC) Habitats Directive 92/43/EEC (as amended);
- EC Birds Directive 2009/147/EC;
- European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) hereafter referred to as the Birds and Habitats Regulations;
- Flora (Protection) Order, 2015;
- Environment (Miscellaneous Provisions) Act 2011;
- The Fisheries (Consolidation) Act 1959; and
- The Local Government (Water Pollution) Act, 1977 (as amended by Sections 3 and 24 of the 1990 Act.).

Relevant Policies and Plans

- National Biodiversity Plan, 2017–2021;
- Ireland's National Strategy for Plant Conservation; and
- All Ireland Pollinator Plan 2021–2025,
- Dún Laoghaire-Rathdown County Biodiversity Action Plan 2021-2025

Natural heritage policies of the Dún Laoghaire-Rathdown County Development Plan 2022-2028

- GIB18: Protection of Natural Heritage and the Environment;
- GIB19: Habitats Directive;
- GIB21: Designated Sites;

- GIB22: Non-Designated Areas of Biodiversity Importance;
- GIB25: Hedgerows; and
- GIB28: Invasive Species.

Relevant Guidance

- Invasive Species in Ireland (NPWS, 2004);
- Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland: Terrestrial, Freshwater and Coastal Environments (CIEEM, 3rd Edition 2018);
- Circular Letter PL 1/2017 - Implementation of Directive 2014/52/EU on the Effects of Certain Public and Private Projects on the Environment (EIA Directive), 15 May 2017;
- Environmental Impact Assessment of Projects - Guidance on the Preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU). European Commission of the European Union 2017;
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (Environmental Protect Agency, 2022);
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Environment, Community and Local Government, 2018);
- Environmental Impact Assessment of National Road Schemes – A Practical Guide (NRA, 2008);
- Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009);
- NRA Environmental Assessment and Construction Series Guidelines (NRA, 2006-2009);
- A Guide to Habitats in Ireland (Fossitt, 2000);
- Bats & Lighting Guidance Notes for Planners, engineers, architects and developers (Bat Conservation Ireland, December 2010); and
- Bat Mitigation Guidelines For Ireland – Version 2 (Marnell *et al*., 2022)

5.3 Assessment Methodology and Significance Criteria

5.3.1 Desktop Survey

A desktop review was conducted in February 2022 by O'Donnell Environmental of available published and unpublished information, including a review of neighbouring planning applications, data available from the National Parks and Wildlife Services (NPWS) and National Biodiversity web-based databases in order to identify key habitats and species that may be present, in particular those protected by legislation. Specifically, The National Biodiversity Data Centre was reviewed for (i) existing species records for the 10km square in which the study site is located and (ii) an indication of the relative importance of the wider landscape in which the study site is located, based on Model of Bat landscapes for Ireland (Lundy *et al*. 2011). In the latter, the index ranges from 0 to 100, with 0 being least favourable and 100 most favourable for bats.

5.3.2 Designated Nature Conservation Site Assessment

Sites of international importance, including Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) are collectively known as Natura 2000 sites. These sites contain examples of some of the most important natural and semi-natural ecosystems in Europe. Designated sites, which also include Natural Heritage Areas

(NHAs) and proposed Natural Heritage Areas (pNHAs) were also searched for. The designated search area was 15 km from the Site boundary for Natura 2000 sites and 5 km for pNHA/NHA sites.

In the subsequent analysis of designated sites, particular attention was given to potential for the development to influence a designated site. In other words, potential ecological pathways were identified; these pathways can be hydrological, physically overlapping or exhibiting habitat and species synergies that could result in temporary or residual effects being afforded to a designated site.

5.3.3 Ecological Survey – Habitats

A Phase 1 habitat and flora assessment walkover survey of the area was conducted by Donnachadh Powell, O'Donnell Environmental on the 18th of January 2022 in accordance with the Heritage Council's guidelines (Smith *et al*. 2011). This involved a walkover of the Proposed Development, where the habitats present were classified according to Fossitt (2000) and recorded on a field map. The purpose of this Site visit was to describe and characterise the types of habitats present and determine whether there were ecologically sensitive or legally protected habitat types within the Site. Plants were identified to species level where possible (some plants are not identifiable to species level during winter months) and any invasive alien plant species observed e.g. Japanese Knotweed, Cotoneaster etc. were recorded and their locations were marked on field maps if recorded.

The evaluation of ecological receptors within the Proposed Development followed the criteria presented in the NRA Guidelines for Ecological Impact Assessment of National Road Projects (NRA, 2009).

Any other records of interest were marked on field maps and locations were recorded using GPS handheld units (Garmin GPSMAP 64x). The presence and extent of invasive alien plant species with the Proposed Development area and the surrounding environs were also identified, georeferenced using a GPS handheld unit and mapped and incorporated into the habitat and botanical surveys.

Relevant guidance adhered to for the Ecological Survey methods are found below:

- Heritage Council (2011). Best Practice Guidance for Habitat Survey and Mapping;
- Phase 1 Habitat Survey methodology (Joint Nature Conservation Committee (JNCC), 1990, revised 2010);
- Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes (NRA, 2009)

5.3.4 Ecological Survey – Fauna

5.3.4.1 Bird Survey

Bird species seen and heard during the Site visit were recorded. Any species that have high priority legal protection or are designated as endangered species were noted. Weather conditions were suitable for bird activity during winter months: partly sunny with scattered clouds, with wind speeds ranging between 4km and 20km per hour. Temperatures ranged between 7º C and 9º C during the survey period.

5.3.4.2 Non-volant Mammals Survey

A survey for non-volant mammals was undertaken and involved a walkover of the Site to identify any mammal species present or signs of mammal activity such as droppings, tracks, burrows etc. Observations were recorded using field notes and/or a handheld GPS unit. Techniques used to identify mammal activity followed recognised guidelines (e.g. Bang & Dahlstrom, 2004 and Muir *et al*., 2013).

The conservation status of mammal species was considered. The conservation status of mammals within Ireland and Europe is indicated by inclusion in one or more of the following: Irish Wildlife Acts (1976 - 2010); Red List of Terrestrial Mammals (Marnell *et al*., 2009); EU Habitats Directive.

5.3.4.3 Bat Survey

A Bat Survey Report prepared by NM Ecology Ltd for the adjacent former Tack Packing site (2020) for the Site was reviewed by O'Donnell Environmental (2022). The study included an inspection of potential roost features, an emergence survey, and a review of bat foraging / commuting activity on the former Tack Packing Site, located directly adjacent to the former Avid Technology Site. The survey was carried out in July 2020 which is within the bat maternity season.

The adjacent former Tack Packing Site footprint is urban and largely devoid of any natural or semi-natural features of ecological interest including buildings that may have supported bat roosts.

5.4 Survey Constraints or Limitations

5.4.1 Habitats

The Phase 1 habitat survey was undertaken outside the optimum survey period for botanical and habitat surveys (April to September). However, due to the nature of the habitats recorded within the proposed development Site and the absence of any vegetation of note the timing of the survey is not deemed to be a significant limitation in this instance.

5.4.2 Fauna

It is acknowledged that the walkover survey occurred outside the breeding bird season. However, due to the predominant habitats recorded, lack of nesting habitat, and the local context and scale of the proposed development, the survey timing is not deemed to be a significant limitation

5.4.3 Invasive Species

During the survey work the opportunity was taken to record the presence of any invasive non-native species. However, as stated above the detectability of such species can vary throughout the year, and depending on their life stage, recent management or timing of introduction during the Project life-cycle. Accordingly, the absence of an invasive non-native species should not be assumed even if it was not recorded during the survey work. Equally, where the presence of any invasive non-native species has been identified, absence in the remainder of the Site should not be assumed.

5.5 Impact Assessment Method

Habitats and species were assessed in accordance with the guidance contained in the document *Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland* (CIEEM, 2018) which recommends that the value of an ecological resource be determined within a defined geographical context (Figure 5.1).

5.5.1 Defining Importance

The relative importance of each ecological feature has been defined on a geographical scale, from international importance, to having relevance only in the context of the site boundary. The definitions employed for the basis of the evaluation are presented in Table 5.1. It should be noted that professional judgement has been employed in the allocation of a level of importance to each feature as it occurs on the site. In other words, the value of the feature is presented in the context of its actual status within the site. Therefore, a single individual of a species which is protected under the European Union (EU) Habitats Directive would not automatically be considered to be of European (international) Importance but would be evaluated in the context of its relationship to the overall population and conservation status.

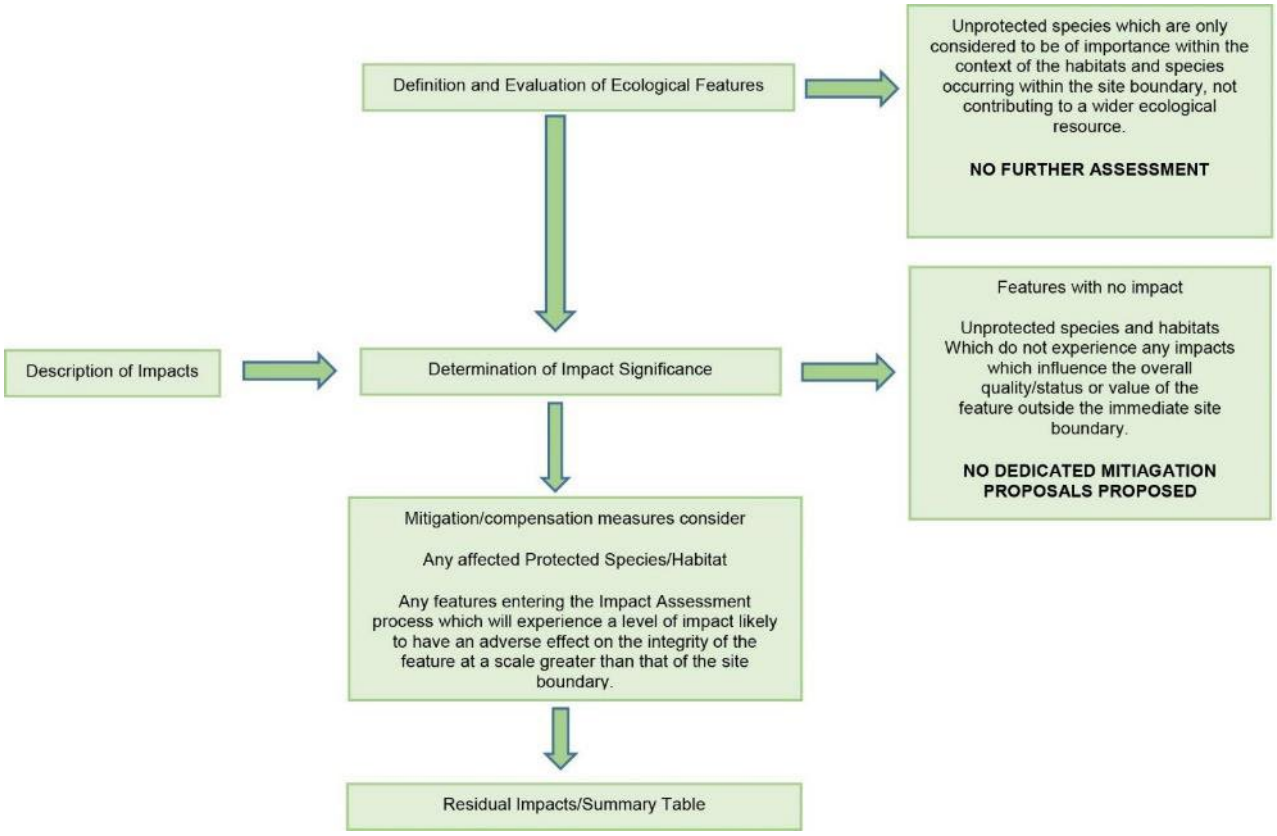

Figure 5.1: Impact Assessment Method

5.5.2 Defining Impact

The impacts to ecological features are defined by their geographical significance in terms of the likely effect and the defined importance of the feature being affected. It is not possible in this system to have an impact greater than the overall geographical importance of the feature (e.g. the maximum possible impact to a feature of a regional importance would be one which is of regional significance). Impacts which do not have significance beyond the immediate area (the Site) will be managed through the implementation of construction and habitat management plans. One exception to this is the case of impacts on Protected Species, where any impact would result in the implementation of mitigation measures.

5.5.3 Defining Magnitude of Change

Considering the potential for impacts as defined above, an assessment of the magnitude of change is arrived at. This is based on Table 5.1 below and relies on professional subjective judgement in deciding the level of magnitude of change.

Table 5.1: Criteria for Assessing Magnitude of Change

Impact Level	Description
Severe Impact	Ecological effects of a scale or magnitude which would result in permanent, total loss of an irreplaceable species or habitat of international or national importance (occasionally of local importance), or which would result in the substantial loss of a protected/rare habitat or a population of a protected/rare species. They represent key factors in the decision-making process. Typically, mitigation measures would be unlikely to remove such effects.

Impact Level	Description
Major Impact	These effects are likely to relate to permanent impacts at a regional or local level, or temporary impacts at an international or national level, and could be potential concerns to the project depending upon the relative importance attached to the issue during the decision making process. The effects are likely to be large in scale or magnitude, and result in substantial medium term loss of protected/rare species or habitats. Mitigation and detailed design work are unlikely to entirely eliminate all ecological effects.
Moderate Impact	These effects are usually only at local or regional level, and may be short or medium term only, or temporary impacts on a small part of an international site. However, the cumulative effects of such issues may lead to an increase in the overall effect on ecological features. They represent issues where effects will be experienced, but mitigation measures and detailed design work may ameliorate/enhance some of the consequences upon affected interests, but some residual effects will still arise.
Minor Impact	These effects are likely to be local issues only; or small magnitude impacts at the regional and national level, they are usually temporary, and are unlikely to be of importance in the decision making process. However, they are of relevance in enhancing the subsequent design of the development and consideration of mitigation measures.
Not Significant / No Impact	No perceivable impacts on ecological features (habitat or species). Impacts may be beneath levels of perception, within normal bounds of variation, within the margin of forecasting error, or impacting on exceptionally poor baseline conditions.
Beneficial / Positive Impact	These effects are those, which through implementation, would be anticipated to benefit the ecology and biodiversity of the site. They may advance the conservation objectives of local, national or international species or habitats.

5.5.4 Outlining mitigation, compensation, and enhancement measures

Receptors subject to significant impacts (those which have the potential to affect the ecological resource outside of the immediate site boundary) are the focus of provision of mitigation measures which have been formulated according to the mitigation hierarchy (avoid, reduce / minimise, compensate). All proposed mitigation measures follow industry best practice. Those for protected species follow the prescribed regulatory protocols.

5.5.5 Defining residual impact

Following the application of mitigation measures, impacts to each ecological feature are reassessed, and any residual impacts are reported.

As stated by the Chartered Institute of Ecology and Environmental Management (CIEEM) guidance (2018), '*The importance of an ecological feature should be considered within a defined geographical context*'. Accordingly, each feature has been assessed based on the scale described in Table 5.2.

Table 5.2: Criteria for Establishing Receptor Sensitivity/Importance

Importance	Ecological Valuation
International	Sites, habitats or species protected under international legislation e.g. Habitats and Species Directive. These include, amongst others: SACs, SPAs, Ramsar sites, Biosphere Reserves, including sites proposed for designation, plus undesignated sites that support populations of internationally important species.
National	Sites, habitats or species protected under national legislation e.g. Wildlife Act 1976 and amendments. Sites include designated and proposed NHAs, Statutory Nature Reserves, National Parks, plus areas supporting resident or regularly occurring populations of species of national importance (e.g. 1% national population) protected under the Wildlife Acts, and rare (Red Data List) species.
Regional	Sites, habitats or species which may have regional importance, but which are not protected under legislation (although Local Plans may specifically identify them) e.g. viable areas or populations of Regional Biodiversity Action Plan habitats or species.
Local/County	Areas supporting resident or regularly occurring populations of protected and red data listed-species of county importance (e.g. 1% of county population), Areas containing Annex I habitats not of international/national importance, County important populations of species or habitats identified in county plans, Areas of special amenity or subject to tree protection constraints.
Local	Areas supporting resident or regularly occurring populations of protected and red data listed-species of local importance (e.g. 1% of local population), Undesignated sites or features which enhance or enrich the local area, sites containing viable area or populations of local Biodiversity Plan habitats or species, local Red Data List species etc.
Site	Very low importance and rarity. Ecological feature of no significant value beyond the site boundary.

5.6 Baseline Conditions

The Application Site is ca. 0.99 hectares in area and is located in Sandyford Business Park, Sandyford, Dublin 18. Specifically, the Proposed Development Site is located on the corner of Blackthorn Road and Carmanhall road. The Site was formerly in use by Avid Technology International housed in a large industrial building, which has since been demolished.

There are no surface watercourses on Site. The Stillorgan Reservoirs are located ca. 200 m to the North of the Site. Carrickmines Stream/Racecourse Stream is located ca. 600 m to the south and appears to be partially culverted under the industrial estate, but is mapped at the surface in an open, vegetated area to the south of the M50 motorway (EPA, 2022). It flows towards the south-east to become Carrickmines River; eventually converging with the Loughlinstown River (North) to the east of the Site (near the N11 road and Loughlinstown) and discharging, as the Shanganah River, into the Irish Sea between Loughlinstown and Shankhill. Racecourse Stream is defined as having moderate waterbody status and is an ‘at risk waterbody’ under the WFD.

Brewery Stream/Carysfort Maretimo Stream (see Figure 7.3 in Chapter 7.0 Water) (is mapped at the surface approximately 800 m northeast of the Site (EPA, 2022). This stream, which is extensively culverted in the area of the Site, originates in the Tree Rock Mountains and flows under the M50 and across the heavily urbanised areas of Sandyford, Leopardstown and Stillorgan before discharging into Dublin Bay/the Irish Sea at Blackrock. There is no WFD status currently assigned to this watercourse; it is under review. The Irish Sea in Dublin Bay has designations that are described below.

There are four proposed national designated National Heritage Areas (pNHA) within 5 km of the Site (Figure 5.2). Fitzsimon's Wood pNHA is located approximately 1.6 km to the south west. Fitzsimons Wood pNHA (site code: 1753) is *'an example of a naturalised woodland along a river valley with a range of native species'*[1]. Dingle Glen pNHA is situated approximately 4.5 km from the Site. Dingle Glen (site code 001207): '*This is a dry valley formed as a glacial lake overflow channel'. 'While this Glen was formerly cleared of vegetation, a woodland cover is now regenerating*[2]'. South Dublin Bay pNHA (site code: 000210[3]) is situated approximately 4 km from the Site. Booterstown Marsh pNHA (001205[4]) is also located approximately 4 km from the Site. It is designated as a pNHA because it is the only saltmarsh in south Dublin and is recognised as a valuable habitat for many birds. It also contains a diverse flora including the protected plant Borrer's Saltmarsh-grass (*Puccinellia fasciculata*).

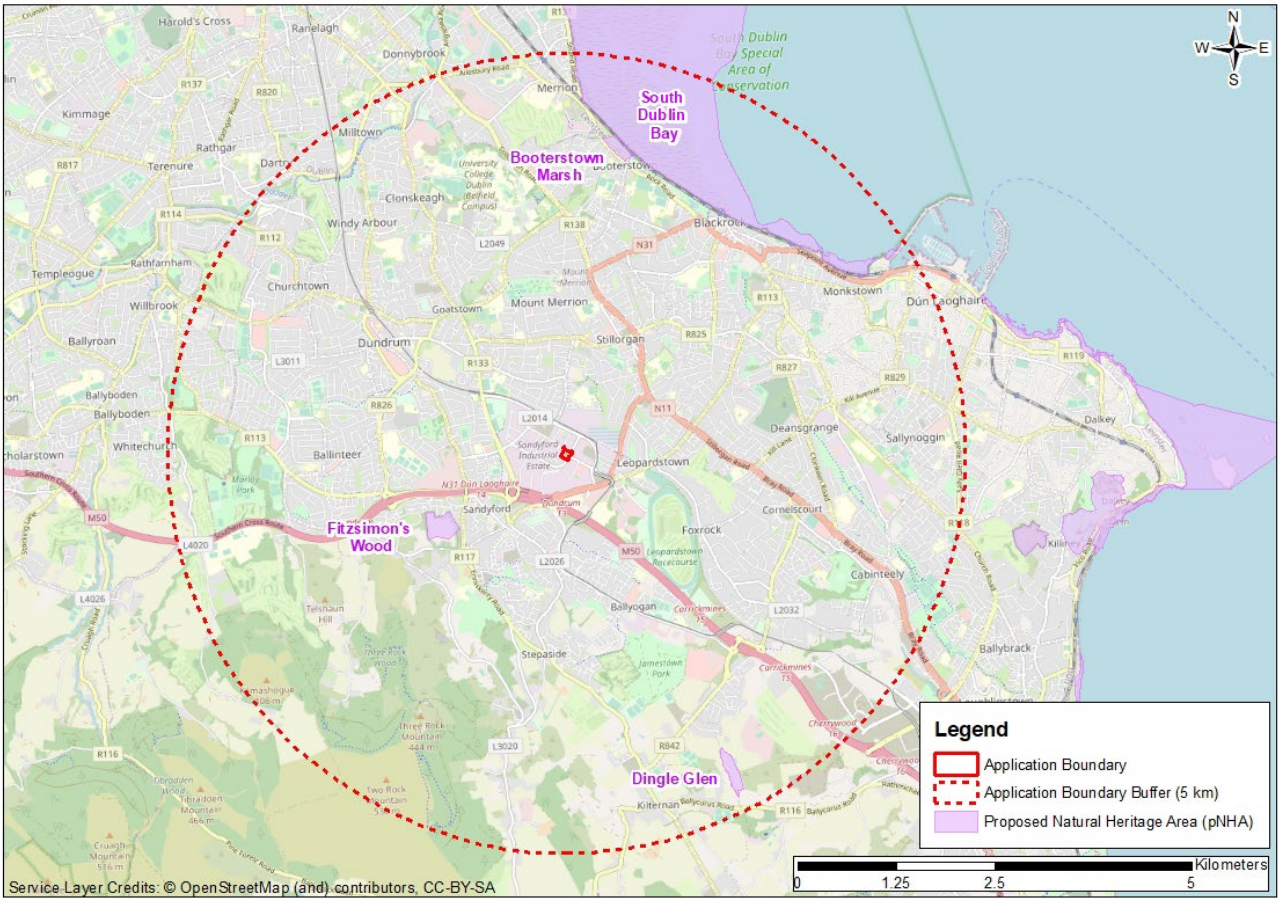

Figure 5.2: PNHA's within 5 km of the Site application boundary

[1] https://www.npws.ie/sites/default/files/publications/pdf/Perrin_et_al_2008_NSNW_V1.pdf

[2] https://www.npws.ie/sites/default/files/general/pNHA_Site_Synopsis_Portfolio.pdf

[3] https://www.npws.ie/sites/default/files/general/pNHA_Site_Synopsis_Portfolio.pdf

[4] https://www.npws.ie/sites/default/files/publications/pdf/McCorry_%26_Ryle_2009_Saltmarsh_survey_V1.pdf

The nearest Natura 2000 receptors are approximately 3.6 km from the Site within Dublin Bay (Figure 5.3). These include the North Dublin Bay SAC and South Dublin Bay SAC, SPAs for various bird species (South Dublin Bay and River Tolka Estuary SPA, and North Bull Island SPA), and a Nature Reserve (North Bull Island Nature Reserve). Part of the near-shore water (about 1.5 km off the coast of where the Shanganah River discharges into the sea, and 8 km east of the Site) is designated as the Rockabill to Dalkey Island SAC. The Wicklow Mountains SAC and SPA are located approximately 6.5 km to the south west. This application is accompanied by a stage 1 Appropriate Assessment screening report and this provides an evaluation of likely significant effects that may, or may not be, afforded to Natura 2000 sites as a consequence of the Proposed Development.

The Proposed Development is in the Liffey and Dublin Bay Water Framework Directive (WFD) catchment, the Dodder WFD sub-catchment and the Brewery Stream River sub-basin. Carrickmines Stream (ca. 600 m from the Site) is defined as an 'at risk waterbody' under the WFD classification system as applied by the EPA (Environmental Protection Agency).

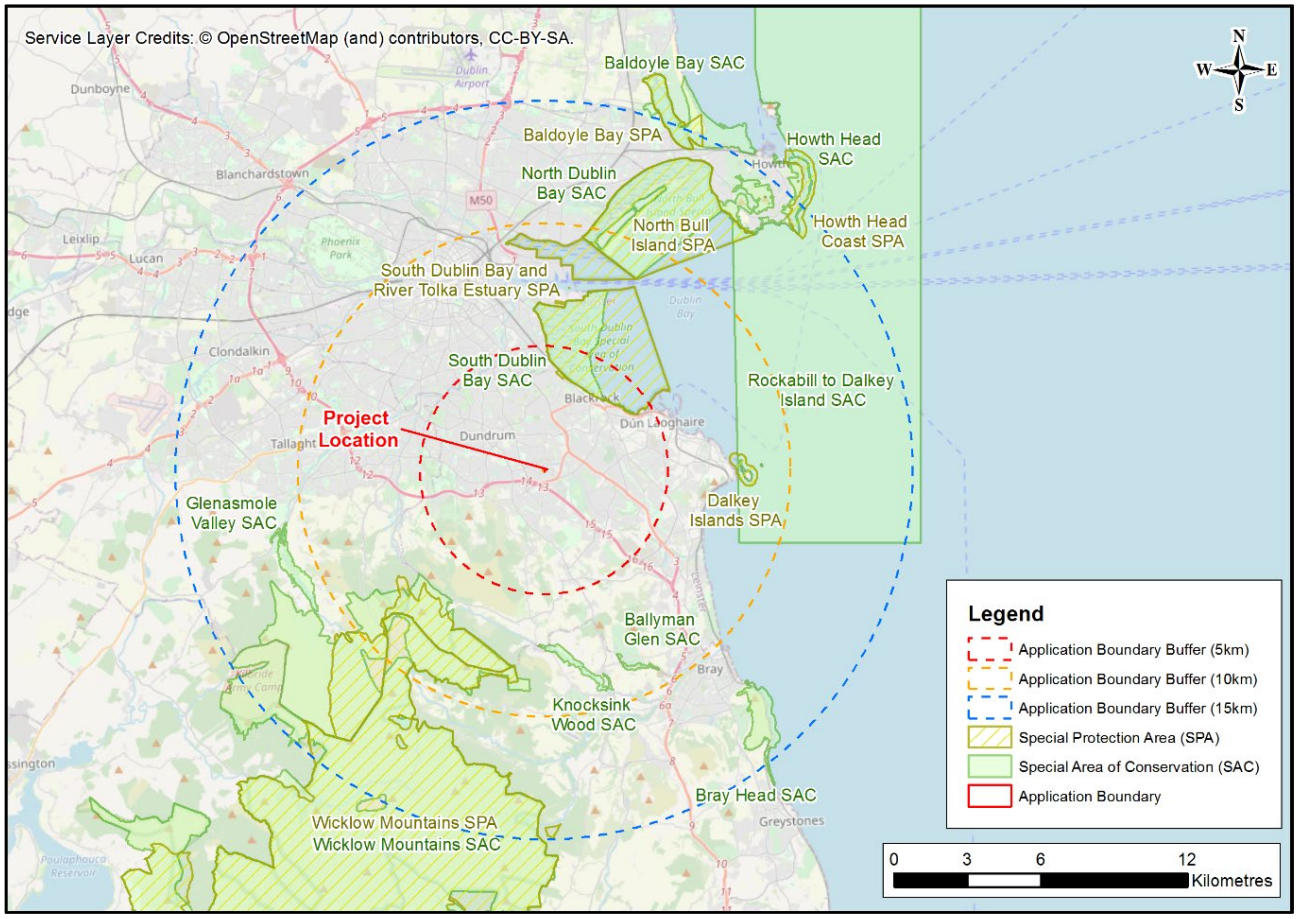

Figure 5.3: Natura 2000 sites within 15 km of the Site Application Boundary

5.7 Baseline Results

5.7.1 Desk Study Habitat

Desk study assessment was based upon searches of relevant web-based resources such as the National Biodiversity Data Centre (NBDC) and also a review of other ecological assessments undertaken within close proximity of the Site, namely O'Donnell (2022), Openfield (2019) and Scott Cawley (2019). No species protected by Section 21 of the Wildlife Act, 1976 as set out in the Flora (Protection) Order, 2015 were noted during desk based searches.

5.7.2 Habitat Assessment

The habitats present within the boundary of the Site are described below and their location is mapped in Figure 5.**4**. No Annex I habitats listed under the EU Habitats Directive are present within the Site and the dominant habitats present are of low ecological value. All species recorded during the botanical survey are considered common for similar habitats (Appendix 5.1).

Figure 5.4: **Fossitt Habitat Map of the Site Walkover area (O'Donnell Environmental Ltd). Buildings and Artificial Surfaces (BL3)**

Artificial surfaces comprise the majority of the Site (see Figure 5.4). Vegetation cover is significantly less than 50% in these areas and most of the land is covered in artificial surfaces, primarily hard surfaces. Some occasional plants occur within BL3 habitats including invasive species such as occasional immature *Cotoneaster* sp. plants and *Buddleja* sp. which frequently occurs in the disturbed habitats found on the east of the Site.

Figure 5.5: Example of BL3 Habitat found within Proposed Site

5.7.2.1 Recolonising Bare Ground (ED3)

ED3 is found in in the eastern portion of the Site and occurs in mosaic with BL3 and ED2. Vegetation cover here is greater than 50%. A large stand of invasive Butterfly Bush (*Buddleja* sp.) is found within this habitat. Other plants typical of ED3 such as Willowherbs (*Epilobium* spp.), Spear Thistle (*Cirsium vulgare*), Ragworts (*Senecio* spp.) and Umbellifers are present.

Figure 5.6: Recolonising Bare Ground Habitat (ED3)

5.7.2.2 Spoil and Bare Ground (ED2)

The spoil and rubble heaps located on the east of the site constitute the ED2 habitats in the study area. Vegetation cover is less than 50% in these areas, with mostly ruderal weed species such as Dandelions (*Taraxacum officinallis*) and Bittercress (*Cardamine hirsuta*). Several Butterfly Bush (*Buddleja davidii*) plants are also found in these ED2 areas.

Figure 5.7: Spoil and Bare Ground Habitat (ED2)

5.7.2.3 Hedgerow (WL1)

Hedgerow (WL1) habitat on site consists mostly of the non-native shrub Cherry Laurel (*Prunus laurocerasus*) growing in mosaic between trees (Silver Birch (*Jacquemon tii*), Norway Maple (*Acer platanoides*) Sycamore (*Acer pseudoplatanus*), and Lime (*Tilia* spp.) on the western boundary of the Site. Understory species include Ivy (*Hedera helix*) and Himalayan Ivy (*Hedera nepalensis*). The eastern boundary of the Site (including the DLRCC verges) contain laurel shrubs and Silver Birch trees (Figure 5.9 below).

Figure 5.8: Hedgerow Habitat (WL1 & WL2) (photo taken from adjacent former Tack Packing Site).

5.7.2.4 Treeline (WL2)

This habitat type is characterised by the presence of a single or narrow line of trees greater than 5m in height, less than 4m in width, often occurring along the edges of property lines (small portion of the western edge with regards to this Site, see Figure 5.4). Treelines (WL2) were formed of species such as Silver Birch (*Jacquemon tii*), Norway Maple (*Acer platanoides*) Sycamore (*Acer pseudoplatanus*), and Lime (*Tilia* spp.).

Figure 5.9: Eastern Hedgerow habitat of the Proposed Development (WL1)

5.7.2.5 Ornanmental/Non-native Shrub (WS3)

A small area of non-native Laurel (*Prunus* spp.) shrubs is located on the north western boundary of the Site. Some juvenile Silver Birch (*Betula pendula*) trees are planted between the shrubs here. Another area of WS3 habitat is situated in the laneway centrally within the site with Honeysuckle (*Lonicera* spp.) varieties growing in a small ornamental bed.

Figure 5.10: Ornamental/Non-native Shrub Habitat (WS3)

5.7.3 Aquatic Habitat – Offsite Receptors

As previously described, there are no watercourses present on the Site. Desk based assessment reveals (see Section 5.6 for further details) that:

- the Stillorgan Reservoirs are located ca. 200 m to the North of the Site,
- Carrickmines Stream/Racecourse Stream is located approximately 600 m to the south of the Site and eventually converging with the Loughlinstown River and discharging, as the Shanganah River, into the Irish Sea between Loughlinstown and Shankhill, and,
- Brewery Stream/Carysfort Maretimo Stream located approximately 800 m northeast of the Site thatv originates in the Tree Rock Mountains and flows under the M50 and across the heavily urbanised areas of Sandyford, Leopardstown and Stillorgan before discharging into Dublin Bay/the Irish Sea at Blackrock.

The stage 1 appropriate assessment for the Site includes an assessment of the Site's hydrological setting and connectivity to potential offsite receptors.

5.7.4 Fauna Assessment

The presence, or potential presence, of species on the Site was identified from the desk study and Phase 1 Habitat survey. The following list provides a rationale for the likely presence or indeed absence of fauna associated with the Site or its immediate surrounds.

5.7.4.1 Desk Study Non-volant Mammals

There are historic records for a total of 18 mammal species within the 10 km grid square in which the Site is located (012; NBDC), see Table 5.3. Only Red Fox (*Vulpes vulpes*), Brown Rat (*Rattus norvegicus*), and Eastern

Grey Squirrel (*Sciurus carolinensis*) have previously been recorded in the 1 km grid square in which the proposed Site is located (O1926; NBDC).

Table 5.3: Mammal species previously recorded within the 10km grid square (O04) in which the site is located (NBDC).

Common name	Species name	Legal Protection*	Conservation Status**
American Mink	*Mustela vison*	AIS	AIS
Brown Rat	*Rattus norvegicus*	AIS	AIS
Eastern Grey Squirrel	*Sciurus carolinensis*	AIS	AIS
Eurasian Badger	*Meles meles*	WA	LC
Eurasian Pygmy Shrew	*Sorex minutus*	WA	LC
Eurasian Red Squirrel	*Sciurus vulgaris*	WA	LC
European Otter	*Lutra lutra*	Annex II/IV, WA	LC
European Rabbit	*Oryctolagus cuniculus*	AIS	LC
Fallow Deer	*Dama dama*	WA	AIS
House Mouse	*Mus musculus*	AIS	LC
Irish Hare	*Lepus timidus hibernicus*	Annex V, WA	LC
Irish Stoat	*Mustela erminea hibernica*	WA	LC
Pine Martin	*Martes martes*	Annex IV, WA	LC
Red Deer	*Cervus elaphus*	WA	LC
Red Fox	*Vulpes vulpes*	-	LC
Sika Deer	*Cervus nippon*	AIS	AIS
West European Hedgehog	*Erinaceus europaeus*	WA	LC
Wood Mouse	*Apodemus sylvaticus*	-	LC

Source: https://maps.biodiversityireland.ie/Map. Accessed 07/07/2021.

* Annex status (EU Habitats Directive), WA (Protected under Wildlife Acts 1976 and 2000).

** LC – Least Concern (Marnell *et al*., 2019); AIS - Alien Invasive Species.

5.7.4.2 Non-Volant Mammal Assessment

No droppings, prints, burrows or other underground dwellings associated with legally protected mammal species were found to be present within the site boundary or in its immediate environs. This is reflective of the high levels of disturbances associated with human activity present on the site, in addition to a lack of suitable habitat

that could support protected mammal species. There is a distinct lack of available resource for the small and medium mammal group such as pygmy shrew, hedgehog, badger and pine marten. These species require mosaic habitats of woodland, scrub and connecting linear features such as hedgerows to fulfil their ecological life cycles. The urban setting, high density of people and traffic plus lack of ecological connectivity with natural or semi-natural features all detract from the suitability of the Site for these species.

5.7.4.3 Desk Study Bats

All Irish bat species are protected under the Wildlife Act (1976) and Wildlife Amendment Act (2000). All Irish bats are listed in Annex IV of the Habitats Directive and the Lesser Horseshoe Bat (*Rhinolophus hipposideros*) is further listed under Annex II.

National Biodiversity Data Centre holds previous records of bat presence from within the 10 km square (O12) in which the Site is located. These records are for Common Pipistrelle (*Pipistrellus pipistrellus*), Soprano Pipistrelle (*Pipistrellus pygmaeus*), Daubenton's Bat (*Myotis daubentonii*), Brown Long-eared Bat (Plecotus auritus), Leisler's Bat (*Nyctalus leisleri)*, Natterer's Bat (*Myotis nattereri*) and Whiskered Bat (*Myotis mystacinus*). It is important to note that an absence of other bat species records is reflective of a lack of surveys undertaken to date rather than absence of bat species.

The overall bat suitability index value (17.44) according to 'Model of Bat Landscapes for Ireland' (Lundy *et al*. 2011) suggests the landscape in which the locality of the study area is of high suitability for bats in general.

Table 5.4: Suitability of the study area for the bat species according to 'Model of Bat landscapes for Ireland' (Lundy *et al*. 2011).

Common name	Scientific name	Suitability index
All bats		*17.44*
Soprano pipistrelle	*Pipistrellus pygmaeus*	30
Brown long-eared bat	*Plecotus auritus*	23
Common pipistrelle	*Pipistrellus pipistrellus*	32
Lesser horseshoe bat	*Rhinolophus hipposideros*	0
Leisler's bat	*Nyctalus leisleri*	34
Whiskered bat	*Myotis mystacinus*	14
Daubenton's bat	*Myotis daubentonii*	3
Nathusiius pipistrelle	*Pipistrellus nauthusii*	10
Natterer's bat	*Myotis nattererii*	11

Bat Conservation Ireland (BCI) conducted a search of their records database at the request of O'Donnell Environmental on 21st January 2022. The relevant search area included a 1km radius from the Development Application Boundary. No roost data exists within, or in close proximity to the Site.

A bat survey undertaken by NMEcology for the adjacent former Tack Packing Site (see section 5.3.4.3 for details) indicated that existing structures and mature trees on that Site are considered to have negligible suitability for roosting bats. Additionally, no bats were recorded during an emergence survey carried out in June 2020. That survey concluded that the site and its immediate surroundings are considered to be of negligible importance for bats.

5.7.4.4 Bat Assessment

Tom O'Donnell of O'Donnell Environmental Ltd. is the independent ecologist who undertook the Bat survey in the neighbouring Tack Site. It is Tom's professional opinion that a Bat Survey is unnecessary due to the lack of structures, buildings and trees present on site that could offer potential roosting features (e.g. crevices, cracks). These features were considered to be of 'negligible' suitability for bats to roost (following Collins, 2016).

Furthermore, the Site does not provide optimal or even sub-optimal bat foraging habitat. On this basis it is unnecessary to perform a Bat Survey and bats have been scoped out of the impact assessment.

5.7.4.5 Desk Study Birds

Bird species relevant to the Site revealed in the desk study included 26 species of bird including common and widespread species and more notable records such as Common Snipe (*Gallinago gallinago)* and Common gull (*Larus canus)* which are both amber listed Irish Birds of Conservation Concern (BoCC).

5.7.4.6 Bird Assessment

During the course of ecological walkover surveys, the following bird species were seen or heard:

- Robin (*Erithacus rubecula*);
- Blackbird (*Turdus merula*);
- Magpie (*Pica pica*);
- Pied Wagtail (*Motacilla alba*);
- Goldfinch (*Carduelis carduelis*);
- Chaffinch (*Fringilla coelebs*);
- Starling (*Sturnus vulgaris*);
- Jackdaw (*Corvus monedula*);
- Rook (*Corvus frugilegus*);
- Herring Gull (*Larus argentatus*); and
- Hooded Crow (*Corvus cornix*).

The bird community recorded at the Site is representative of a disturbed urban environment and is characterised by the presence of mostly common and widespread bird species. The species recorded included two species that are red-listed in Birds of Conservation Concern in Ireland 2013-2019 (BoCCI; Colhoun and Cummins, 2013): Herring Gull and Starling.

The Site does not support an adequate nesting, foraging and shelter habitat for birds. An absence of woodland, trees or even unmanaged grasslands dictates that the Site is relatively sterile for bird species. It is possible that some common and widespread species could move through the Site sporadically but in general the Site could not support even common and widespread species for more than infrequent limited occupation.

5.7.4.7 Summary of Faunal Results

Summary Table 5.5 lists the species which were considered within the impact assessment process then scoped out as a lack of available habitat for these species was realised.

Table 5.5: Assessment of the potential for faunal species to occur within the Site.

Species/Group	Status	Summary of status on site
Small and medium Mammals such as Pygmy Shrew, Hedgehog, Badger and Pine Marten	Wildlife Acts (1976 – 2010) EU Habitat Directive (Pine Marten)	No available resource, no habitat available for commuting, foraging or breeding. Not considered further in this assessment
Bats	Wildlife Acts (1976 – 2010) – EU Habitat Directive.	No available resource, no potential[5] roosting habitat available from mature trees or buildings. Not considered further in this assessment with the exception of general biodiversity safeguards (lighting mitigation) in Section 5.15.
Birds	Wildlife Acts (1976 – 2010), EU Birds Directive, Birds of Conservation Concern (BoCC[6], Ireland).	Common and widespread species may infrequently pass through the Site. Not considered further in this assessment with the exception of general biodiversity safeguards in section 5.15.
Aquatic Fauna	Salmonids, Wildlife Acts (1976 – 2010) – EU Habitat Directive.	No available resource on Site. Considered further within this assessment owing to potential for aquatic ecological connectivity.

5.7.5 Tree Assessment

Northern Tree Services undertook an arboriculture assessment of trees within the Site planning application boundary (Northern Tree Services, 2022)[7]. A total of 8 no. individual trees and 3 no. groups of trees (made up of approximately 10 trees) were tagged and assessed as part of the Survey fieldwork. The survey included the trees on the land owned by DLRCC in verges adjacent to the Site. Tree species recorded were Birch (*Jacquemon tii*), Norway Maple (*Acer platanoides*) Sycamore (*Acer pseudoplatanus*), and Lime (*Tilia* spp.). The majority of trees recorded where semi-mature and no mature trees were identified by Northern Tree Services.

Of the trees surveyed, 8 no. trees and groups were classed as Category A2 (‘*trees of a high quality with an estimated remaining life expectancy of at least 40yrs’* and *‘trees with mainly landscape qualities’*), and 3 no. trees and groups were classed as Category B2 (‘*trees of moderate quality with an estimated remaining life expectancy of at least 20yrs’ and ’trees with mainly Landscape qualities’*). There are no Tree Protection Orders (TPOs) on any of the trees on the Site.

[5] A tree or trees of sufficient size to exhibit potential roosting features but none seen from the ground or with limited roosting potential, Collins 2016.

[6] Colhoun, K. & Cummins, S. (2013) Birds of Conservation Concern in Ireland 2014–2019. Irish Birds 9: 523–544.

[7] Northern Tree Services (2022), Tree Survey Report: Lands at Avid, Sandyford, Dublin.

5.8 Evaluation

The evaluation of ecological features (sites, habitats and species) which could be affected by the project proposals is presented in Table 5.6. The table includes:

- Any statutory designated areas, with the exception of Natura 2000 sites (dealt with in accompanying Stage 1 screening report), which are situated within 5 km of the project site that have potential ecological connection(s) with the site;
- Any surface or groundwater bodies that have hydrological connectivity with the site;
- Any habitat type recorded within the site; and
- Any species of conservation importance which has been confirmed as occurring within the site.

The value of the feature is based upon how important the feature is in relation to its geographical context. In other words, at what level of geographical resolution would the feature contained within the site (habitat or species) be recognised as contributing to biodiversity to a significant degree. The evaluation takes into account extent (or population size) within the site compared to the resource elsewhere and whether it has characteristics which either elevate or depress its importance in comparison with a 'typical' example (for example, whether a habitat is particularly species rich, or depleted in species).

Common and widespread species or habitat, therefore, only have a level of importance in respect of the biodiversity of their immediate area (taken in this case to be represented by the boundary of the site). Such features are not considered further within the Impact Assessment. Some protected species may, under certain circumstances (such as a single example occurring within the site, as part of a much larger local population) be considered to only be of importance within the site itself. Such species, on the basis of legal and planning regulation compliance, are included within the Impact Assessment and, (if necessary) dedicated impact mitigation measures are provided. Table 5.6 presents each feature occurring, together with the rationale for its evaluation.

Table 5.6: Classifying the Geographical Importance of Key Ecological Features

Key Ecological Features	Importance	Rationale
Designated Sites		
Fitzsimon's Wood pNHA	Regional	This feature is situated approximately 1.6 km from the Site. There are no ecological pathways, habitat or species synergies between this pNHA and the Site. As such, this pNHA is scoped out of the ecological impact assessment.
Dingle Glen pNHA	Regional	This feature is situated approximately 4 km from the Site. There are no ecological pathways, habitat or species synergies between this pNHA and the Site. As such, this pNHA is scoped out of the ecological impact assessment.
South Dublin Bay pNHA	Regional	This feature is situated approximately 4 km from the Site. There are no ecological pathways, habitat or species synergies between this pNHA and the Site. As such, this pNHA is scoped out of the ecological impact assessment.

Key Ecological Features	Importance	Rationale
Booterstown Marsh pNHA	Regional	This feature is situated approximately 4 km from the Site. There are no ecological pathways, habitat or species synergies between this pNHA and the Site. As such, this pNHA is scoped out of the ecological impact assessment.
Habitats		
Trees	Site	The trees on Site do not represent a valuable resource for fauna such as roosting and nesting bats and birds. However, this feature is included within the general biodiversity safeguard mitigations and ecological impact assessment on a precautionary basis.
Aquatic receptors (off Site)	Regional (potential international important receptors are dealt with in the stage 1 appropriate assessment).	There is potential for a measurable increase in nutrient loading (aquatic eutrophication) during construction and residential occupation as a consequence of the Project.

5.9 Landscape Design

5.9.1 Embedded Design Parameters

NMP (2022) have submitted a comprehensive landscape plan as part of the Tack Sandyford SHD planning package for the purpose of landscape enhancement and provision of amenity and recreational space at the development. Landscape design incorporates green public open space and communal open spaces with gardens in courtyards and rooftop terraces. The plan provides schedules showing where trees will be retained and, there required, planting will be used to replace existing trees, where development or enhancement measures require that they be removed. The plan also includes:

- The use of native tree and Shrub planting and wildflower meadow grass areas to respond to, support and promote the national pollination plan;
- The use of additional tree planting to promote carbon sequestration as well as a varied habitat, roosting for bird life and screening the development;
- A planting strategy intended to retain as much of the existing landscape to the sites periphery as possible and to provide tie in with the character and wildflower / perennial mix; and
- The provision of native herbaceous planting, hedges, grassland, trees, and wildflowers to provide biodiversity net gain in benefitting pollinating insects and bird species.

Additional enhancement measures are discussed in the following sections, where appropriate

5.9.1.1 Trees

The Proposed Development landscaping scheme outlines works and upgrades to the trees within Site Boundary but also includes lands ca. 0.26 ha outside ownership line (subject to prior consent of Dún Laoghaire Rathdown County Council). The treeline/hedgerow habitat (DLRCC verge) bordering the east and north of the Site are to be retained and enhanced with planting of trees associated with herbaceous planning or rain gardens. Of these existing trees twelve are to be removed according to the Landscape Design Statement, however, substantial tree planning is proposed within DCC lands (verges) where the site abuts Carmanhall Road and Blackthorn Road, the Development's central courtyard, and along the boundary with the former Tack Packing Site and southern site boundary (NMP, 2022). The landscape plan indicates that planning will allow for a net gain of trees within the proposed Development Application Boundary.

Tree species are selected for longevity, suitability to local soil conditions and micro-climate, biodiversity (native species) and where required suitability for proximity to residential buildings. Proposed tree sizes range from heavy standards and multi-stemmed trees to native whip and forestry transplants. There will be a net gain of individual trees in order to improve the species mix and the proportion of native species on site. Typical species are illustrated on the following pages (NMP, 2022).

5.9.1.2 Herbaceous Planting

The planting strategy intends to retain as much of the existing landscape to the Site's periphery as possible. To enhance bio-diverse credentials wildflower and shrub planting will occupy edges and large swathes of the sites periphery along with shade tolerant understory planting including plant selection to encourage foraging. The typical species include *Papaver rhoeas*, *Silene dioica, Lotus corniculatus, Matricaria chamomilla, Ranunculus acris, Medicago lupulina, Lavandula x intermedia, and Salvia officinalis*.

5.9.1.3 Green Roof

The design incorporates green roofs which will reduce, attenuate and filter stormwater runoff. The Green Roofs design allows for storage of excess precipitation and attenuation of discharges to a rate acceptable to the Dún Laoghire-Rathdown County Council. In addition, this eco-friendly design will provide stored water for irrigation and other applications, reduce the Urban Heat Island Effect and energy costs. The use of this roofing approach will provide rooftop areas for planting to promote biodiversity at this level.

5.9.1.4 Rain Gardens

The design incorporates rain gardens used to increase rain runoff reabsorption by the soil. It is proposed to incorporate rain gardens to the east of the development to provide a better surface water quality run off of the development. The rain gardens will be connected to the wider surface water network and attenuated to the attenuation tank located at basement level.

5.9.1.5 Bio-retention tree pits

The design incorporates tree pits to the south of the development to provide interception storage to the south access road. Tree pits are engineered pits that allow for the drainage through and retention of water within the tree pit.

5.9.2 Surface and Wastewater

Direct impacts to water can give rise to indirect impacts to ecology and biodiversity if not managed effectively. Mitigation measures that are incorporated at the design stage that are protective of the water environment and water are discussed in Chapter 7 – Water.

Potable water, foul water and storm water will be managed on the Site by engineered networks with connections to existing infrastructure networks. Surface water runoff will be controlled using SuDs measures incorporating source and site control measures and managed in accordance with the Greater Dublin Strategic Drainage

Strategy. Source and Site control measures potentially beneficial to local and regional biodiversity and ecology during operations include:

- Use of permeable ashphalt to reduce storm water run-off rates (source control),
- Use of Green Roofs/ Green Podium to reduce surface water run-off rates (source control);
- Petrol interceptors used to filter out hydrocarbon pollutants from rainwater run-off (site control);
- Use of Attenuation Tank and Hydro-brake to facilitate controlled water release and avoidance of downstream impacts arising from release of temporarily storage water (site control); and
- Use of rain gardens and bio-retention tree pits.

These have been designed to be protective of waters and are not specifically included to protect European site.

5.9.3 Lighting

IN2 (2022) states that proposed Site lighting design has 'been assessed to establish minimal environmental and ecological impact through glare, sky glow and obtrusive light (light spill)'. The lighting strategy devised by IN2 (2022) has committed to the following characteristics that may be considered beneficial for some nocturnal fauna, albeit noting that the Site contains no suitable habitat for bats:

- The minimum level of appropriate/required lighting level will be provided within the developed/residential areas;
- Light standards will be fitted with low intensity, horizontal cut-off LED light fittings employing a narrow directional light or cowled light. This will avoid the effect of light spill arising;
- The lighting includes dimming by 30% post curfew hours;
- Light standards and associated lighting will be directed away from areas of open space;
- No floodlighting will be used in Development; and

The external lighting for this proposed development has been designed to achieve the performance requirements as set out in the standard ;Bats and Lighting in the UK – Bats and the Built Environment Series (Institute of Lighting Professionals, September 2018)'.

5.10 Potential Effects

Potential effects are considered taking into account to the committed embedded design parameters detailed in the previous section. The following potential effects may be associated with the Project:

- Permanent loss or damage to on Site trees; and
- Measurable increase in nutrient loading to offsite aquatic habitat during construction and residential occupation in perpetuity.

5.11 Impact Assessment

Potential impacts associated with the Proposed Development have been defined and their significance assessed in relation to their implications on ecological features, defined in terms of their geographical extent (Table 5.6). Impacts are described during the construction and residential occupation phases. Assessments are made in accordance with the guidance contained in the document *Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland* (CIEEM, 2018).

The key construction and residential impacts assessed are:

- Loss or damage to on Site trees; and
- Aquatic eutrophication as a consequence of increased nutrient loading due to increases in population density and pressure on existing foul drainage processing.

5.11.1 Site Trees – Construction and Operational Impacts

The Proposed Development will cause the permanent loss of trees. Any trees removed from the Site are for purposes of Landscape Design.

5.11.1.1 Characterisation of Unmitigated Impact on the Feature

In the absence of mitigation, trees on the Site due to be retained could be damaged during construction by vehicular compaction of soils indirectly, and intrusive works directly, damaging root structures, and during operations by sealing of surfaces where works of development occurs near trees.

Additionally, trees removed will be permanently lost, though it is worth reiterating that trees planned to be removed in the landscape design do not represent a valuable biodiversity resource and proposed planting of new trees will offset impacts

5.11.1.2 Rationale for Prediction of Effect

Tree habitat is relatively scarce in the wider context of the Site. The removal or damage of trees is more likely to have an aesthetic impact in contrast to a measurable impact on biodiversity e.g. nesting birds or the tree itself. Nonetheless, it is considered that the loss or damage of these trees would negatively impact the Site landscape.

5.11.1.3 Effect without Mitigation

The unmitigated effect of this habitat loss would result in a *minor* permanent impact to habitat of Site sensitivity and importance.

5.11.2 Aquatic Receptors – Construction and Operation Impacts

The Proposed Development will lead to an increase in nutrient loading due to be managed by the Ringsend facility. In addition, sediment loading from Site run off during construction may occur though there are no surface water receptors that would receive turbid water containing elevated suspended sediments. As a consequence of the increase in trophic status in the absence of mitigation, aquatic receptors such as fish and also habitats could be adversely impacted by eutrophication.

5.11.2.1 Characterisation of Unmitigated Impact on the Feature

The Proposed Development has potential to cause measurable increases in nutrient loading which could degrade the quality of aquatic habitats in the absence of mitigation.

5.11.2.2 Rationale for Prediction of Effect

Alterations to water quality have potential to adversely affect aquatic downstream receptors, impacting on the balance of the current aquatic ecosystem, potentially leading to a loss in biodiversity. Increases in total suspended sediments (TSS) may also factor in the absence of mitigation.

5.11.2.3 Effect without Mitigation

The unmitigated effect of this Proposed Development could result in a **minor** impact to habitat of **regional** sensitivity and importance.

5.12 'Do-Nothing' Scenario

The Site is currently dominated by hardstanding. In the absence of the Proposed Project, it is assumed that the current management regime within the Site would be continued. In essence, the Site would remain undeveloped, and areas of hardstand may degrade over the long term with potential for some vegetative colonisation, potentially invasive in nature. Therefore, there may be potential for a limited increase in biodiversity value of the Site in the absence of the Project, assuming that ongoing management activity removes any invasive species that may colonise it. Invasive flora species are present on the site and, left unchecked, may spread within or beyond the site boundary.

5.13 Mitigation and Management

5.13.1 General

All Site construction will be undertaken in accordance with the Construction Industry Research and Information Association's (CIRIA) (2015) C741 Environmental Good Practice on Site Guide (fourth edition).

5.13.2 Aquatic Receptors

To prevent any pollution incidents that might potentially cause deterioration of the aquatic environment it is proposed that a series of best practice measures are introduced throughout works, in accordance with CIRIA guideline documents C532 (CIRIA, 2001) and C741 (CIRIA, 2015), and Enterprise Ireland's best practice guidance for oil and hydrocarbon storage (BPGCS005). Dangerous substances such as oils and fuels will be stored at all times in a bunded area. Only clean water would be allowed to enter public surface water system. Where necessary, silt traps will be used to remove sediment and solid matter prior to discharge to surface water systems. The Site manager will be responsible for ensuring that pollution does not occur, and Site personnel will be trained in the importance of pollution prevention.

The increase in nutrient contribution from increases in Site residential usage will effectively be addressed by upgrades at the Ringsend wastewater treatment plant (WTP). The Ringsend WTP discharges into Dublin Bay which is currently classified as being unpolluted by the EPA and attaining 'good' ecological status as defined by the WFD.

5.13.3 Retention or removal of on-Site habitats

Trees that are to be retained in the landscape design will be protected in accordance with best practice guidance (BS5837, trees in relation to construction) as detailed in Tree Survey Report & Arboricultural Impact Assessment prepared by Northern Tree Services (2022). Any trees to be removed will be done so in line with the Tree Survey Schedule prepared by Northern Tree Services (2022) and outside of the bird nesting season on a precautionary basis. The nesting season is considered to be between March and August inclusive. If trees are required to be felled within the nesting season a suitably qualified ecologist will first check to ensure that the trees do not support nests. In the unlikely event that nests are discovered and in use the trees will not be cleared until the young have fledged.

To reduce the impact of construction activity, Tree Survey Report & Arboricultural Impact Assessment (Northern Tree Services, 2022) recommendations shall be observed in sequence:

- The erection of temporary staked Tree Protection Barriers (TPB) to establish a fenced-off Construction Exclusion Zone (CEZ) before any demolition and/or construction works begin on-site in the areas where trees to be retained;
- Installation of temporary ground protection (TGP): before any demolition and/or construction works begin on-site;
- Route underground services: not within the Root Protection Areas (RPAs) of any retention trees;

- Installation of Cellular Confinement Systems;
- Remove TGP and TPBs;
- Landscape works (leading to a net gain of trees on the Site).

Any tree removal or planting on DLRCC lands will require prior approval from DLRCC. The Principal Contractor will ensure that seed mixes to be used on DLRCC lands are agreed in advance with DLRCC, where required.

5.13.4 Invasive Species

The presence of invasive plant species was sparse during Ecological Survey, immature *Cotoneaster* sp. and *Buddlejea* sp. found in the BL3 habitat and considered non-significant and will be removed by competent contractors prior to commencement of construction works.

Measures will be implemented throughout Site works to safeguard against the spread of any invasive non-native species (such as Japanese knotweed or Cotoneaster). The Principal contractor for the construction of the Project will ensure that all materials imported or exported from the Site are not contaminated and monitoring will take place post-construction to ensure that invasive species do not colonise the Site.

5.13.5 Monitoring

A precautionary approach will be adopted regarding invasive place species, and invasive plant species surveys will be carried out by suitability experienced persons at the earliest opportunity, in advance of any Site works commencing on the site, and annually until completion of the construction phase. Should invasive plant species be identified from these survey(s), the Principal Contractor will be required to develop and implement an Invasive Species Management Plan, that will set out, at a minimum; the identity of the species, the location of individual plants and stands, and the treatment methodology and programme, and any additional required site safety measures to be implemented. Treatment should only be undertaken by an appropriate and experienced party.

NMP (2022) sets out monitoring requirements to ensure successful establishment of landscaped elements, including plant, trees and gasses, and invasive floral species.

5.14 Residual Effects

In the absence of mitigation, it is considered that the Proposed Development would result in **Minor** effects to features of Site and Regional value. However, with the implementation of appropriate mitigation it is considered any residual effects on the Site will be **Not Significant** i.e. no perceivable impacts on ecological features (habitat or species). Impacts may be beneath levels of perception, within normal bounds of variation, within the margin of forecasting error, or impacting on exceptionally poor baseline conditions.

5.15 Cumulative Effects

The effects of the Proposed Development are considered cumulatively with other reasonably foreseeable developments in the local area in Chapter 15 – Interactions, Cumulative and Combined Effects.

5.16 Summary and Conclusions

This assessment considers the potential impacts and effects on ecology and biodiversity that can be reasonably foreseen as consequences of the normal construction and operation of the Proposed Development during the construction and after-use phases.

The baseline assessment was informed by desktop research and a phase 1 habitats survey (including floral alien invasive species). A tree survey was also undertaken. An evaluation of ecological features (sites, habitats and species) which could be affected by the project proposals was prepared.

The dominant habitats present within the boundary of the Site are of low ecological value and no Annex I habitats listed under the EU Habitats Directive are present within the Site. There are no aquatic habitats present on the Site. There is a distinct lack of available resource for the small and medium mammal group such as pygmy shrew, hedgehog, badger and pine marten on the site. No bat roost data exists within, or in close proximity to the Site, and its immediate surroundings are considered to be of negligible importance for bats.

The Site does not support an adequate nesting, foraging and shelter habitat for birds. The bird community recorded at the Site is representative of a disturbed urban environment and is characterised by the presence of mostly common and widespread bird species. The species recorded included two species that are red-listed in Birds of Conservation Concern in Ireland 2013-2019: Herring Gull and Starling.

Northern Tree Services undertook an arboriculture assessment indicates that trees on the site, or in the vicinity of the northern and eastern boundaries, are chiefly high value mainly for their landscape qualities. There are no Tree Protection Orders (TPOs) on any of the trees on the Site.

With the implementation of appropriate mitigation it is considered any residual effects on the Site will be with the implementation of appropriate mitigation it is considered any residual effects on the Site will be **Not Significant** i.e. no perceivable impacts on ecological features (habitat or species). Impacts may be beneath levels of perception, within normal bounds of variation, within the margin of forecasting error, or impacting on exceptionally poor baseline conditions. i.e. no perceivable impacts on ecological features (habitat or species).

5.17 References

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APPENDIX 5.1

Ecological Report: O’Donnell Environmental

Methodology

DESK STUDY

A desktop review of publicly available relevant data was undertaken on the National Biodiversity Data Centre (NBDC) and National Parks & Wildlife Service (NPWS) websites. The National Biodiversity Data Centre was reviewed for relevant data, specifically i) existing species records for the 10km square in which the study site is located (O12) and ii) an indication of the relative importance of the wider landscape in which the study site is located, based on Model of Bat Landscapes for Ireland (Lundy *et al*. 2011). In the latter, the index ranges from 0 to 100, with 0 being least favourable and 100 most favourable for bats.

FIELD SURVEYS

An ecological walkover survey was carried out on 18th January 2022 by Donnachadh Powell BSc (Hons) as described below.

Phase 1 Habitat Survey

A Phase 1 habitat and flora assessment in accordance with the Heritage Council's guidelines (Smith *et al*. 2011). This involved a walkover of the study site, where the habitats present were classified according to Fossitt (2000) and recorded on a field map. The purpose of this site visit was to describe and characterise the types of habitats present and determine whether there were ecologically sensitive or legally protected habitat types within the study area. Plants were identified to species level where possible (some plants are not identifiable to species level during winter months) and any invasive alien plant species observed e.g. Japanese Knotweed, Cotoneaster etc. were recorded and their locations were marked on field maps.

The evaluation of ecological receptors within the proposed development followed the criteria presented in the NRA Guidelines for Ecological Impact Assessment of National Road Projects (NRA, 2009).

Any other records of interest were marked on field maps and locations were recorded using GPS handheld units (Garmin GPSMAP 64x). The presence and extent of Invasive Alien Plant Species with the study area and the surrounding environs were also identified, georeferenced using a GPS handheld unit and mapped and incorporated into the habitat and botanical surveys.

Bird Survey

Bird species seen and heard during the site visit were recorded. Any species that have high priority legal protection or are designated as endangered species were noted. Weather conditions were suitable for bird activity during winter months: partly sunny with scattered clouds, with wind speeds ranging between 4km and 20km per hour. Temperatures ranged between 7° C and 9° C during the survey period.

Non-volant Mammals

Survey for non-volant mammals was undertaken and involved a walkover of the site to identify any mammal species present or signs of mammal activity such as droppings, tracks, burrows etc. Observations were recorded using field notes and/or a handheld GPS unit. Techniques used to identify mammal activity followed recognised guidelines (e.g. Bang & Dahlstrom 2004 and Muir *et al.,* 2013).

The conservation status of mammal species was considered. The conservation status of mammals within Ireland and Europe is indicated by inclusion in one or more of the following: Irish Wildlife Acts (1976 - 2010); Red List of Terrestrial Mammals (Marnell *et al*. 2009); EU Habitats Directive.

A Bat Survey Report prepared by NM Ecology Ltd. (2020) for the western portion of the proposed site was reviewed. The report was prepared in relation to a previous iteration of a project at this site. The study included consideration of the suitability of the buildings on site for bats, an active bat survey and the survey was carried out in July 2020 which is within the bat maternity season.

Limitations

The Phase 1 habitat survey was undertaken outside the optimum survey period for botanical and habitat surveys (April to September). However, due to the nature of the habitats recorded within the proposed development site, the timing of the survey is not deemed to be a significant limitation in this instance. The survey occurred outside the breeding bird season.

Results

HABITATS

The habitats present within the boundary of the study site are described below and their location is mapped in the figure shown on Page 8. No Annex I habitats listed under the EU Habitats Directive are present within the study site and the dominant habitats present are of low ecological value. All species recorded during the botanical survey are considered common for similar habitats.

Buildings and Artificial Surfaces (BL3)

Buildings and artificial surfaces comprise the majority of the study area. Vegetation cover is significantly less than 50% in these areas and most of the land is covered in artificial surfaces including, structures and hard surfaces. Some occasional plants occur within BL3 habitats including invasive species such as occasional immature *Cotoneaster sp.* plants and *Buddleja sp*. which frequently occurs in the disturbed habitats found on the east of the site.

Plate 3.1 – Example of BL3 habitat found within the study area.

Spoil and Bare Ground (ED2)

The spoil and rubble heaps located on the east of the site constitute the ED2 habitats in the study area. Vegetation cover is less than 50% in these areas, with mostly ruderal weed species such as Dandelions (*Taraxacum officinallis*), and Common Bittercress (*Cardamine hirsuta*). Several Butterfly Bush (*Buddleja davidii*) plants are also found in these ED2 areas.

Plate 3.2 – Spoil and Bare Ground (ED2) habitat.

Recolonising Bare Ground (ED3)

ED3 is found in in the eastern portion of the site and occurs in mosaic with BL3 and ED2. Vegetation cover here is greater than 50%. A large stand of invasive Butterfly Bush is found within this habitat. Other plants typical of ED3 such as Willowherbs (*Epilobium* spp.), Spear Thistle (*Cirsium vulgare*), Ragworts (*Senecio* spp.) and Umbellifers are present.

Plate 3.3 – Recolonising Bare Ground (ED3).

Flower Beds and Borders (BC4)

This habitat type is found in on the west of the site close to existing buildings. Both flower beds and flowerpots are present here. The vegetation in these areas is comprised of ornamental shrubs and small

herbaceous plants. Darley Dale Heath (*Erica darleyensis*) is growing in the flower bed at the entrance near BL1. Other non-flowering, non-native dwarf shrubs are also found in the BC4 areas.

Plate 3.4 – Flower Beds and Borders (BC4)

Ornamental/Non-Native Shrub (WS3)

A small area of non-native Laurel (*Prunus* spp.) shrubs is located centrally on the northern boundary of the site. Some juvenile Silver Birch (*Betula pendula*) trees are planted between the shrubs here. Another area of WS3 habitat is situated in the laneway centrally within the site with Honeysuckle (*Lonicera* spp.) varieties growing in a small ornamental bed.

Plate 3.5 – Ornamental/Non-Native Shrub (WS3)

Amenity Grassland (GA2)

Amenity Grassland areas comprise regularly mown grass swards and support Dandelion, Daisy (*Bellis perennis*) Speedwells (*Veronica* spp.) and localised abundances of Lawn Moss (*Rhytidiadelphus squarrosus*). The semi-mature Oak (*Quercus* spp.) trees form a small area of 'Scattered Trees and Parkland' (WD5) habitat at the western entrance to the site within the GA2 habitat. Some scattered juvenile and semi-mature trees occur occasionally on the boundaries of the site.

Plate 3.6 – Amenity Grassland (GA2)

Treeline (WL2)

This habitat type is characterised by the presence of a single or narrow line of trees greater than 5m in height, less than 4m in width, often occurring along the edges of property lines or fields. Treelines (WL2) were formed of species such as Silver Birch, Alder (*Alnus glutinosa*), Norway Maple (*Acer platanoides*) Sycamore (*Acer pseudoplatanus*) and Beech (*Fagus sylvatica*).

Plate 3.7 – Treeline (WL2)

Hedgerow (WL1)

Hedgerow (WL1) habitat on site consists mostly of the non-native shrub Cherry Laurel (*Prunus laurocerasus*) growing in mosaic between trees (Alder, Norway Maple and Birch). Understory species include Ivy (*Hedera* helix) and Himalayan Ivy (*Hedera nepalensis*).

Plate 3.8 – Hedgerow (WL1)

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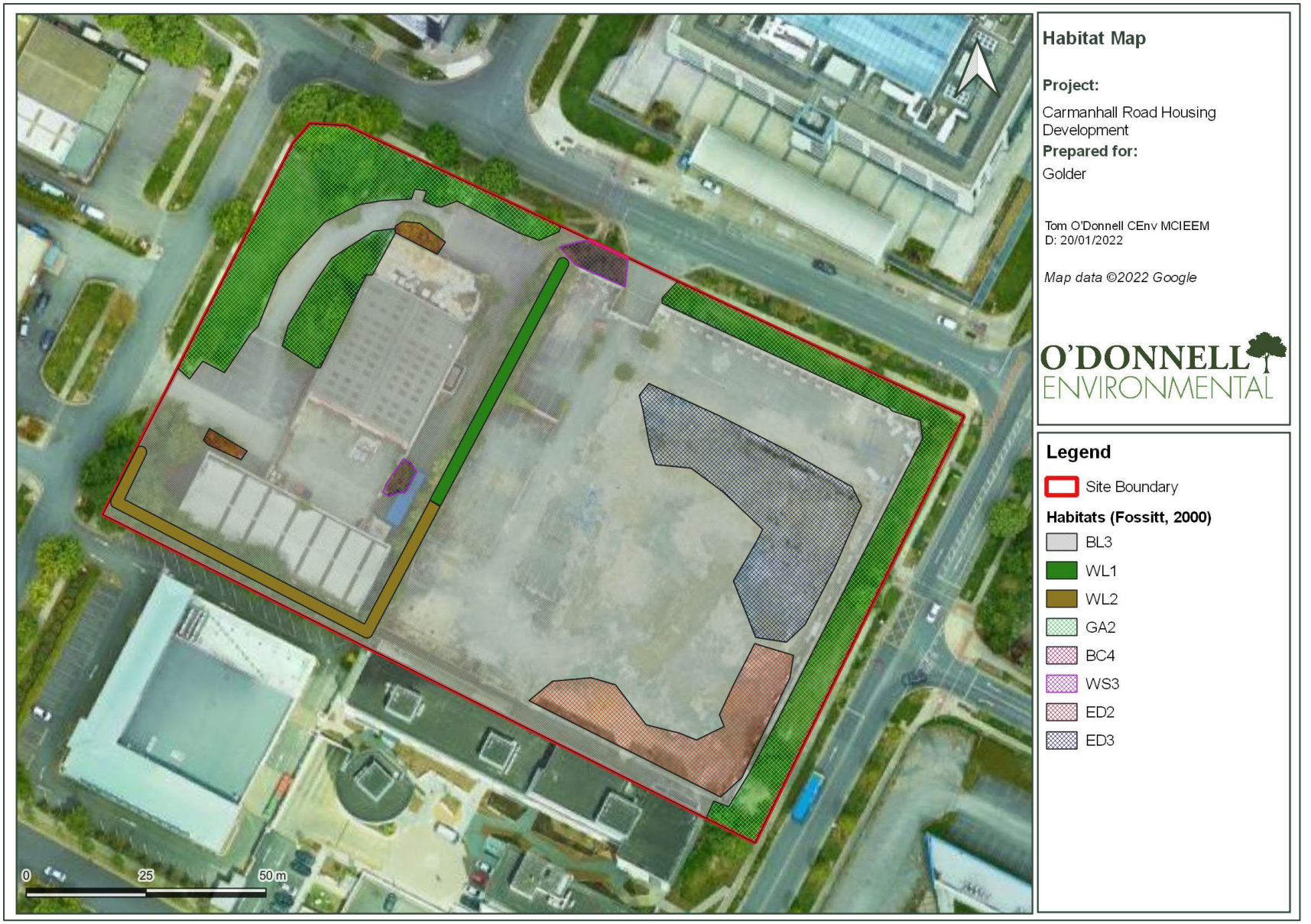

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MAMMAL SURVEY

The results of surveys carried out for non-volant mammals and bats are outlined below.

Non-volant Mammals

Within the 10km grid square in which the study area is located (O12; NBDC) there are historic records for a total of 18 mammal species (see **Table 3.6**). Only Red Fox (*Vulpes vulpes*), Brown Rat (*Rattus norvegicus*), and Eastern Grey Squirrel (*Sciurus carolinensis*) have previously been recorded in the 1km grid square in which the study area is located (O1926; NBDC).

Table 3.6 - Mammal species previously recorded within the 10km grid square (O04) in which the site is located (NBDC).

Common name	Species name	Legal Protection*	Conservation Status*
American Mink	*Mustela vison*	AIS	AIS
Brown Rat	*Rattus norvegicus*	AIS	AIS
Eastern Grey Squirrel	*Sciurus carolinensis*	AIS	AIS
Eurasian Badger	*Meles meles*	WA	LC
Eurasian Pygmy Shrew	*Sorex minutus*	WA	LC
Eurasian Red Squirrel	*Sciurus vulgaris*	WA	LC
European Otter	*Lutra lutra*	Annex II/IV, WA	LC
European Rabbit	*Oryctolagus cuniculus*	AIS	LC
Fallow Deer	*Dama dama*	WA	AIS
House Mouse	*Mus musculus*	AIS	LC
Irish Hare	*Lepus timidus hibernicus*	Annex V, WA	LC
Irish Stoat	*Mustela erminea hibernica*	WA	LC
Pine Martin	*Martes martes*	Annex IV, WA	LC
Red Deer	*Cervus elaphus*	WA	LC
Red Fox	*Vulpes vulpes*	-	LC
Sika Deer	*Cervus nippon*	AIS	AIS
West European Hedgehog	*Erinaceus europaeus*	WA	LC
Wood Mouse	*Apodemus sylvaticus*	-	LC

Source: https://maps.biodiversityireland.ie/Map. Accessed 07/07/2021.

* Annex status (EU Habitats Directive), WA (Protected under Wildlife Acts 1976 and 2000).

** LC – Least Concern (Marnell *et al*., 2019); AIS - Alien Invasive Species.

No droppings, prints, burrows or other underground dwellings associated with legally protected mammal species were found to be present within the site boundary or in its immediate environs. This is reflective of the high levels of disturbances associated with human activity present on the site, in addition to a lack of suitable habitat that could support protected mammal species.

Bats

All Irish bat species are protected under the Wildlife Act (1976) and Wildlife Amendment Act (2000). All Irish bats are listed in Annex IV of the Habitats Directive and the Lesser Horseshoe Bat (*Rhinolophus hipposideros*) is further listed under Annex II.

National Biodiversity Data Centre holds previous records of bat presence from within the 10km square (O12) in which the proposed site is located. These records are for Common Pipistrelle (*Pipistrellus pipistrellus*), Soprano Pipistrelle (*Pipistrellus pygmaeus*), Daubenton's Bat (*Myotis daubentonii*), Brown Long-eared Bat (*Plecotus auritus*), Leisler's Bat (*Nyctalus leisleri*), Natterer's Bat (*Myotis nattereri*) and Whiskered Bat (*Myotis mystacinus*). It is important to note that an absence of other bat species records is reflective of a lack of surveys undertaken to date rather than absence of bat species.

The overall bat suitability index value (17.44) according to 'Model of Bat Landscapes for Ireland' (Lundy *et at.* 2011) suggests the landscape in which the locality of the study area is of high suitability for bats in general. Species specific scores are provided in **Table 3.2**.

Table 3.2 - Suitability of the study area for the bat species according to 'Model of Bat Landscapes for Ireland' (Lundy *et al.* 2011).

Common name	Scientific name	Suitability index
All bats		*17.44*
Soprano pipistrelle	*Pipistrellus pygmaeus*	30
Brown long-eared bat	*Plecotus auritus*	23
Common pipistrelle	*Pipistrellus pipistrellus*	32
Lesser horseshoe bat	*Rhinolophus hipposideros*	0
Leisler's bat	*Nyctalus leisleri*	34
Whiskered bat	*Myotis mystacinus*	14
Daubenton's bat	*Myotis daubentonii*	3
Nathusiius pipistrelle	*Pipistrellus nauthusii*	10
Natterer's bat	*Myotis nattererii*	11

Bat Conservation Ireland (BCI) conducted a search of their records database at the request of O'Donnell Environmental on 21st January 2022. The relevant search area included a 1km radius from the development application boundary. No roost data exists within or in close proximity to the proposed site.

The structures and trees present on site were considered to be of 'negligible' suitability for bats (following Collins, 2016).

Birds

During the course of ecological walkover surveys, the following bird species were seen or heard:

- Robin (*Erithacus rubecula*)
- Blackbird (*Turdus merula)*
- Magpie (*Pica pica*)
- Pied Wagtail (*Motacilla alba*)
- Goldfinch (*Carduelis carduelis*)
- Chaffinch (*Fringilla coelebs*)
- Starling (*Sturnus vulgaris*)
- Jackdaw (*Corvus monedula*)
- Rook (*Corvus frugilegus*)
- Herring Gull (*Larus argentatus*)
- Hooded Crow (*Corvus cornix)*

The bird community recorded at the study site is representative of a disturbed urban environment and is characterised by the presence of mostly common and widespread bird species. The species recorded included two species that are red-listed in *Birds of Conservation Concern in Ireland 2013-2019* (BoCCI; Colhoun and Cummins, 2013): Herring Gull and Starling.

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ECOLOGICAL EVALUATION

Based upon the results of ecological walkover survey, and considering the local context of the study site, the ecological value of the study site is considered to be of **Local Importance (Lower Value)** overall.

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Photographs:

A1. Northern elevation of the site showing BL3, GA2 and WD5 habitat types.

A2. Carpark between buildings at western section of site.

A3. Interior of building at the southwestern border of the site showing high light ingress.

A4. Laneway at centre of site.

A5. Treeline of immature Silver Birch trees located centrally within the site.

A6. North-western elevation of site within GA2 habitat.

A7. View from the southern end of laneway at centre of site.

A8. Eastern section of the site showing active construction processes underway.

A9. Stand of Butterfly Bush in the eastern section of the site.

A10. Cotoneaster growing centrally on the border between the eastern and western sections of the site.