

## 4.0 POPULATION AND HUMAN HEALTH

### 4.1 Introduction

This Chapter of the EIAR has been prepared by Golder Associates Ireland Ltd (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 (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).

The following population and human health assessment was prepared by Kevin McGillycuddy (BA (Mod), MSc). Kevin is a Practitioner Member of the Institute of Environmental Management and Assessment and has more than 8 years' experience in environmental consultation.

### 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 2016-2022 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 EI20:** 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.*

**Policy EI22:** 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 15), 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) 113, which seeks to protect residential amenity and ensure the appropriate provision of social and community infrastructure to serve the needs of the resident and employee population.

**SLO 113** - *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, Objective 'A2' is an objective of the Council to provide for the creation of Sustainable Residential Neighbourhoods, and 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 in 'draft' by the Environmental Protection Agency (EPA) in August 2017. These guidelines were drafted by the EPA with a view to facilitating compliance with EIA Directive (2014/52/EU).

The EPA's 2017 draft 'Guidelines on the information to be contained in environmental impact assessment reports' suggest the following sub headings under which to arrange issues; *"Employment, 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)."*

The assessment also considered 'Advice Notes for Preparing Environmental Impact Statements', also published in 'draft' by the EPA in September 2015.

Having regard to the above guidance, particularly the EPA's 2017 draft '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 EIA 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 EIA 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 2017 draft '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
	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	<ul style="list-style-type: none"> <li>■ Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements;</li> <li>■ An impact that is expected to have considerable adverse socioeconomic effects. Such impacts will typically affect large numbers of businesses, workers or residents;</li> <li>■ Very large damage to local business which may compromise its viability;</li> <li>■ Adverse health impact to a large number of people and adverse impact affecting sensitive population groups.</li> </ul>
	Beneficial	<ul style="list-style-type: none"> <li>■ Large scale or major improvement of resource quality; extensive restoration; major improvement of attribute quality;</li> <li>■ An impact that is expected to have considerable beneficial socioeconomic effects. Such impacts will typically affect large numbers of businesses, workers or residents;</li> <li>■ Very large direct or indirect benefits for local business;</li> <li>■ Beneficial health impact to a large number of people and beneficial impact affecting sensitive population groups.</li> </ul>
Medium	Adverse	<ul style="list-style-type: none"> <li>■ Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements;</li> <li>■ Moderate magnitude impacts will typically be long-term in nature, resulting in the permanent change of the study area's baseline socio-economic conditions;</li> <li>■ Moderate to large damage to local business, but with changes to management it should remain viable;</li> <li>■ Adverse impact affecting moderate number of people. Adverse impact affecting some sensitive population group(s).</li> </ul>
	Beneficial	<ul style="list-style-type: none"> <li>■ Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality;</li> <li>■ Moderate magnitude impacts will typically be long-term in nature, resulting in the permanent change of the study area's baseline socio-economic conditions;</li> <li>■ Moderate to large benefits for local business;</li> <li>■ Beneficial impact affecting moderate number of people. Beneficial impact affecting some sensitive population group(s).</li> </ul>
Low	Adverse	<ul style="list-style-type: none"> <li>■ Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements;</li> <li>■ 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;</li> <li>■ Slight to moderate damage to local business, but with minor changes to management it should remain viable;</li> <li>■ Adverse impact affecting low-moderate number of people. Adverse impact affecting few sensitive population groups.</li> </ul>
	Beneficial	<ul style="list-style-type: none"> <li>■ 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;</li> <li>■ 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;</li> <li>■ Slight to moderate benefits for local business;</li> <li>■ Beneficial impact affecting low-moderate number of people. Beneficial impact affecting few sensitive population groups.</li> </ul>
Negligible	Adverse	<ul style="list-style-type: none"> <li>■ Very minor loss or alteration to one or more characteristics, features or elements;</li> </ul>

Magnitude of impact (change)		Typical description
		<ul style="list-style-type: none"> <li>■ 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;</li> <li>■ The identified impacts are predicted to have little or no damage to local business;</li> <li>■ No or non-perceptible impact to health, population or sensitive groups.</li> </ul>
	Beneficial	<ul style="list-style-type: none"> <li>■ Very minor benefit to or positive addition of one or more characteristics, features or elements;</li> <li>■ 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;</li> <li>■ The identified impacts are predicted to have little or no benefit to local business;</li> <li>■ No or non-perceptible impact to health, population or sensitive groups.</li> </ul>

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)				
		Negligible	Low	Medium	High
Environmental value (Sensitivity)	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.

**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.

Significance Category	Typical Description
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.
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?

Using the described classification and professional judgement, **effects considered to be Profound or Large are deemed significant and those Moderate, Slight, or Imperceptible, to be not significant**, for the purposes of this assessment.

### 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 (22 and 23 July 2020), 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 and 2016 Census);
- ESRI Quarterly Economic Commentary

- Dún Laoghaire Rathdown County Development Plan 2016-2022;
- Regional Planning Guidelines for the Greater Dublin Area, 2010-2022;
- Department of Health, Key Trends in Ireland, 2018;
- Department of Communication, Climate Action and Environment, Climate Action Plan 2019;
- Project Ireland 2040 National Development Plan 2018—2027
- Field surveys of the Application Site;
- Department of Communication, Climate Action and Environment (DCCA) Eircode maps; and
- Aerial and ordnance survey maps of the area.

The EPA's 2017 draft '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.

An audit of Community and Social Infrastructure in the vicinity of the Site has been carried out by Hughes Planning & Development 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 2017 draft '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.

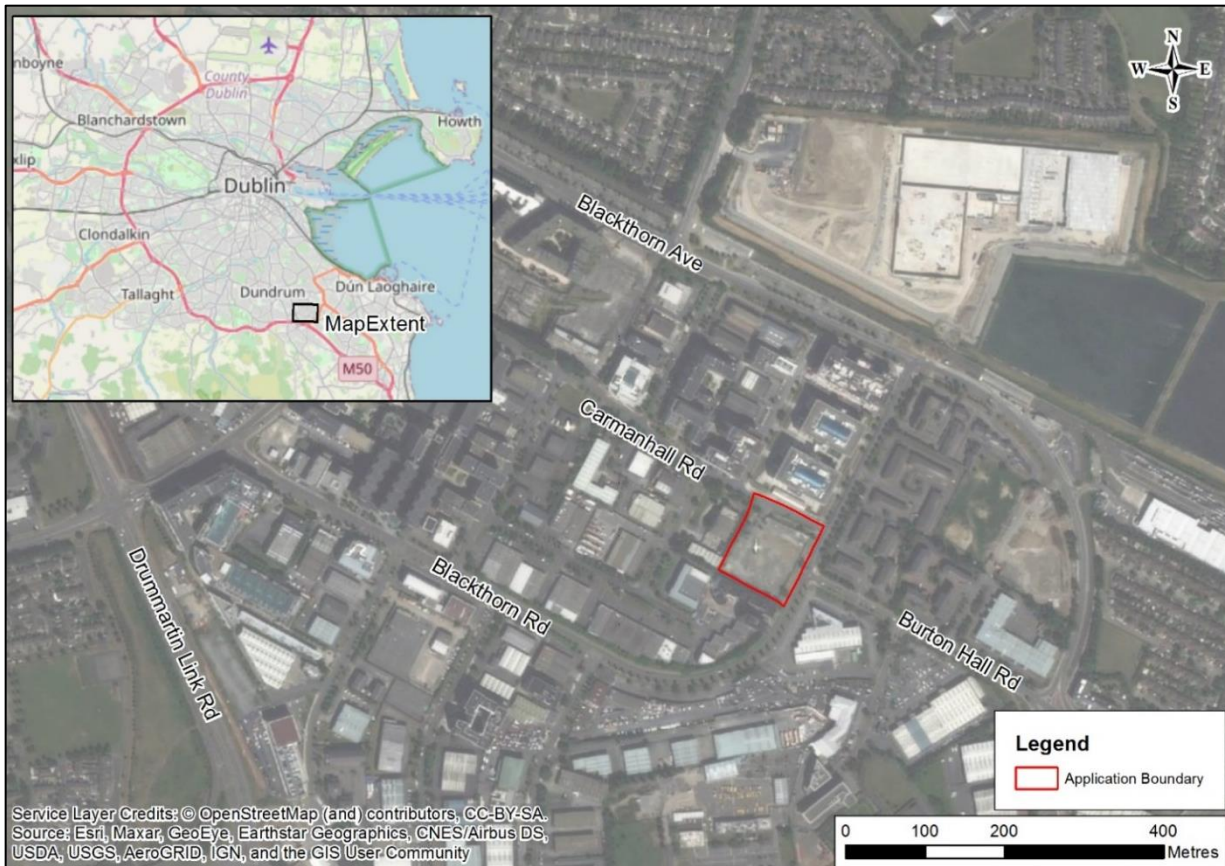
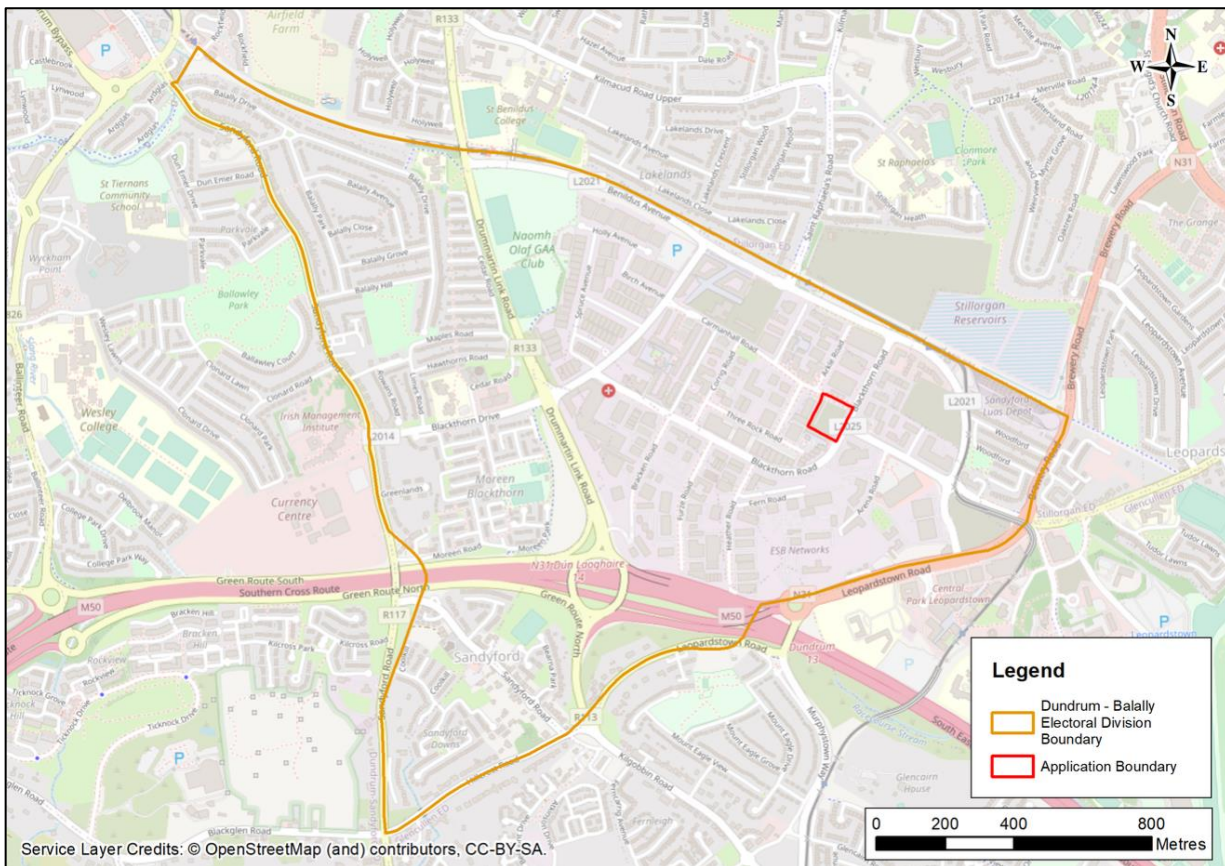


Figure 4.1: Location and Application Boundary of the Proposed Carmanhall Road SHD



**Figure 4.2: Location and 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 a former commercial premise was recently 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 occupied by a double storey office building. 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
State	4,239,848	4,588,252	8.2%	4,761,865	3.8%
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 - Usually Residents	190,421	202,569	6.4%	213,519	5.4%
Dundrum-Balally	4,894	7,049	44.0%	8,035	14.0%
Dundrum-Balally - Usually Residents	4,828	6,898	42.9%	7,851	13.8%

### 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
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 as a result of the 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<sup>2</sup> in 2006 to 3202.8 persons per km<sup>2</sup> 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 <sup>2</sup>	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 2020), identifies the unprecedented volatility which the COVID-19 pandemic has imposed on the Irish economy. Prior to the lockdown in Q2 2020 the Irish economy exhibited strong growth, however a subsequent dramatic decline was seen in the domestic economy following the establishment of the public health measures.

A significant recovery in the domestic economy was evident in Q3 of 2020 with further strengthening in export growth. In Q4 2020, the re-imposition of public health restrictions is predicted by ESRI to inevitably moderate the degree of the economic recovery, however the second lockdown may not have the same negative impact on economic growth that the Q2 2020 lockdown did.

ESRI believe that the growth in the Irish economy is due to the relatively strong performance of the export sector through the present year. However, it is expected that COVID-19 will continue to have a highly detrimental impact on the Irish economy and society at large. The unemployment rate had been declining following the lifting of the first general lockdown, however ESRI identify that this was increasing in Q4 2020.

ESRI expect that with the increased roll-out of vaccines GDP will increase in 2021 by 4.9 %, with unemployment averaging 14.5 % for the year. However, the speed and efficiency with which a vaccine is rolled out to the general public, will have major implications for the short- and medium-term outlook for the domestic economy.

### 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 2019 Sandyford Business District Review to hold 26,000 employees in approximately 1,000 companies and is also home to ca. 5,000 residents<sup>1</sup>.

<sup>1</sup> Sandyford Business District website, <https://www.sandyford.ie/>, accessed 27 November 2020



**Figure 4.3: Sandyford Business District Companies, Industries and Amenity statistics (Source: 2019 Sandyford Business District Review).**

The Proposed Development 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 area 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 vicinity of the Business Park, however these are located ca. 1 km from the Site boundary. These clubs include the Naomh Olaf GAA Club and the Stillorglin RFC training pitches ca. 1 km to the north west of the Site. The Kilmacud Crokes Silver 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 – 240 m;

- Sandyford Men's Shed, Activities for Adult/Retired Men including Gardening, Woodwork – 250 m;
- Janz Gymnastics Club, Gymnastics - 400 m
- Gracie Barra Sandyford, Brazilian Jiu-Jitsu - 450 m
- Headon Boxing Academy, Boxing - 600 m
- Jump Zone Sandyford, Trampolining and Dodgeball - 650 m
- Trojan Gymnastic Club, Gymnastics - 950 m
- Public Basketball Court, Basketball - 1.3 km
- Genesis Hockey Club, Lady's Hockey - 1.3 km
- St Mary's Boys Football Club, Schoolboy's Football - 1.6 km
- Leopardstown Tennis Club, Tennis - 1.6 km
- Ballally Celtic Football Club, Schoolboy's Football - 1.8 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.

### 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 - 1.8 km; and
- St. Laurence O'Toole, Catholic Christian services - 1.6 km.

#### 4.5.4 Land-use

The Proposed Development is approximately 1.03 ha in area. The Site is located on a brownfield site where a former commercial premise was recently demolished. As noted previously, the lands are situated within the SBD and the DLRCC administrative area. The DLRCC Development Plan 2016-2022 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. 450 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 former commercial premises have been demolished. The Site is currently vacant with negligible construction and demolition rubble within the Site. The perimeter of the Site has been securely enclosed by hoarding, while the entrance is secured with a locked gate onto Carmanhall Road. The Site is also monitored by a 24-hour security patrol.

### 4.6 Characteristics of the Proposed Development

The Proposed Development will comprise of:

(i) construction of 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 (40,814sq.m) comprising 428 no. apartments (41 no. studio, 285 no. one-bedroom, 94 no. two-bedroom & 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 (142sq.m) at ninth floor level;

(ii) all apartments have access to 2,600sq.m of communal amenity space, spread over a courtyard at first floor level and roof terraces at sixth, eighth and ninth floor levels, a 142sq.m resident's childcare facility

at ground floor level, 392sq.m of resident's amenities, including concierge/meeting rooms, office/co-working space at ground floor level and a meeting/games room at first floor level, and 696sq.m of resident's amenities/community infrastructure inclusive of cinema, gym, yoga studio, laundry and café/lounge at ground floor level. The café/lounge will primarily serve the residents of the development and will be open for community use on a weekly/sessional basis;

(iii) provision of 145 no. vehicular parking spaces (including 8 no. mobility parking spaces, 2 no. club-car spaces and 44 no. electric charging spaces), 5 no. motorcycle parking spaces, bin stores, plant rooms, switch room and 2 no. ESB sub-stations all at ground floor level; provision of bicycle parking (752 no. spaces), plant and storage at basement level; permission is also sought for the removal of the existing vehicular entrance and construction of a replacement vehicular entrance in the north-western corner of the site off Carmanhall Road;

(iv) provision of improvements to street frontages to adjoining public realm of Carmanhall Road & Blackthorn Road comprising an upgraded pedestrian footpath, new cycling infrastructure, an increased quantum of landscaping and street-planting, new street furniture inclusive of bins, benches and cycle parking facilities and the upgrading of the existing Carmanhall Road & Blackthorn Road junction through provision of a new uncontrolled pedestrian crossing; and,

(v) All ancillary works including provision of play equipment, boundary treatments, drainage works - including SuDS drainage, landscaping, lighting, rooftop telecommunications structure and all other associated site services, site infrastructure and site development works. The former Avid Technology International buildings were demolished 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 part-seven rising to nine storey student accommodation development permitted under Reg. Ref. PL06D.303467, will be superseded by the Proposed Development.

## 4.7 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 2017 draft '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*'.

## 4.7.1 Population and Social Patterns

### 4.7.1.1 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. 400 – 500 construction staff.

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 (1-7 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 (1-7 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. 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 6.0), Water (Chapter 7.0), Air Quality and Climate (Chapter 8.0), Noise (Chapter 9.0); and Landscape and Visual (Chapter 12.0). 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 11.0).

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 (1-7 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 practice and mitigation which have been defined in the development's Construction Environmental Management Plan.

No mitigation measures specifically to protect local populations and population dynamics from potential impacts were deemed to be required during the assessment period.

### 4.7.1.2 Operational Phase

#### Local Populations

During the operational and occupational phases of the Proposed Development it is considered that the creation of 428 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 428 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.

### 4.7.1.3 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.

## 4.7.2 Economic Patterns

### 4.7.2.1 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 4.7.1.1, 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.

### 4.7.2.2 Operational Phase

The Proposed Development will provide residential units for ca. 428 no. residents. 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.

### 4.7.2.3 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.

## 4.7.3 Amenity

### 4.7.3.1 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 8.0 (Air Quality and Climate) and Chapter 9.0 (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 in the 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 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.

### 4.7.3.2 Operational Phase

During the operational phase the Proposed Development will include a public spaces 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.

### 4.7.3.3 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.

## 4.7.4 Land-use

### 4.7.4.1 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 Construction Management Plan and associated Construction Environmental Management Plan (CEMP).

Construction works will take place in accordance with the Construction Environmental Management Plan (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) 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.

#### 4.7.4.2 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 Development Plan (2016-2022). Therefore, a review of planning policy was carried out as part of this assessment.

As identified, the DLRCC Development Plan (2016-2022) 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.

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 a moderate benefits for local business'. This has results in a '**Moderate**' permanent beneficial significance for the land-use at the Site. This is an effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends, which is consistent with the DLRCC Objective for the lands and the emergence of similar developments in the local area in recent years.

#### Mitigation Measures

The beneficial changes in land-use at the Proposed Development Site will support objectives in the DLRCC Development Plan (2016-2022). Therefore, as a result of the beneficial permanent effects no mitigation measures have been proposed.

#### 4.7.4.3 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.

### 4.7.5 Human Health

#### 4.7.5.1 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<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub>.

**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<sub>10</sub>. PM<sub>10</sub> 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 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<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> at nearby sensitive receptors within the Air Quality Study Area. The assessment quantified total pollutant concentrations for the following scenarios:

- Scenario 1 Current 2020 Baseline;
- Scenario 2: Future 2038 Baseline - including natural growth; and
- Scenario 3: Future 2038 with Development - including natural growth and the Proposed Development.

With the Proposed Development in the future 2038 scenario all cases the predicted change in air quality concentrations of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> 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<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> 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 120 m to the north of the Proposed Development. However, noise effects arising at off-site NSRs (including the residential NSR 120 m to the north) have been evaluated using Bloom Health (midwifery clinic; 100 m north-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 'no change' has been identified in the magnitude of impact. A 'Negligible' magnitude of noise impact 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 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 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 night-time period, predicted noise levels within most-exposed proposed dwellings on second-floor level meet the target internal noise levels, via closed-window transmission. The resultant impact magnitude at all NSRs is 'no change / none' and the effect significance at high sensitivity NSRs is 'neutral'. During the daytime period, predicted levels within most-exposed proposed dwellings range from meeting the target level by 11 dB, to up to 2.4 dB above the target level. The resultant impact magnitude ranges from no change / none to low adverse. A 'Low' 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, 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 EIA. 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, (2021). Sunlight availability was assessed against the BRE.209 criterion in amenity spaces and compliance was determined with 79% of the proposed amenity space achieving compliance of at least 2 hours potential sunlight on March 21st to the majority the areas. The internal daylight analysis was also undertaken for all units across the development. The analysis determined that 96% of rooms were in excess of the BRE guidelines for average daylight factors. The populations living within the Proposed Development are of 'High' sensitivity and the sunlight and daylight analysis has determined a 'Negligible' magnitude of impact which will have no or a non-perceptible impact to the populations. This will result in a '**Slight**' adverse effect.

Impacts on neighbouring buildings was also considered in the IN2 (2021) Sunlight and Daylight Analysis. IN2 (2021) identify that the industry best practice guideline for daylight and sunlight is the BRE publication 'Site Layout Planning for Daylight and Sunlight – A guide to good Practice (Second Edition)'. Their assessment concluded that '*as no there are no residences within the neighbouring surrounds, this assessment was deemed not relevant for the development*'. Residential dwellings are considered a 'High' sensitivity receptor, and there is a 'Negligible' magnitude of impact identified by IN2 as it is non-perceptible. This will result in a '**Slight**' adverse effect.

Building surrounding the Proposed Development are commercial in nature and could continue to operate relatively unharmed if affected by a disruption in to form of reduced daylight/sunlight, these therefore have a 'Negligible' sensitivity. The magnitude of the impact is also 'Negligible' as the daylight/sunlight impacts a small number of businesses surrounding the Proposed Development. This results in '**Imperceptible**' effects of reduced daylight/sunlight on the businesses surrounding the Proposed Development.

### 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 Estate and Common Area Management Strategy Report (Aramark, 2021) 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.

#### 4.7.5.2 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.

## 4.7.6 Health and Safety

### 4.7.6.1 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 plan 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 aligns with the measures as outlined in the Construction Industry Federation's (CIF; November 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.

#### 4.7.6.2 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, February 2021). 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. Health and safety considerations will include:

- The Management Team, post-handover, will design a health and safety strategy and Occupiers' Handbook which will ensure the development has the utmost health and safety standards ensuring the wellbeing of the residents and the staff/contractors which will be managing the development;
- The Handbook will contain protocols for the times of operation, weather events, planned shutdowns of the water etc;
- The amenity areas will have a specific health and safety focus. There will be an individual set of risk assessments and method statements relating to any outdoor areas;
- This Handbook will also govern the protocols for contractors visiting site to carry out works; and
- A comprehensive General Risk Assessment will be completed by an appointed surveyor prior to occupation of the building.

A 'Preliminary Fire Safety, and Access and Use Strategy' report has been provided in the SHD Application, (Maurice Johnson & Partners (MJP), 2021). 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, February 2021) identifies relevant operational fire protection management for the Proposed Development, which includes:

- Provisions and the management of evacuations will include:
  - An Excavation Strategy / Resident Guide. This is a step by step guide of what to do in the event of a fire and will be provided to the Residents within the overall Residents' Guide;
  - Fire Signage: Appropriate directional and exit signage will be in place throughout the property;

- Fire Notices: Notices will be display in high traffic areas advising of the fire action policy and arrangements;
- Fire Prevention Equipment, (FPE): The Management Team will ensure FPE is provided following the recommendation from an independent survey;
- Risk Assessments will be carried out by an independent and comprehensive Fire Risk Assessor, and will be completed prior to occupation of the building;
- Fire Alarm: The fire alarm panel will be maintained and serviced in accordance with manufacturer's guidelines. Each residential unit will have its own fire alarm system;
- Dry and wet risers will be maintained in accordance with manufacturer's guidelines; and
- The development's sprinklers will be maintained by a suitably qualified professional and serviced in accordance with manufacturer's guidelines. The Property Manager will ensure appropriate contracts are in place with a contractor for maintenance of the risers.

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

The potential impacts from the Proposed Development on pedestrian safety and comfort have been assessed in Chapter 12.0 of this EIAR, (Section 12.6). This assessment includes the existing topography and developments surrounding the Site.

The assessment identified that the wind conditions at the development predominantly ranged from "suitable for long term sitting" to "suitable for walking and strolling". At ground floor level it was concluded that there were no critical areas which were unacceptable for pedestrian comfort. It was also determined that the courtyard was always suitable for long term sitting, short term sitting, standing, walking and strolling activities. It is considered that wind impacts from the Proposed Development on the health and safety of pedestrians around the Site are '**Imperceptible**'.

## 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.

#### 4.7.6.3 Do-Nothing Scenario

Should the Proposed Development (or a similar residential development) not be permitted, the Applicant is required to appropriately maintain the perimeter of the Site and keep secure the hoarding and locked entrance onto Carmanhall Road. Such neutral effects of the Do-Nothing scenario are considered to be '**Imperceptible**' which includes no effects.

## 4.8 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, 2021) 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.

### 4.8.1 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).

## 4.9 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'.

## 4.10 Difficulties Encountered

There were no particular difficulties encountered during the production of the Population and Human Health chapter of the EIAR.

## 4.11 Summary and Conclusions

This Population and Human Health chapter identifies and assesses the potential health and wellbeing effects of the Proposed Development on the surrounding population and local community during construction and operation. The human environment and potential impacts on the 'quality of life' as a consequence of the Proposed Development were discussed under the headings:

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

The construction phase of the Proposed Development will likely result in a positive effect on the population in that it will give rise to direct and indirect construction employment, and expenditure in local businesses.

Potential negative effects on the local human environment during construction may be temporary disturbance or nuisance by means of site activities during the construction. Best practise construction management measures will be implemented by the appointed main contractor and managed through a Construction Management Plan and associated Construction Environmental Management Plan.

Dust emissions to atmosphere during the construction phase may potentially pose a risk to human health by increasing the risk of respiratory illnesses. However, appropriate mitigation measures will be employed during this phase to ensure that emission levels are contained within all consented limits.

Noise emissions during the construction phase may potentially to cause annoyance and disruption to the surrounding population. However, appropriate mitigation measures will be employed during the construction phase to ensure noise levels are contained within all appropriate limits.

Construction activities have the potential to contaminate the water surrounding the Site. Such contamination could result in health impacts if contamination were to impact water supplies. The best practise construction methods to be employed by the main contractor will ensure that no water contamination will occur.

The main contractor will develop and implement a Construction Health and Safety Management Plan to ensure the safety of construction workers in relation to the activities on Site, and for Covid-19 if it should still present a public health risk at the time of construction.

Impacts on neighbouring buildings was also considered with regards to daylight and sunlight. Buildings surrounding the Proposed Development are commercial in nature and could continue to operate relatively unharmed if affected by a disruption in the form of reduced daylight/sunlight.

The operational phase of the Proposed Development will result in positive effects on the local population due to the provision of housing. A positive effect on the population is also predicted from the provision of communal amenities within the Proposed Development. The location of the development and the proximity to public transport networks will likely result in a positive effect on those living and working in the Proposed Development.

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



## 4.12 References

EPA, 2017, Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports, 2017.

Department of Communication, Climate Action and Environment. 2019. Climate Action Plan.

Government of Ireland. 2018 Project Ireland 2040 National Development Plan 2018—2027

Sandyford BID CLG, 2019, Sandyford Business District Review

European Commission. 2017. Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report.

Department of Housing, Planning and Local Government. 2018. Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment

Economic and Social Research Institute, December 2020, Quarterly Economic Commentary, Winter 2020

Aramark. February 2021. Property Management Strategy Report. Document accompanying the overall SHD Application for the Proposed Development.

Maurice Johnson & Partners (MJP). 2021. Preliminary Fire Safety, and Access and Use Strategy report. Document accompanying the overall SHD Application for the Proposed Development.

Golder Associates. 2021. Construction Environmental Management Plan (CEMP) for the Carmanhall Road Strategic Housing Development.

Golder Associates. 2021. Preliminary Construction Management Plan (pCMP) for the Carmanhall Road Strategic Housing Development.

Institute of Air Quality Management (IAQM, 2014) Guidance on the assessment of dust from demolition and construction v1.1, 2016.

Environmental Protection UK / Institute of Air Quality Management (EPUK/IAQM, 2017) Land-Use Planning and Development Control: Planning for Air Quality, 2017.

IN2. 2021. Sunlight and Daylight Analysis Report. No. D2020.

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 8233:2014 – Guidance on sound insulation and noise reduction for buildings. British Standards Institute, 2014.