5 POPULATION & HUMAN HEALTH

5.1 Introduction

This chapter has been prepared to identify, describe and assess the likely significant impacts of the Proposed Development on Population and Human Health .

The EU (2017) *Guidance on the preparation of the Environmental Impact Assessment Report* outlines that human health is a very broad factor that is highly project dependent. This guidance states:

> *"The notion of human health should be considered in the context of the other factors in Article 3(1) of the EIA Directive and thus environmentally related health issues (such as health effects caused by the release of toxic substances to the environment, health risks arising from major hazards associated with the project, effects caused by changes in disease vectors caused by the project, changes in living conditions, effects on vulnerable groups, exposure to traffic noise or air pollutants) are obvious aspects to study."*

Human health should be considered in the context of environmental pathways which may affect health such as air quality, noise, water and soil quality. All can contribute to negative effects on human health by facilitating the transport of contaminants or pollutants. An evaluation of the effects of these pathways on health, by considering the accepted standards of safety in dose, exposure or risk of air quality and noise levels for example, is considered appropriate, as these standards have been arrived at via scientific and medical research.

The EPA Guidelines (2022) note that the transposing legislation does not require assessment of land-use planning, demographic issues or detailed socioeconomic analysis (EPA, 2022).

Furthermore, in accordance with the EPA Guidelines (2022), the assessment of impacts on population and human health should refer to the assessments of those factors under which human health effects might occur, as addressed elsewhere in the EIAR. The likely significant impacts on Human Health and Population regarding issues such as soils, geology and hydrogeology, water, air quality, noise and vibration, traffic and landscape are addressed in detail within the following EIA chapters:

- Chapter 7 – Land, Soils, and Geology;
- Chapter 8 – Water;
- Chapter 10 – Air (Noise and Vibration);
- Chapter 11 – Climate (Air Quality);
- Chapter 13 – Landscape and Visual Impact Assessment; and
- Chapter 14 – Material Assets (Transport).

Where these topics are dealt with in further detail elsewhere in this EIA Report, the relevant chapters have been cross referenced in this Chapter to provide context for assessment.

Other health and safety issues subject to assessment under other EU Directives are also relevant. These may include reports prepared under the Industrial Emissions, Waste Framework, Landfill, Strategic Environmental Assessment, Seveso III, Water Framework, Floods, and/or Nuclear Safety Directives. In keeping with the requirement of the amended EIA Directive, an EIAR considers the results of such assessments without duplicating them.

5.2 Assessment Methodology

5.2.1 Relevant Legislation and Guidance

This chapter has been prepared in accordance with:

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports. Environment Protection Agency (EPA, 2022)
- Health Impact Assessment Guidance. Institute of Public Health (IPH), (IPH, 2021).

- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report European Commission (EU, 2017)

This chapter follows these guidelines and will examine the effects on population and human health relevant to the Proposed Development as they relate to the relevant study area.

The descriptions of sensitivity, magnitude and significance outlined in this assessment are based on the Health Impact Assessment Guidance (IPH, 2021) criteria, while the probability and duration of effects are based on the definitions set out in Section 3.7 of the 'Guidelines on information to be contained in Environmental Impact Assessment Reports' (EPA, 2022).

5.2.2 Data Sources of Information

The following sources of information have been used in this assessment:

- 2022 Census carried out by the Central Statistics Office (CSO) 03 April 2022. Made available from https://www.cso.ie/en/
- 2016 Census carried out by the Central Statistics Office (CSO) 24 April 2016. Made available from https://www.cso.ie/en/
- Pobal HP Deprivation Index based on 2022 Census Data (CSO) Made available from https://www.pobal.ie/
- Pobal HP Deprivation Index based on 2016 Census Data (CSO) Made available from https://www.pobal.ie/
- Google maps available from https://www.google.com/maps
- OpenStreetMap and contributors available from https://www.openstreetmap.org
- GeoHive contributors and available from https://www.geohive.ie/

5.2.3 Study Area

There is no specific guidance available on an appropriate study area to focus the assessment of human health and populations. The research area has been established based on expert judgement, the accessibility of data, and taking into consideration review of the potential for impact from the Proposed Development.

It is acknowledged that projects like the one proposed can have an impact on activity in a larger area than the site itself. Generally, the closer to the works, the greater the potential for impacts. The most significant environmental impacts are likely to be confined within 50-150 m of the Proposed Development. Some effects from the Proposed Development, including air quality and traffic, might have a larger area of effect, and these are addressed in detail in the corresponding expert assessments contained in the chapters of this EIAR.

The project being considered is not expected to have Regional, National or International, or Transboundary impacts on Human Health and Populations. Therefore, the Study area has been restricted to the neighbouring community (site-specific population), and wider community (local population). A general study area of 1 km from the site location is included for population statistics, while the wider area of 2.5 km from the site location has been used to inform the baseline description of the area.

In the desk-based assessment of Population Health Sensitivity, Electoral Division (ED) statistics from CSO have been utilised. Electoral Divisions are the smallest legally defined administrative areas in the state, developed with the intention of producing areas roughly equivalent in both population and "rateable value" (CSO).

The Proposed Development consists of three development sites (Sites 3, 4 and 5) which form part of the Clonburris Strategic Development Zone (SDZ). The sites are located in close proximity to each other. As such, when establishing the Study Area utilising EDs and the 1 / 2.5km distances mentioned

above, there is no variance between potential Study Areas for each site. For this reason, it was considered appropriate to assess the receiving environment under one Study Area which is applicable to all three sites.

The Proposed Development site is located in the Local Authority Area of South Dublin County Council (SDCC), and in the electoral divisions (EDs) of Lucan-Esker (267100), Clondalkin-Cappaghmore (267048) and Clondalkin-Dunawley (267049). The area selected for consideration of baseline Human Health and demographic information has been defined as the ED containing the Proposed Development site and those within 1 km of the Proposed Development site. The EDs which will be included alongside those already mentioned are Clondalkin-Rowlagh (267052), Lucan-St Helen's (267103) and Newcastle (267107), all of which are also located within the SDCC Local Authority Area.

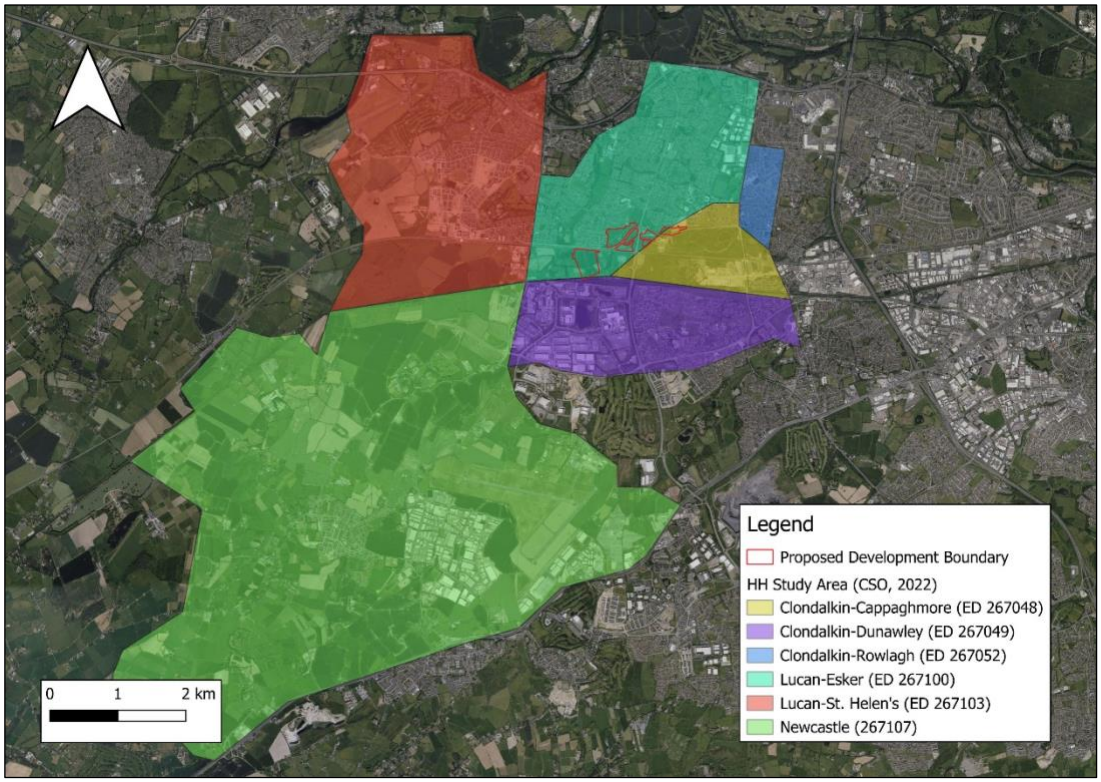

Figure 5.1: Location of the Proposed Development (Sites 3, 4 and 5) within the Study Area

5.2.4 Population Impact Assessment Categories

5.2.4.1 Assessment Sensitivity of Population

The assessment of significance of an impact is a professional appraisal based on the sensitivity of the receptor and the magnitude of effect. Within any area, the sensitivity of individuals in a population will vary. The Health Impact Assessment Guidance (IPH, 2021) sets out a conceptual model of the different components of sensitivity (Figure 5.2). It uses criteria (segments) and indicative classifications (levels) to explore, and explain, a finding of sensitivity. The conclusion may be summarised as a high, medium, low, or negligible sensitivity to change.

The existing sensitivity of the receiving environment (in terms of population and human health) has been appraised for the study area with a desk-based assessment of routine demographic and health indicators, rather than the use of surveys or collection of primary data. This includes analysis of existing data (based on the availability of information) from the Central Statistics Office (CSO) and Pobal to build up a profile of the baseline population information within the study area. Topographical maps and Google maps have also been used to inform the baseline description of the area to inform the proximity of the Site to areas of economic activity, employment, community infrastructure, emergency services, tourism and recreation amenities.

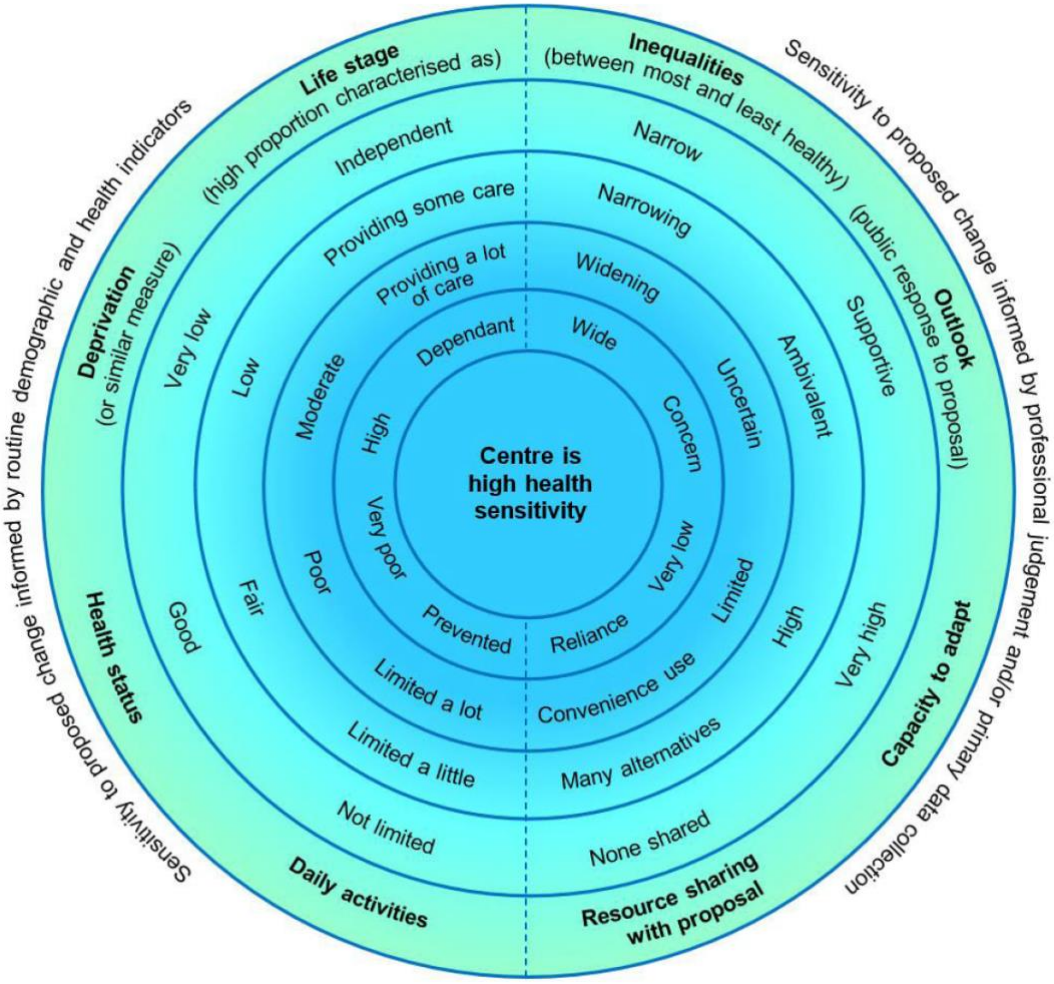

Figure 5.2: Health Sensitivity: Conceptual Model (Source: Health Impact Assessment Guidance (IPH, 2021))

5.2.4.2 Magnitude of Impact

Magnitude considers the characteristics of the change which would affect the receptor as a result of the proposal. The Health Impact Assessment Guidance (IPH, 2021) sets out a conceptual model of the different components of sensitivity (Figure 5.3). Again, this model provides different components of *magnitude*. It uses criteria (segments) and indicative classifications (levels) to explore, and explain, a finding of *magnitude*. The conclusion may be summarised as a high, medium, low, or negligible magnitude of change.

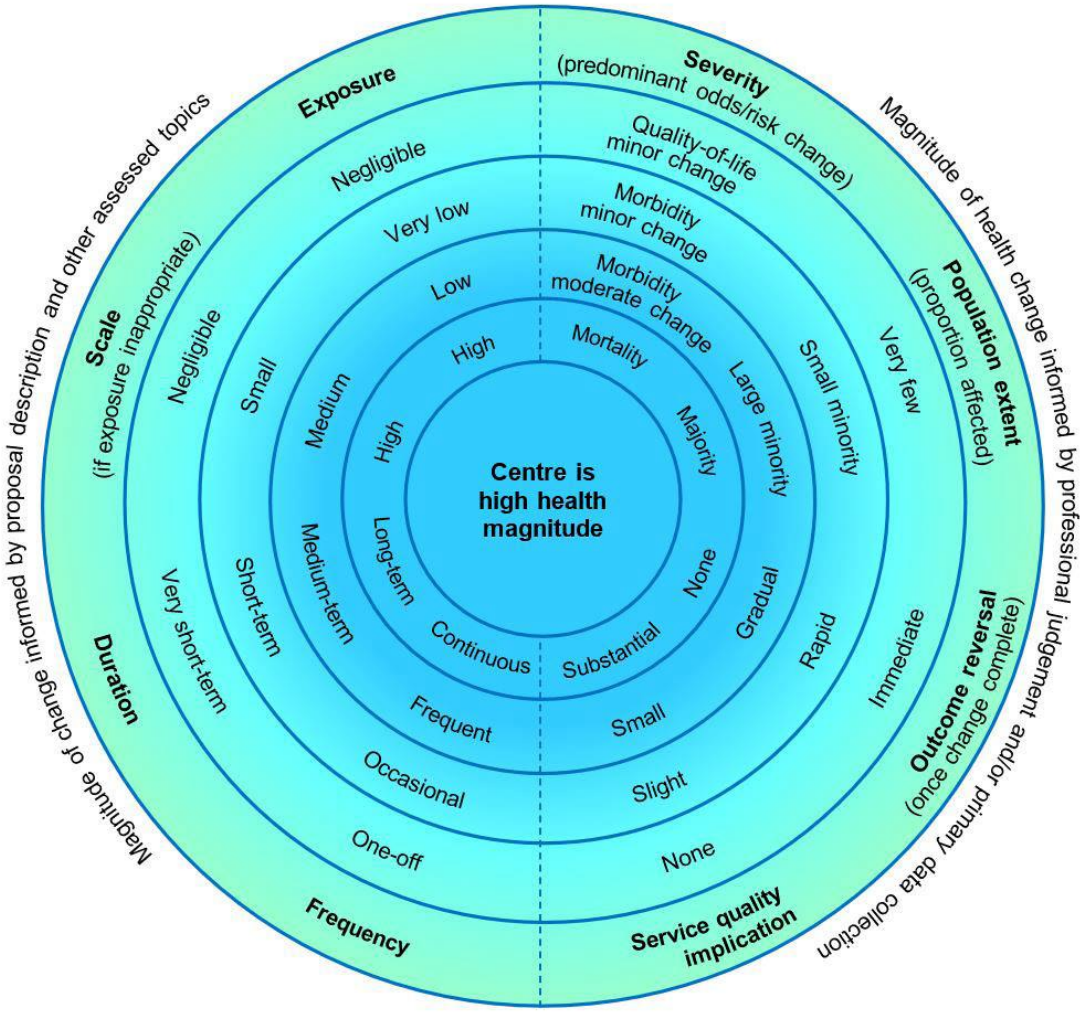

Figure 5.3: Health Magnitude: Conceptual Model (Source: Health Impact Assessment Guidance (IPH, 2021))

5.2.4.3 Significance of Effects

Significance relies on informed, expert judgement about what is important, desirable or acceptable with regard to changes triggered by the proposal in question. The assessment of the significance of effects in this assessment is a professional appraisal based on the relationship between the magnitude of the effects and the sensitivity of the receptor.

The Health Impact Assessment Guidance (IPH, 2021) sets out a conceptual model of the different components of significance. It uses criteria (segments) and indicative classifications (levels) to explore, and explain, a finding that a health effect is significant or not significant.

The Health Impact Assessment Guidance (IPH, 2021) model brings together different types of evidence, e.g. scientific literature, public health priorities, regulatory standards and health policy. The model thus not only takes into account a range of evidence sources, but also a diversity of professional perspectives, e.g. academics, public health practitioners, regulators and policy makers.

The model below includes the factors of magnitude of impact and the sensitivity of receptors as determined in accordance with Section 5.2.1 and Section 5.2.2 above. This EIA assessment typically relies on regulatory thresholds, where there would be formal monitoring by regulators, to set out the acceptability or desirability of change to population health.

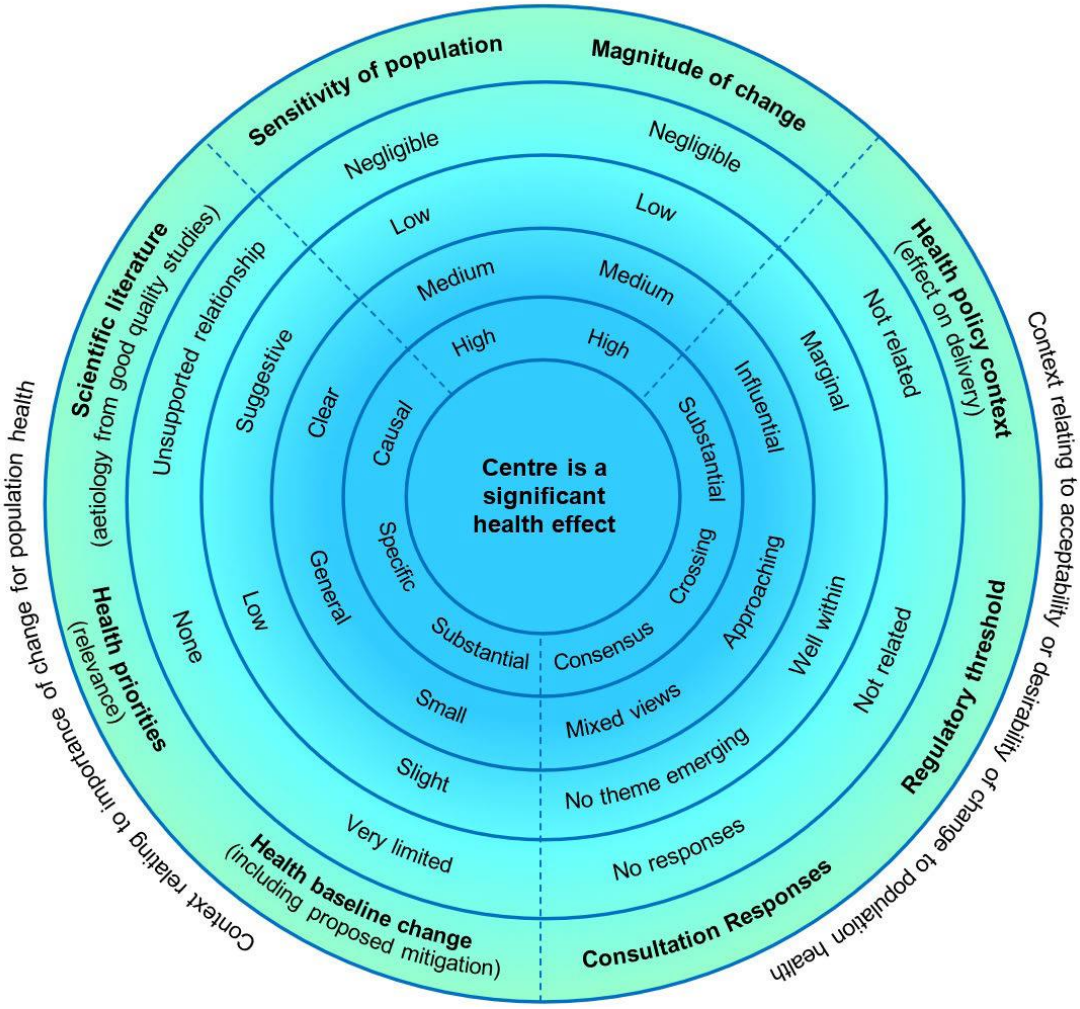

Figure 5.4: Health Significance: Conceptual Model

5.3 Receiving Environment

As stated in Section 5.2.3, the receiving environment will be assessed under one Study Area which is applicable to all three sites.

5.3.1 Population Health Sensitivity within the Study Area

The purpose of the population health sensitivity assessment is to identify the likely sensitivity of the local population and its capacity to absorb change. It is considered that, for the purpose of this assessment, available data on: Population; Deprivation; Life Stage; and Health Status within the Study Area provides sufficient information to establish the population sensitivity and to provide the required context for this assessment.

5.3.1.1 Population

The most recent census of population was carried out by the CSO on 3 April 2022. The census compiles data for the whole state as well as smaller individual areas including counties, cities, towns, and electoral divisions. Taking into consideration the location of the Proposed Development, the census information on population, age profile, employment, and social class, has been analysed in relation to the development site.

Table 5.1 denotes the population change of the State and the electoral divisions which make up the Study Area for the census years 2016 and 2022. Two EDs experienced population growth at a rate significantly higher than the state overall. Three EDs in the study area have experienced population growth at a slower pace than the state overall. In contrast, the ED of Clondalkin-Dunawley has seen a population decline compared to both the rest of the Study Area and the state.

Area	Population for Census Year		% Change 2016 – 2022
	2016	2022	
State – Republic of Ireland	4,761,865	5,149,139	+8.1
Lucan-Esker	32,236	33,849	+5.0
Lucan-St Helen's	10,658	16,805	+57.7
Clondalkin-Cappaghmore	2,581	2,445	+5.3
Clondalkin-Dunawley	11,323	11,298	-0.2
Clondalkin-Rowlagh	4,096	4,106	+0.2
Newcastle	4,257	5,552	+30.4

Table 5.1: Population Change at National and Electoral Division Level from 2016 – 2022 (Source: www.cso.ie)

5.3.1.2 Deprivation

The Health Impact Assessment Guidance (IPH, 2021) outlines that impact assessments should consider if the population is already stressed by limited resources or high burdens as well as if groups are affected that have reduced access to financial, social and political resources. Deprivation differences between areas are indicative of social gradients, which are central to the consideration of health inequalities.

Deprivation statistics for Ireland are available from the Pobal HP Deprivation Index, which shows overall affluence and deprivation. This Index draws on data from the national Census and combines three dimensions of relative affluence and deprivation: Demographic Profile, Social Class Composition, and Labour Market Situation, which are measured by ten key socio-economic indicators from the Census of Population.

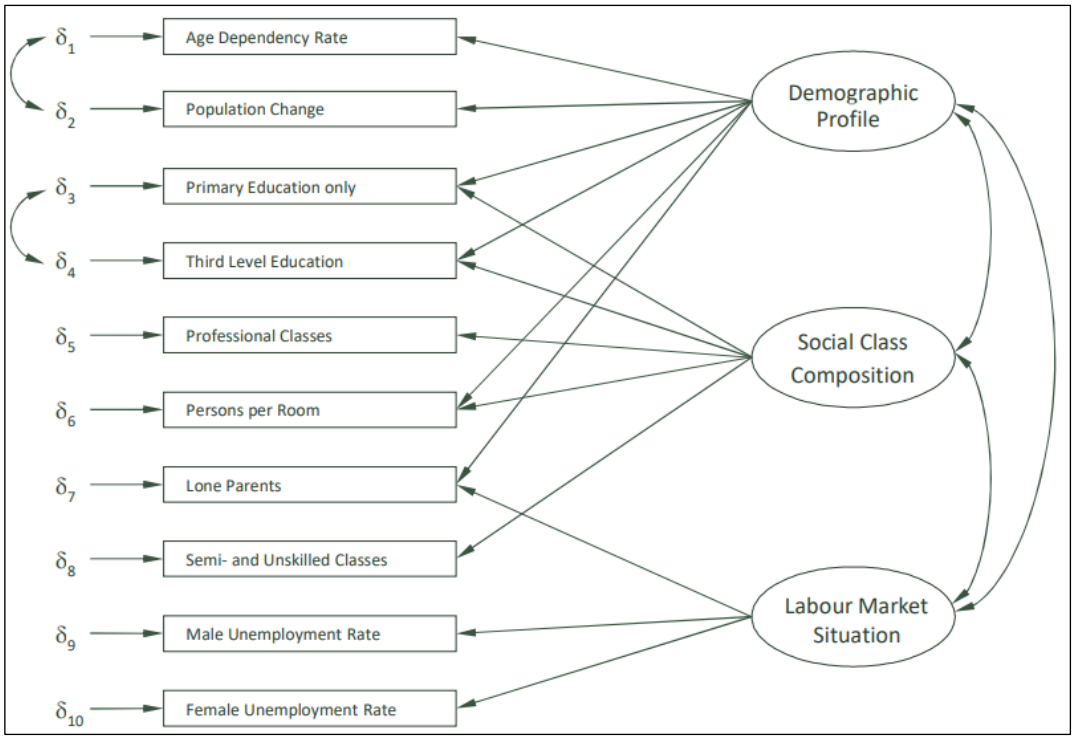

Figure 5.5: Basic Model of the Pobal HP Deprivation Index

The Pobal HP Deprivation Index Relative Index Score allows for the provision of descriptive labels with the scores, which are grouped by standard deviation as seen in Table 5.2 below.

In order to make a uniform assessment using the conceptual model as set out in Figure 5.2 above, a relative Population Sensitivity the Deprivation Score of 'Very disadvantaged', or 'Extremely disadvantaged' would represent a high sensitivity. Conversely, an 'Extremely affluent' or 'Very affluent' score would represent a very low sensitivity.

Deprivation Score	Pobal HP Description	Sensitivity of Population
> 30	Extremely affluent	Very low
20 to 30	Very effluent	Very low
10 to 20	Affluent	Low
0 to 10	Marginally above average	Low
0 to -10	Marginally below average	Moderate
-10 to -20	Disadvantaged	Moderate
-20 to -30	Very disadvantaged	High
< -30	Extremely disadvantaged	High

Table 5.2: Pobal HP Index Relevant Index Score Labels (Source: Pobal HP Deprivation Index)

The data in Table 5.3 presents the Pobal HP Deprivation Index scores for the Study Area, derived from the 2022 Census. Since Pobal has not released national-level deprivation scores for 2022, the Dublin County average score is used for comparison.

The Index shows that three Electoral Divisions (ED) in the Study Area are classified as 'Marginally Above Average', aligning with the overall Dublin County score. However, two EDs are categorized as 'Disadvantaged', and Clondalkin-Rowlagh is rated as 'Very Disadvantaged'. This reflects a mixed level of population sensitivity to deprivation within the Study Area: three EDs have low sensitivity, two EDs have moderate sensitivity, and one ED demonstrates high sensitivity.

Area	Deprivation Score	Pobal HP Description
Dublin County	2.69	Marginally Above Average
Lucan-Esker	6.45	Marginally Above Average
Lucan-St Helen's	8.53	Marginally Above Average
Clondalkin-Cappaghmore	-15.86	Disadvantaged
Clondalkin-Dunawley	-12.15	Disadvantaged
Clondalkin-Rowlagh	-22.50	Very Disadvantaged
Newcastle	2.39	Marginally Above Average

Table 5.3: Deprivation Score within the Study Area (Pobal HP Deprivation Index, 2022 Census)

5.3.1.3 Life Stage (Age Dependency)

The Health Impact Assessment Guidance (IPH, 2021) outlines that life-course analysis is often used in public health and reflects differing health sensitivities and needs at different ages. Typically, children and older people are particularly sensitive to change, including due to being dependents. Dependents are defined for statistical purposes as people outside the normal working age of 15-64. Dependency ratios are used to give a useful indication of the age structure of a population with young (0-14) and old (65+) shown as a percentage of the population of working age (15-64).

A low dependency ratio indicates that there is a larger proportion of working population age (15–64) years as compared to young (0-14) and old (65+). Conversely, a high dependency ratio indicates that

there is a larger proportion of young (0-14) and old (65+) as compared to working population age. A high dependency ratio can also indicate that some groups are more likely to be at home during the day (for example, due to childcare, or retired persons) and would therefore be more likely to be impacted by a development within the area.

Age dependency ratios are available through the Pobal Online Geo-Profiling tools (https://maps.pobal.ie/) which are based on the national Census.

The age dependency ratio for the study area is shown in Table 5.4 below. From these dependency ratios we can tell that the study area is less dependent when compared with ROI as a whole. Indicating a largely 'independent' population within the Study Area as compared to ROI, which can be defined as per the conceptual model as 'providing some care' to 'providing a lot of care'. This indicates that there is a larger proportion of working population within the Study Area, likely to be more mobile, out of the home during the working day, and would therefore be less likely to be impacted by a development within the area as compared to a more dependent population.

Area	Age Dependency Ratio for Census Year	
	2016	2022
State – Republic of Ireland	52.70	53.22
Lucan-Esker	33.36	27.50
Lucan-St Helen's	34.16	34.19
Clondalkin-Cappaghmore	36.18	28.83
Clondalkin-Dunawley	32.32	32.36
Clondalkin-Rowlagh	32.03	35.83
Newcastle	38.36	38.6

Table 5.4: Age Dependency Ratio within the Study Area (Pobal Geo-Profiling, 2022 Census)

5.3.1.4 Health Status (General Health)

The CSO as part of the census records an overall self-reported measure of population health within Ireland. Areas with a poor health status are typically considered to be of a higher sensitivity and more susceptible to change in environmental conditions.

Table 5.5 below shows the self-reported measure of population health within the Study Area compared to ROI. This shows that people in the area predominately self-report their health as 'Very Good', in-line with national trends, although to a lesser degree than the national average in Clondalkin-Cappaghmore, Clondalkin-Rowlagh and Clondalkin-Dunawley.

Area	% population describing their general health					
	Not Stated	Very Bad	Bad	Fair	Good	Very Good
State – Republic of Ireland	6.74%	0.32%	1.41%	8.64%	29.66%	53.23%
Lucan-Esker	6.27%	0.18%	0.96%	5.92%	28.77%	57.92%
Lucan-St Helen's	5.94%	0.18%	1.06%	6.18%	29.63%	57.01%
Clondalkin-Cappaghmore	14.06%	0.98%	2.17%	11.7%	27.6%	43.48%
Clondalkin-Dunawley	9.83%	0.47%	2.14%	10.15%	31.66%	45.74%
Clondalkin-Rowlagh	9.88%	0.73%	3.21%	11.74%	30.25%	44.18%
Newcastle	7.6%	0.2%	1.49%	7.8%	28.73%	54.18%

Table 5.5: Self-Reported Measure of Population Health (CSO, 2022 Census)

5.3.1.5 Ability to Perform Daily Activities

People's ability to perform day-to-day activities is relevant to population sensitivity, particularly where there are changes in access to services or community amenities. Persons with disabilities can

also be more susceptible to changes in environmental conditions. The CSO as part of the census records an overall self-reported measure of persons with disabilities within Ireland.

Table 5.6 details the number of persons with a disability compared to the population as a whole. The data shows that three EDs within the Study Area have a higher % of persons with a disability overall than the national average, indicating that for persons within the area there are greater restrictions on daily activity than the national average. Lucan-Esker, Lucan-St Helen's and Newcastle reported a lower % than the national average.

Area	Persons with a disability	Population	% Persons with a disability
State - Republic of Ireland	1,109,557	5,149,139	22%
Lucan-Esker	5,546	33,849	16%
Lucan-St Helen's	2,695	16,805	16%
Clondalkin-Cappaghmore	646	2,445	26%
Clondalkin-Dunawley	2,729	11,298	24%
Clondalkin-Rowlagh	1,094	4,106	27%
Newcastle	1,129	5,552	20%

Table 5.6: Persons with a Disability (CSO, 2022 Census)

5.3.1.6 Summary of Population Health Sensitivity

The sensitivity of the surrounding area has been considered based on the details of the published data available from CSO and Pobal. Two EDs have experienced population growth at a significantly higher rate than the state overall. Three EDs in the study area have experienced population growth at a slower pace than the state overall. In contrast, the ED of Clondalkin-Dunawley has seen a population decline compared to both the rest of the Study Area and the state. The Pobal HP Deprivation Index reflects a mixed level of Population Sensitivity (Deprivation) within the Study Area: three EDs have low sensitivity, two EDs have moderate sensitivity, and one ED demonstrates high sensitivity.

There is a low age dependency ratio, therefore a large proportion of the population is within working age, implying a higher degree of self-sufficiency and resilience to change. The information presented above for the study area shows a high proportion [43.48 – 57.92%] describe their health status as 'Very Good' and alow proportion as 'Bad' or 'Very Bad'. The data show that the study area has three EDs with a higher % of persons with a disability than the national average, indicating that for persons within the area there are greater restrictions on daily activity than the national average.

Taking these factors into consideration, it can be concluded that the population in the study area exhibits a relatively moderate sensitivity to change, categorising it with regard to the criteria set out in Figure 2.2 as having a Moderate population sensitivity.

5.3.2 Location and Character of the Local Environment

Describing the location and character of the local environment provides useful information on the current local community and usage within the study area, affording context for this assessment. This includes community and social infrastructure that covers a range of services and facilities that meet local and strategic needs and contribute towards a good quality of life, including local business, residential areas, education, health facilities, emergency services, places of worship, and green infrastructure.

Furthermore, the baseline identifies tourism and landscape amenity within the Study Area, which provides an indication of current intrinsic values placed on the area for local, national and international users that may be impacted by the Proposed Development.

The local environment also includes areas of natural resources that relate to populations and human health that may be impacted by the Proposed Development, this includes economic resources, recreational and bathing waters, and drinking water resources.

While a general study area of EDs within 1 km from the site location is included for population statistics, the wider area of 2.5 km from the site location has been used to inform the baseline description of the area.

5.3.2.1 Community and Social Infrastructure within the Study Area

Residential and Employment Areas

Under the South Dublin County Development Plan 2022–2028, the site is located within a Strategic Development Zone (SDZ). The Clonburris Strategic Development Zone defines the Kishoge Character Area as follows:

> *"The area will be developed with a primary focus on residential development, complemented by limited retail, service, and employment functions to form a central hub. The Kishoge Centre will feature higher-density residential development around the railway station, providing local convenience and services for nearby residents. Development will gradually transition outward from the centre to medium- and lower-density residential areas, incorporating local nodes, community facilities, schools, and high-quality open spaces. The area will benefit from park and canal frontage to the south and east.*
>
> *The combination of retail/commercial provision and higher-density residential development around both centres will foster a critical mass of activity, enhance the public realm, and contribute to the vitality and viability of both urban centres."*

As per the Clonburris SDZ Planning Scheme (2019), the Proposed Development lies predominately in land use areas designated as 'Primarily Residential', as well as smaller areas of 'Open Space Areas' and 'Mixed-Use – Retail, Community and Residential'. The features of the Proposed Development have been considered against the 'permitted in principle' and 'open for consideration' land uses outlined for the three land use areas above, and the Proposed Development has been found to fully align with the land use area designations. Fulld detail can be found in Section 3.5.4.1 of Chapter 3: Description of Proposed Development.

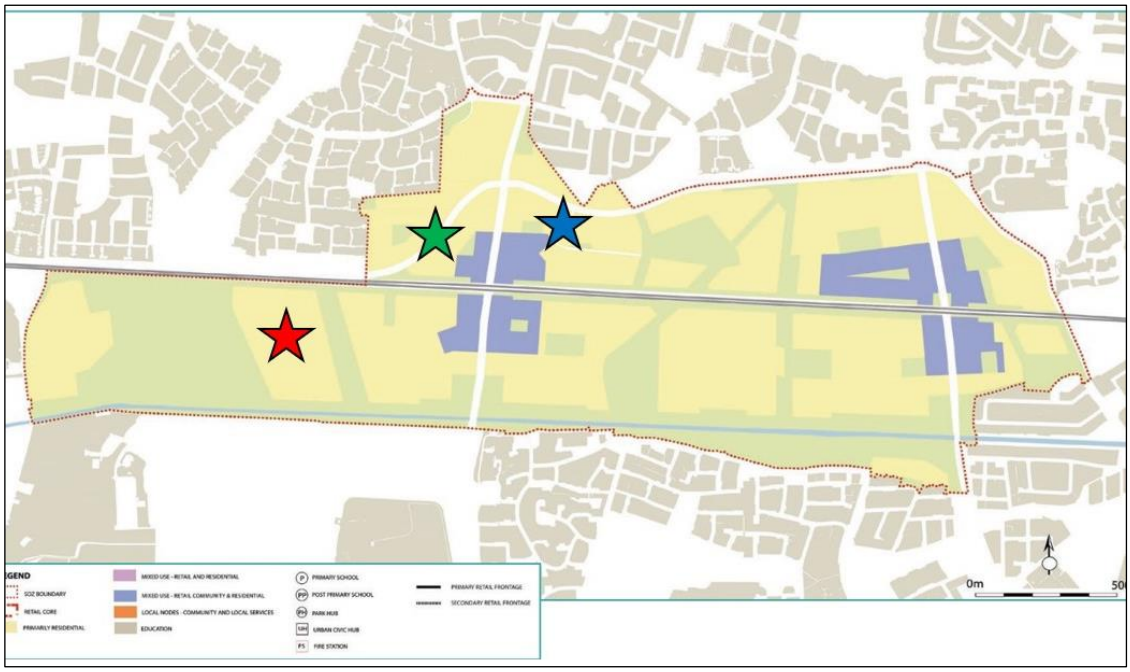

Figure 5.6: Clonburris SDZ Land Use Area Map (Source: Clonburris SDZ Planning Scheme, 2019) (Approximate location of Site 3 in green, Site 4 in red, and Site 5 in blue)

Notable facilities within the vicinity of the site, located in Grange Castle Business Park and Clondalkin Industrial Estate, include pharmaceutical companies, ICT companies, warehouses, manufacturing companies and waste management facilities. There is a high concentration of smaller commercial businesses in Clondalkin and Lucan town centres. The closest shopping centre of note is Liffey Valley Shopping Centre, located c. 2.2 km northeast of the site.

There are significant residential settlements within the Study Area. The Proposed Development site is bordered by residential estates to the north, northeast and northwest. Separated from the site by the Clonburris SDZ undeveloped lands and the Grand Canal, there are further residential settlements.

High sensitivity residential receptors in the vicinity of the Proposed Development include the Tullyhall estate to the north of Site 4 and west of Site 3, the Rossberry estate to the northwest of Site 3, the Oldbridge estate to the north of Site 3, the Foxborough estate to the north of Site 5, and the Tor an RÍ estate to the northeast of Site 5.

Education, Childcare, Schools

There are a number of primary and secondary schools in the vicinity of the Proposed Development including:

- Lucan East Educate Together National School – directly north of Site 3
- Kishoge Community College – directly south of Site 5
- Griffeen Community College - directly south of Site 5
- Lucan Community National School – c. 0.2km north
- Divine Mercy Senior School – c. 0.2km northeast
- Divine Mercy Junior National School Lucan – 0.3km northeast
- Griffeen Valley Educate Together National School – c. 0.3km north
- Adamstown College Educate Together National School – c. 1km west
- St John the Evangelist National School – c. 1.1km west
- Adamstown Community College – 1.2km west

The closest third level institution in the area is TU Dublin's Tallaght Campus, located c. 6.3 km southeast of the site.

As outlined in the Clonburris SDZ Planning Scheme (2019), the Department of Education and Skills has identified a need for new primary and post-primary schools throughout the SDZ lands.

Healthcare Services

The Healthcare Services within the study area include:

- Deansrath Health Centre – c. 1.1km south
- Ballyowen Medical Centric Health – c. 1.2km north
- Ashwood Medical Centre – c. 1.4km southeast
- Clondalkin Medical Centre – c. 1.8km southeast
- Lucan Health Centre – c. 2.3km north

The closest hospital to the Proposed Development is Tallaght Hospital, located c. 5.7km southeast of the site.

Implementing the Clonburris SDZ Planning Scheme (2019) will require provision of a new primary health care centre for the area. Additional smaller scale healthcare facilities are also supported by the scheme.

Emergency Services

The nearest Garda Station is Ronanstown Garda Station, located c. 0.9km east of the site, and the nearest fire station is Tallaght Fire Station, located c. 4.2km southeast of the site.

There is provision within the Clonburris SDZ Planning Scheme (2019) for a Garda station at Clonburris within the urban centre designated lands, should An Garda Siochána identify a need for this additional station. Through consultation with the Dublin Fire Brigade, a site has been identified within the SDZ, adjacent to the Fonthill road and Thomas Omer Way, for a new fire station at Clonburris.

Places of Worship

There are numerous places of worship in the vicinity of the development, including:

- Church of the Divine Mercy – c. 0.5km northeast
- Lucan Islamic Centre of Ireland – c. 0.7km northeast
- Parish of St Patrick's – c. 1.2km north
- St Ronan's Church – c. 1.2km south
- Church of the Transfiguration, Bawnogue – c. 1.4km southeast

The Clonburris SDZ Planning Scheme (2019) allows for additional development of places of worship within the designated urban centre lands of the SDZ.

Green Infrastructure, Landscape and Amenity, within the Study Area

Recreational facilities within the Study Area include Griffeen Valley Park to the northwest of the site, which features a playground, outdoor gym, a dog park and various playing fields. To the north of the site, there are various sports clubs, the Lucan Sports and Leisure Centre and North Clondalkin Library. The Grand Canal is located to the south of the site, including the Grand Canal Way walking path.

The Clonburris SDZ Planning Scheme (2019) outlines the planned green and blue infrastructure for the SDZ. These include strategic open space and SuDS ponds in the lands directly to the west of Site 4 of the Proposed Development, as well as treelines, green corridors and preserving or improving the existing hedgerows in and around the Proposed Development lands.

In terms of landscape amenity, greenfield undeveloped lands are the dominant elements of the site and surrounding landscape, and visual amenity is limited. Site 3 is currently screened to the north and west by tree planting and thick hedgerow of approximately 2 metres in height which runs along Adamstown Avenue. It is screened to the west by tree planting and a wall along the R136. Site 4 is currently screened to the south by thick tree planting which runs along the canal. It is screened to the north by thick hedgerow of approximately 2 metres in height which runs along Adamstown Avenue. Site 5 is currently partly screened to the north with hedgerow and tree planting. There are no listed or scenic views, no landscape or amenity designations or protected trees pertaining to the site, and no protected structures or National Monuments on the site.

5.3.2.2 Tourism within the Study Area

Tourism is returning to strong growth and continues to play a hugely influential role in Ireland's economic success.

The development site is located within South Dublin County, which has much to offer as a tourist destination, with a wealth of natural, built and cultural heritage, seamlessly connected to the city centre and a variety of visitor experiences. Section 2.6 of the Clonburris SDZ Planning Scheme (2019) outlines the key principles for tourism relating to the SDZ:

> *"To support the development of tourism infrastructure, attractions, activities and facilities at appropriate locations subject to sensitive design and environmental safeguards."*

The development site is located on predominantly greenfield lands and is not located near any areas of significance or local tourism. The closest area of significance to local tourism the Grand Canal,

located south of the Proposed Development, with its associated greenway walking and cycling trails, and historic canal locks. Overall, tourism is not a major industry in the immediate environs of the site.

5.3.2.3 Natural Resources within the Study Area

Geological Heritage and Economic Resources

Natural resources and land use in the study area have also been considered as they may have implications for the development of the lands. There are no active quarries within the vicinity of the Proposed Development lands.

A review of Geological Survey Ireland online maps has shown that there are 2 no. Mineral Localities within the Study Area. There is a clay and brick deposit located c. 2.3 km southeast of the site, and a limestone deposit located c. 2.5 km northeast of the site.

There are three Geological Heritage Sites located within the Study Area. The Lucan Esker, located at its closest point c. 0.7 km north of the Proposed Development site, is a good example of a deglacial, meltwater-deposited feature. The N4 Lucan Cutting, located at its closest point c. 1.7 km northwest of the site, is a roadside exposure of Dublin 'Calp' limestones beside the N4 underpass junction for Lucan. The Liffey Valley Centre Road Sections, located at their closest point c. 2.4 km northeast of the site, include roadside exposures of calp limestones near the junction to Liffey Valley Centre.

Recreational Waters and Bathing Waterbodies

A review of EPA online maps that include the Register of Protected Areas (RPA) under the Water Framework Directive (WFD) has shown that there are no protected Recreational Waters or Bathing Waterbodies within the Study Area. The Griffeen River is situated to the west of the site and flows in a northerly direction to ultimately discharge into the River Liffey. There are no protected Recreational Waters or Bathing Waterbodies along the Griffeen River or River Liffey.

Drinking Water Resources

A review of Geological Survey of Ireland online maps that includes the Water Abstraction locations, and Groundwater Public Supply Source Protection Zones (SPZs) has been undertaken.

There are no groundwater SPZs, or listed groundwater wells or springs within the vicinity of the Proposed Development site.

5.3.3 Risk of Major Accident Hazards or Disasters

The potential for a project to cause risks to human health, cultural heritage or the environment due to its vulnerability to external accidents or disasters is considered where such risks are significant, e.g. the potential effects of floods on sites with sensitive facilities. Where such risks are significant then the specific assessment of those risks in the form of a Seveso Assessment (where relevant) or Flood Risk Assessment may be required. Potential risks are identified, evaluated and assessed further in Chapter 17 Risk Management (Major Accidents & Disasters) of this EIAR.

5.3.3.1 Landslides, Seismic Activity and Volcanic Activity

In general, risk of landslides in Ireland is considered to be low, as the country is not located in a region with high seismic activity or large mountain ranges. Landslides are more common in unconsolidated material than in bedrock, and where the sea constantly erodes the material at the base of a cliff landslides and falls lead to recession of the cliffs. Landslides have occurred in Ireland in recent years in upland peat areas due to disturbance of peat associated with construction activities. The landslide susceptibility map (GSI spatial map viewer) identifies areas which are subject to landslides and is measured from low to high. The landslide susceptibility map considers the location of landslides and what causes them (slope, soil type and the impact of the flow of water). Based on the GSI spatial map viewer, the Proposed Development site is not in an area susceptible to landslides, with a GSI Landslide Susceptibility Classification of Low.

There are no active volcanoes in Ireland so there is no risk of volcanic activity.

In Ireland, seismic activity is recorded by the Irish National Seismic Network. The Geophysics Section of the School of Cosmic Physics, Dublin Institute for Advanced Studies, has been recording seismic events in Ireland since 1978 (www.dias.ie). This network consists of several seismometers that are located throughout Ireland. Seismic activity and earthquake risk in Ireland are generally considered to be low. This is because Ireland is located on the western edge of the Eurasian Plate, which is a tectonic plate that is not known for its seismic activity. However, earthquakes can still occur in Ireland, although they are typically small and have little impact. There is a very low risk of seismic activity to the Proposed Development site. This means that there is less than a 2% chance of potentially-damaging earthquake shaking in the next 50 years.

The Proposed Development site is not vulnerable to landslides, seismic activity or volcanic activity. Therefore, there is no significant potential for the Proposed Development to cause risks to human health due to its vulnerability to landslides, seismic activity or volcanic activity.

5.3.3.2 Proximity to Seveso or Industrial Emissions Sites

The Seveso Directive (Directive 82/501/EEC, Directive 96/82/EC, Directive 2012/18/EU) was developed by the EU after a series of catastrophic accidents involving major industrial sites and dangerous substances. Such accidents can give rise to serious injury to people or serious damage to the environment, both on and off the site of the accident. The Chemicals Act (Control of Major Accident Hazards involving Dangerous Substances) Regulations 2015 (S.I. No. 209 of 2015) (the "COMAH Regulations"), implement the latest Seveso III Directive (2012/18/EU).

The purpose of the COMAH Regulations is to transpose the Seveso Directive into Irish law and lay down rules for the prevention of major accidents involving dangerous substances, and to seek to limit as far as possible the consequences for human health and the environment of such accidents, with the overall objective of providing a high level of protection in a consistent and effective manner.

Establishments are either lower tier establishments or upper-tier COMAH sites with above threshold quantities of dangerous substances present, and to which the provisions of the COMAH regulations apply.

As set out in Chapter 17: Risk Management (Major Accidents & Disasters), the closest Notified Seveso Establishments to the Proposed Development are the Lower Tier establishments Microsoft Ireland Ltd, c. 1.1km from the Proposed Development, and Brenntag Chemicals Distribution (Ireland) Ltd, c. 4km from the Proposed Development. Both establishments have a consultation distance of 1km. The site is not a Seveso facility and is not within the consultation distance of any Seveso facility. Therefore, there are no implications for major accidents or hazards at the Proposed Development site.

There is a concentration of EPA Licensed facilities within the Study Area to the south of the site in Grange Castle Business Park and to the east in Clondalkin Industrial Estate that could potentially give rise to cumulative effects, detailed in Table 5.7 below.

Registration number	Name	Category	Licence type	Distance (km)
P1033	Grange BackUp Power Limited	IE	Industry	0.3
P0652	Pfizer Ireland Pharmaceuticals Unlimited Company	IE	Industry	0.4
P0693	Takeda Ireland Limited	IE	Industry	0.5
P1191	Microsoft Ireland Operations Limited	IE	Industry	0.8
P1187	Microsoft Ireland Operations Limited	IE	Industry	0.9
P1190	Microsoft Ireland Operations Limited	IE	Industry	0.9
P1204 (Applied)	Edgeconnex Ireland Limited	IE	Industry	1.0
P1170	Amazon Data Services Ireland Limited	IE	Industry	1.4

P1203 (Applied)	Vantage Data Centers Dub11 Limited	IE	Industry	1.4
P1196 (Applied)	Bord Gáis Energy Power Plant	IE	Industry	1.8
P1189	Google Ireland Limited	IE	Industry	1.8
P1184	ADSIL Grange Castle South	IE	Industry	1.8
P1165 (Applied)	Data and Power Hub Services Limited	IE	Industry	1.9
P0401	Metal Processors Limited	IE	Industry	1.9
W0205	Green Circular Economy Unlimited Company	IE	Waste	2.1
P1066	Crag Digital Limited	IE	Industry	2.4

Table 5.7: EPA Licenced Facilities nearby to the Proposed Development Site

It is important to note that the proximity of a COMAH or licensed facility does not necessarily mean that the Proposed Development will be impacted by it or vice versa. However, it is essential to consider these sites as part of the existing environment and to consider and understand the potential for cumulative impacts or other interactions with the Proposed Development at this location.

5.3.3.3 Risk of Flooding

Individual Site-Specific Flood Risk Assessments (FRAs) have been undertaken by DBFL Consulting Engineers (Site 3), JBA Consulting (Site 4), and RPA Group (Site 5) for the three sites associated with the Proposed Development. The FRAs have assessed the risk from tidal, fluvial, pluvial, groundwater and human/mechanical error sources of flooding.

The Site 3 FRA (DBFL, 2025) concluded that there are no significant potential flood sources that may affect the Proposed Development site. Therefore, the Proposed Development site is categorised as 'Flood Zone C'. The Stage 3 Detailed Flood Risk Assessment analysed the potential risk of flooding regarding the existing ESB substation at the site and the proposed adjacent attenuation pond. The detailed assessment concluded that the existing ESB substation is not at risk from flooding. The proposed adjacent attenuation pond is designed to have a top water level of 56.401m AOD (for a 1% AEP storm) and a top of bank level of 56.80m. This top of water level of the attenuation pond is over 0.5m lower than the ESB substation level of 56.90m. An overland flood route will direct any excess surface water away from the ESB substation towards the northwest of the site.

The Site 4 FRA (JBA, 2025) concluded that the site is predominantly located in Flood Zone C, but a small area of the south east corner is located within Flood Zone B, with fluvial flooding from the Kilmahuddrick Stream being the primary flood risk source. The extreme 0.1% AEP flood event on the Kilmahuddrick Stream leads to localised flooding in the southeastern corner of the site. Therefore, mitigation measures have been designed to ensure sustainability and resilience of the development, including appropriate site layout planning, FFLs, compensatory storage, and flood-resilient infrastructure, outlined fully in the Site 4 FRA included with the planning documentation. With the proposed mitigation measures in place, the development can proceed without increasing flood risk to the site or surrounding areas and the Justification Test has been applied and passed. The proposed measures ensure that the site remains resilient to current and future flood risks, while maintaining compliance with local and national planning policies.

The Site 5 FRA (RPS, 2025) concluded that the flood zones maps prepared in the SFRA undertaken as part of the South Dublin County Development Plan 2022-2028 showed the subject site is located in Flood Zone C. Any increase in surface runoff generated by the proposed developed will be attenuated and treated through a suite of SuDs type drainage systems as discussed above, before discharging into the adjacent surface water drainage network with a hydrobrake implemented at the outfall manhole to limit outflow to greenfield runoff rates. This therefore will not pose any increased flooding risks at the adjacent lands and properties.

5.4 Characteristics of the Proposed Development

The Proposed Development is contained in 3no. application sites (Site 3, 4 and 5). The combined application is for a total of 1,252no. residential units, 2no. childcare facilities, a community pavilion, conversion of Grange House, retail space, public open space and all associated ancillary site development works at lands within the Clonburris SDZ Planning Scheme area.

The construction and operational activities associated with each site with the greatest relevance to human health and populations are common to all three sites. The construction activities associated with the Construction Stage of the Proposed Development can give rise to dust, noise and traffic emissions which can impact on human health and local populations. There is also the potential for pollution of land and water resources. When operational, the Proposed Development will give rise to additional traffic on local roads, with associated noise and air emissions.

5.4.1 Proposed Development – Site 3

The Proposed Development comprises 580no. residential units in a mix of house, apartment, duplex and triplex units comprising 1-bedroom, 2-bedroom and 3-bedroom typologies; 2-storey childcare facility; All associated and ancillary site development and infrastructural works including surface level car parking, bicycle parking, hard and soft landscaping and boundary treatment works, including public, communal and private open space, public lighting, bin stores and foul and water services. Vehicular access to the site will be from Adamstown Avenue and the Northern Link Street, proposed under concurrent application Reg. Ref. SDZ24A/0033W.

5.4.2 Proposed Development – Site 4

The Proposed Development comprises 436no. residential units in a mix of house, apartment, duplex and triplex units comprising 1-bedroom, 2-bedroom, 3-bedroom and 4-bedroom typologies; a childcare facility on the ground floor of Block F; retail unit; community building; employment uses and All associated and ancillary site development and infrastructural works including surface level car parking, bicycle parking, hard and soft landscaping and boundary treatment works, including public, communal and private open space, public lighting, bin stores and foul and water services. Vehicular access to the site will be via the Southern Link Road permitted under SDZ20A/0021

5.4.3 Proposed Development – Site 5

The Proposed Development comprises 236 no. residential units including 55 no. social housing units, 113 no. affordable purchase units and 68 no. cost rental units. The scheme provides for a mix of 1, 2 and 3-bedroom units in a range of dwelling typologies, as follows:

a) 35 no. houses
b) 110 no. duplex units
c) 33 no. triplex units, and
d) 58 no. apartments

The proposal also includes all associated and ancillary site development and infrastructural works including a total of 219 no. car parking spaces at undercroft and surface level, bicycle parking, hard and soft landscaping and boundary treatment works, public, communal and private open space, public lighting, waste storage areas and foul and water services. Vehicular access to the site will be from Thoms Omer Way and the Northern Link Street (NLS) proposed under concurrent application Reg. Ref. SDZ24A/0033W.

5.4.4 Cumulative

The cumulative applications which were considered with the Proposed Development are outlined in detail in Section 3.8 of Chapter 3 – Description of the Proposed Development of this EIAR.

The main outward emissions from the Proposed Development during the construction phase that could be capable of resulting in cumulative impacts, and effects on human health and populations, are air quality (dust) and additional noise and vibration.

The Proposed Development sites, Sites 3, 4 and 5, form part of the larger Clonburris SDZ, which has already been subject to a number of planning permissions for residential development, as well as infrastructure, schools and retail.

5.5 Potential Impact of the Proposed Development

The potential impacts discussed below are applicable to Sites 3, 4 and 5, unless otherwise stated.

5.5.1 Proposed Development

5.5.1.1 Construction Stage

Potential Impacts on Businesses and Residences

The main potential negative impacts on local businesses and residences associated with the Proposed Development will be in relation to air quality, noise, visual impact and traffic. The potential impacts and mitigation measures to address them are dealt with within the corresponding chapters of this EIAR as follows: -

- Chapter 9: Air (Noise & Vibration);
- Chapter 10: Climate (Air Quality);
- Chapter 12: Landscape and Visual Impact Assessment; and
- Chapter 13: Material Assets (Transport).

The potential increase in the temporary population of the area during construction as a result of the employment of workers from outside the area that may choose to reside in the immediate and wider local area is likely to amount to only a small percentage of the workforce employed during the construction phase but will result in some additional trade for local accommodation and services. It is expected that the majority of the work force will travel from existing places of residence to the construction site rather than reside in the immediate environs of the site. However, some local employment from within the wider local area is expected.

Construction will have an indirect positive effect on support industries such as builder suppliers, construction material manufacture, maintenance contracts, equipment supply, landscaping and other local services. There will also be a need to bring in specialist workers on a regular basis that may increase the above estimated working population at times. Specialists are only likely to stay for shorter periods depending on the nature of the work. The construction phase, therefore, is considered to have the potential to have a **positive, slight, short term** impact on the economy and employment of the local and wider area.

Potential Impacts on Landscape, Amenity and Tourism

There will be no significant negative impacts on the local parks or the larger amenity areas. It is not anticipated the Proposed Development will have any significant negative impact on local tourism or shopping amenities. The Proposed Development will not create any wastewater discharge which could have a potential impact on local amenities or the local population.

Visual impacts and amenity impacts perceived by individual persons are highly subjective and difficult to characterise. However, generally, the effects would be negative since construction is an inherently, unavoidably unsightly activity. It is considered that the overall impact on the community will be **negative, slight** to **moderate** and **short term** during the construction phase.

Potential Impacts from Land and Water Emissions on Human Health

With reference to Chapter 7 (Land, Soils & Geology), a potential risk to human health due to the associated works during construction is the direct contact, ingestion or inhalation of receptors (i.e.

construction workers) with any soils which may potentially contain low level hydrocarbon concentrations from Site activities (potential minor leaks, oils and paint).

No human health risks associated with long term exposure to contaminants (via direct contact, ingestion or inhalation) resulting from the Proposed Development are anticipated.

Therefore, on this basis in the absence of mitigation measures the potential impacts during the construction phase on human health and populations due to changes to the potential for contamination of soil and groundwater are **neutral, imperceptible** and **short term**.

With reference to Chapter 8 (Water), during construction of the Proposed Development, a reduction in water quality via unmitigated pollutants entering to the Griffeen River and the downstream River Liffey has the potential to lead to negative impacts on human health and populations. Hydrocarbons and petroleum products for example have the greatest risk for human health when they are in drinking water. However, there are not understood to be any potable abstractions from surface water or groundwater downstream of the site. Therefore, there is not considered to be any significant risk to human health associated with impact to water receptors.

Therefore, on this basis in the absence of mitigation measures the potential impacts during the construction phase on human health and populations due to changes to the hydrological environment are **neutral, imperceptible** and **short term**.

Potential Impacts from Air Quality on Human Health

The key elements of construction of the Proposed Development with potential impacts on populations and human health from air quality and climate impacts are:

- Potential for Dust Soiling effects on people and property from general site preparation, vehicles and construction activities;
- Potential Human Health Impacts from dust (PM_{10} and $PM_{2.5}$) emissions from general site preparation, vehicles and construction activities;
- Engine emissions from construction vehicles, traffic and machinery.
- A change in traffic flows on road links nearby the Proposed Development.

The greatest potential impact on air quality during the construction phase of the Proposed Development is from construction dust emissions and the potential for nuisance dust and through human health impacts from PM_{10} and $PM_{2.5}$ emissions. While construction dust tends to be deposited within 250 m of a construction site, the majority of the deposition occurs within the first 50 m. The extent of any dust generation depends on the nature of the dust (soils, peat, sands, gravels, silts etc.) and the nature of the construction activity. In addition, the potential for dust dispersion and deposition depends on local meteorological factors such as rainfall, wind speed and wind direction. A review of Casement Aerodrome meteorological station meteorological data indicates that the prevailing wind direction is westerly to south-westerly with a mean wind speed of 5.2 m/s over the 30-year period of 1991 – 2020 (see Section 10.3.1 of Chapter 10).

In line with the UK Institute of Air Quality Management (IAQM) guidance document '*Guidance on the Assessment of Dust from Demolition and Construction'* (2024) as referenced in Chapter 10 Climate (Air Quality) (Section 10.3.3) the overall sensitivity of the area to dust soiling impacts is considered **high** for Sites 3 and 5 and **low** for Site 4 based on the IAQM criteria outlined in Table 10.12. Based on the IAQM criteria outlined in Table 10.13, the worst-case sensitivity of the area to human health is considered to be **low** for the Proposed Development i.e. Sites 3, 4 and 5.

In the absence of mitigation there is the potential for **short-term, negative** and **not significant** impacts to human health from air quality.

Potential Impacts from Noise and Vibration on Human Health

Exposure to excessive noise is becoming recognised as a large environmental health concern. According to the 2015 European Commission report 'Noise Impacts on Health', (European Commission, 2015), the most common effects of noise on the vulnerable include:

- Annoyance
- Sleep Disturbance
- Heart and circulation problems
- Quality of Life
- Cognitive Process
- Hearing

It is acknowledged that humans are particularly sensitive to vibration stimuli and that any perception of vibration may lead to concern. In the case of road traffic, vibration is perceptible at around 0.5mm/s and may become disturbing or annoying at higher magnitudes. Noise and vibration impacts associated with the development have been fully considered within Chapter 9 Air (Noise and Vibration) of this EIAR including consideration of the impacts on Populations and Human Health (noise sensitive locations).

A variety of items of plant will be in use for the purpose of site clearance and construction works. There will also be vehicular movements to and from the site that will make use of existing roads. Due to the nature of these activities, there is potential for the generation of elevated levels of noise in the vicinity of existing noise sensitive properties.

As detailed in Chapter 9 Air (Noise and Vibration), in the absence of mitigation at Noise Sensitive Locations (NSLs) located beyond 40m from the construction works the Critical Noise Threshold (CNT) will not be exceeded, resulting in **short-term, negative** and **not significant** impacts. Regarding Site 3 and Site 5, there are some NSLs within 40m of the construction works. At the closest locations, representing the worst case, in the absence of mitigation, there is potential for **short-term, negative,** and **significant** to **very significant** impacts.

The main potential source of vibration during the construction of any residential development is associated with piling and any initial groundbreaking or demolition activities. It is not anticipated that groundbreaking or piling will be undertaken in relation to any of the sites associated with the Proposed Development based on site investigation works. Therefore, it is expected in the absence of specific mitigation measures that there will be a **negative, not significant** and **temporary** impact at the closest receptors.

Potential Impacts from Traffic and Transportation on Human Health

The World Health Organisation Report 'Health Effects and Risks of Transport Systems: The Hearts Project' (World Health Organisation, 2006) states that road traffic is a major cause of adverse health effects – ranking with smoking and diet as one of the most important determinants of health in Europe. The report states;

> *"Traffic-related air pollution, noise, crashes and social effects combine to generate a wide range of negative health consequences, including increased mortality, cardiovascular, respiratory and stress-related diseases, cancer and physical injury. These affect not only transport users but also the population at large, with particular impact on vulnerable groups such as children and elderly people, cyclists and pedestrians."*

In the Department of Communications, Climate Action & Environment document *Cleaning Our Air – Public Consultation to Inform the Development of a National Clean Air Strategy*, vehicle emissions are included as a key source of health impacts in Ireland (DOCCA&E, 2017).

As noted in Chapter 13 Material Assets (Transport), construction traffic will only be generated on weekdays (07:00-19:00, subject to conditions of a planning permission) and will consist of the following two principal categories:

- Private vehicles owned and driven by site construction staff and by full time supervisory staff.
- Excavation plant, dumper trucks and delivery vehicles involved in site development works and material delivery vehicles for the following: granular fill materials, concrete pipes, manholes,

reinforcement steel, ready-mix concrete and mortar, concrete blocks, miscellaneous building materials, etc.

A significant benefit of the subject development site's characteristics is that all construction traffic vehicle parking demands can be accommodated on-site, thereby minimising the impact upon the operational performance and safety levels of the adjacent public road network. Therefore, the impact on human beings and in particular road users such as local Businesses, and Residences would be **not significant, negative** and **short term.**

Potential Impacts from Major Accident Hazards and/or Natural Disasters on Population and Human Health

The Proposed Development has the potential for an impact on the health and safety of workers employed during the construction phase. The activities of the applicant's contractors during the construction phase will be carried out in accordance with the Safety, Health and Welfare at Work (Construction) Regulations 2013 (S.I. No. 291 of 2013) to minimise the likelihood of any impacts on workers' health and safety.

As outlined in Section 5.3.3 there is a negligible risk of external natural disasters, including landslides, seismic activity, volcanic activity and sea level rise. There is a negligible risk of major accidents to occur at the facility due to the lack of proximity to Seveso/Control of Major Accident Hazards (COMAH) Regulations Establishments.

As stated in the FRAs submitted with the planning documentation, the majority of the site is located in Flood Zone C, with a small area of the south east corner of Site 4 located within Flood Zone B, and SUDS features will be implemented into the surface water drainage system, which will allow storage of water for the 1 in 100 year storm event plus a 20% allowance for climate change. The FRAs conclude that the residual risk is low.

As set out in Chapter 17: Risk Management (Major Accidents & Disasters), none of the potential risks to be noted during the Construction Phase were identified as requiring further assessment. The potential effect is therefore imperceptible and unlikely in respect of Major Accident Hazards or Natural Disasters on Population and Human Health during the construction phase of the Proposed Development.

5.5.1.2 Operational Stage

Potential Impacts on Businesses and Residences

The main potential impacts on local businesses and residences associated with the Proposed Development will be in relation to air quality, noise, visual impact and traffic. The potential impacts and mitigation measures to address them are dealt with within the corresponding chapters of this EIAR as follows:

- Chapter 9: Air (Noise & Vibration);
- Chapter 10: Climate (Air Quality);
- Chapter 12: Landscape and Visual Impact Assessment; and
- Chapter 13: Material Assets (Transport).

The Proposed Development (Sites 3, 4 and 5 combined) includes 1,252 no. residential units. The addition of new residential accommodation to the area will have a positive impact on the vibrancy and vitality of the area and will help to support existing community and social infrastructure, in addition to further supporting nearby neighbourhood centre and commercial businesses. As set out in Section 5.3.2 of this Chapter, there is a considerable range of existing community and social infrastructure within a 2.5 km radius of the subject site, as well as additional planned infrastructure set out in the Clonburris SDZ Planning Scheme (2019), which the Proposed Development will be able to avail of. Residents will spend a portion of their income locally, which would not happen without the Proposed Development. The Proposed Development also provides for two childcare facilities, one associated with Site 3 and one with Site 4. As such, in providing these facilities the Proposed

Development will also provide long term job opportunities for people living in the area to operate the facilities.

Once operational, the Proposed Development will give rise to much needed additional residential accommodation. As outlined above in Section 5.3.1, the Study Area has a growing population, in particular in Lucan-St Helen's and Newcastle EDs, which saw increases in population between 2016 and 2022 significantly higher than the state average, at 57.7% and 30.4% respectively. The operational phase of the Proposed Development will result in the introduction of a greater intensity and density of residential development, delivering wider public realm improvements, in accordance with national and local planning policy objectives, which seek to deliver compact growth at suitable locations. Adequate provision of high-quality housing to serve the existing and future population of the county is an important pre-requisite and contributor to the establishment and maintenance of good human / public health. The high quality design of the Proposed Development will contribute to a positive impact on the wellbeing of future residents.

An analysis of Daylight and Sunlight levels was undertaken in individual Daylight and Sunlight Assessment Reports prepared for each site by 3D Design Bureau and submitted with the planning documentation. The assessments were carried out in accordance with the BRE Guidelines. Site 3 demonstrates strong daylight and sunlight performance while having minimal impact on neighbouring properties. Site 4 demonstrates daylight and sunlight provision for the future residents while having no adverse impact on surrounding existing properties and granted scheme SD228/0003. There are no existing or granted/under construction properties within a distance three times the height of the highest structure proposed for Site 5, therefore no detailed analysis was required.

Taking into account the provision of additional, high quality residential accommodation and the good level of social and community infrastructure within the area to support such a development, the impact on population will be **positive, moderate** and **long term.**

Potential Impacts on Landscape, Amenity and Tourism

The Proposed Development once operational will have no impact on local tourism or shopping amenities. There will be no significant negative impacts on the local parks. All wastewater generated at the Proposed Development will be connected to the existing public foul network and so will not impact local amenities or the local population.

The Proposed Development includes provision for public open space. In total, between all three Sites this amounts to c. 10,598sqm of public open space, consisting of local green corridors, strategic green corridors and local parks. As the Proposed Development site currently exists as agricultural land with no public amenity use, the introduction of these public open spaces will result in a **positive, not significant, long term** impact on local amenities.

As discussed in Chapter 12: Landscape and Visual, the operational phase will give rise to a change in the landscape character due to change in land use. The Proposed Development will have a visual impact due to the introduction of new buildings, walls, boundary treatments, roads, lighting and parking. The potential impact on the local population will be **neutral, slight** to **moderate**, and **long term.**

Potential Impacts from Land and Water Emissions on Human Health

With reference to Chapter 7: Land, Soils and Geology, a reduction in groundwater quality via unmitigated pollutants entering the soil or Dublin Ground Water Body has the potential to lead to negative impacts on human health and populations. Hydrocarbons and petroleum products for example have the greatest risk for human health when they are in drinking water. However, no discharges to groundwater are included in the design and thus risks to this water supply as a result of this operation are negligible. Any accidental discharge will more likely impact stormwater drainage due to the hardstand and drainage infrastructure proposed and any releases to drainage will be mitigated through petrol interceptors.

Therefore, on this basis in the absence of mitigation measures the potential impacts during the operational phase on human health and populations due to the potential for groundwater contamination are **neutral, imperceptible** and **long term**.

With reference to Chapter 8: Water, a reduction in water quality via unmitigated pollutants entering the Griffeen River or the downstream River Liffey has the potential to lead to negative impacts on human health and populations. Hydrocarbons and petroleum products for example have the greatest risk for human health when they are in drinking water. However, there are not understood to be any potable abstractions from surface water or groundwater downstream of the site.

When operational, the Proposed Development represents an increase in hardstand. The new storm water drainage systems will include SuDS features such as permeable paving parking spaces, bioretention areas and brown roofs to provide additional storage and promote infiltration of and treatment of surface water run-off. As such, the potential for unmitigated off-site flooding as a result of the increased hardstanding areas will not have potential to impact on human health, populations, and material assets.

In the absence of mitigation measures the potential impacts during the operational phase on human health and populations due to changes to the hydrological environment are **neutral, imperceptible** and **long term**.

Potential Impacts from Air Quality on Human Health

As outlined in Chapter 10: Climate (Air Quality), traffic related air emissions have the potential to impact air quality which can affect human health. A detailed air dispersion modelling assessment of traffic emissions was conducted and it was determined that emissions of air pollutants are predicted to be below the ambient air quality standards which are based on the protection of human health. Therefore, it can be determined that the impact to human health during the operational stage is **long-term, localised, negative** and **imperceptible.**

Potential Impacts from Noise and Vibration on Human Health

Exposure to excessive noise is becoming recognised as a large environmental health concern. According to the 2015 European Commission report 'Noise Impacts on Health', (European Commission, 2015), the most common effects of noise on the vulnerable include;

- Annoyance
- Sleep Disturbance
- Heart and circulation problems
- Quality of Life
- Cognitive Process
- Hearing

It is acknowledged that humans are particularly sensitive to vibration stimuli and that any perception of vibration may lead to concern. In the case of road traffic, vibration is perceptible at around 0.5mm/s and may become disturbing or annoying at higher magnitudes. Noise and vibration impacts associated with the development have been fully considered within Chapter 9 of the EIAR.

Once the Proposed Development is operational, there are no sources of mechanical or electrical plant associated with the building types across the Proposed Development with potential to emit significant audible noise levels beyond the buildings themselves (i.e. individual heat recovery systems serving the residential units where proposed). The main potential noise impact associated with the Proposed Development is considered, therefore, to relate to the generation of additional traffic to and from the site as a result of the new residential buildings.

In the absence of mitigation, the resulting impact of noise generated during the operational phase of the Proposed Development on human health is likely to be **negative, imperceptible** to **not significant** and **long term.**

Potential Impacts from Traffic and Transportation on Human Health

The World Health Organisation Report 'Health Effects and Risks of Transport Systems: The Hearts Project' (World Health Organisation, 2006) states that road traffic is a major cause of adverse health

effects – ranking with smoking and diet as one of the most important determinants of health in Europe. The report states;

> *"Traffic-related air pollution, noise, crashes and social effects combine to generate a wide range of negative health consequences, including increased mortality, cardiovascular, respiratory and stress-related diseases, cancer and physical injury. These affect not only transport users but also the population at large, with particular impact on vulnerable groups such as children and elderly people, cyclists and pedestrians."*

In the Department of Communications, Climate Action & Environment document *Cleaning Our Air – Public Consultation to Inform the Development of a National Clean Air Strategy* vehicle emissions are included as a key source of health impacts in Ireland (DOCCA&E, 2017).

As outlined in Chapter 13: Material Assets (Transport), an analysis and assessment of the impact of the Proposed Development on the surrounding road network was carried out using a traffic model of the affected junctions. The potential impact during operation is likely to be **negative, not significant** and **long term.**

Potential Impacts from Major Accident Hazards and/or Natural Disasters on Population and Human Health

The Proposed Development has been designed with consideration given to the health and safety risks of people living and working in the vicinity. The facility has been designed by skilled personnel in accordance with internationally recognised standards, design codes, legislation, good practice and experience.

As outlined in Section 5.3.3 there is a negligible risk of external natural disasters; including landslides, seismic activity, volcanic activity and sea level rise. There is a negligible risk of major accidents to occur at the facility due to the lack of proximity to Seveso/Control of Major Accident Hazards (COMAH) Regulations sites.

As stated in the FRAs submitted with the planning documentation, the majority of the site is located in Flood Zone C, with a small area of the south east corner of Site 4 located within Flood Zone B, and SUDS features will be implemented into the surface water drainage system, which will allow storage of water for the 1 in 100 year storm event plus a 20% allowance for climate change. The FRAs conclude that the residual risk is low.

The risk identification undertaken in Chapter 17: Risk Management (Major Accidents & Disasters) identified a risk of an incident at the nearby Kishoge Train Station which required further risk assessment. This risk was given a score of 5, indicating a scenario that is 'extremely unlikely' to occur, but which would have 'catastrophic' consequences should it do so. According to the risk matrix in Table 17.7 of Chapter 17, this indicates a 'low risk scenario'.

The potential effect of Operational Phase of the Proposed Development on Population and Human Health, in respect of Major Accident Hazards or Natural Disasters, is therefore ***imperceptible*** and unlikely .

5.5.1.3 Do-Nothing Impact

If the Proposed Development were not to proceed, the subject land would for the short term remain as it is in which case there is no potential for the positive impacts associated with increased housing supply, increased local amenities and community spaces.

In the long-term, the lands would be developed in time for another similar development in line with the 'Primarily Residential' land use area designation of the site under the Clonburris SDZ Planning Scheme (2019).

5.5.2 Cumulative

5.5.2.1 Construction Stage

The cumulative impact of other developments detailed in Section 5.4.2 on human health during the construction stage are included in the assessments contributing to Section 5.5.1.1 Proposed Development. Section 5.7.4 provides further detail on residual cumulative impacts.

5.5.2.2 Operational Stage

The cumulative impact of other developments detailed in Section 5.4.2 on human health during the operational stage are included in the assessments contributing to Section 5.5.1.2 Proposed Development. Section 5.7.4 provides further detail on residual cumulative impacts.

5.6 Mitigation Measures (Ameliorative, Remedial or Reductive Measures)

Mitigation measures proposed to minimise the potential impacts on human health in terms of Land and Water Emissions, Noise and Vibration, Air Quality, Landscape and Visual and Traffic are discussed in the relevant sections of Chapters 7, 8, 9, 10, 12 and 13 of this EIAR respectively.

The mitigation measures discussed below are applicable to Site 3, Site 4 and Site 5.

5.6.1 Construction Stage

Any perceived nuisance impacts on the immediate local population will be short-term in nature due to the length of the construction process for the Proposed Development. The remedial and mitigation measures to address the potential effects on population and human health from the Proposed Development have been assessed within the corresponding chapters of the EIAR.

5.6.1.1 Businesses and Residences

The construction contractor will establish a feedback mechanism for residents to report any concerns or issues related to construction activities. The construction contractor will engage with the community to address concerns and provide updates on mitigation efforts.

5.6.1.2 Landscape, Amenity and Tourism

Consideration shall be given to mitigate any potentially adverse construction related impacts on the surrounding lands, including erecting visually sensitive site hoarding.

The construction compounds, temporary car parking and storage facilities etc will be located sensitively to avoid any visually sensitive areas. As the site is located on the edge of the existing urban areas, the visual elements associated within construction would be considered part of the urban landscape.

5.6.1.3 Land and Water Emissions

As detailed in Chapter 7: Land, Soil & Geology of this EIAR, all mitigation measures set out in Section 7.6.2 will be implemented during the construction phase for the protection of human health and populations as a result of changes to the geological and soil environment.

The mitigation measures set out in Chapter 8: Water, Section 8.6.2, will be implemented during the construction works for the protection of human health and populations. These measures relate to erosion and sediment control, and accidental spills and leaks.

5.6.1.4 Air Quality

In order to mitigate the potential dust-related health impacts during the construction phase, dust related mitigation measures have been provided in Chapter 10: Climate (Air Quality) of this EIAR. The mitigation measures draw on best practice guidance from Ireland (DCC (2018), DLRCC (2022)), the UK (IAQM (2024), BRE (2003), The Scottish Office (1996), UK ODPM (2002)) and the USA (USEPA, 1997).

5.6.1.5 Noise and Vibration

Best practice noise and vibration control measures will be employed by the contractor during the construction phase in order to avoid exceedance of the adopted construction noise threshold values at the nearest NSLs. The best practice measures set out in BS 5228 (2009 +A1 2014) Parts 1 and 2 will be complied with. Further details are provided in Chapter 9 Air (Noise & Vibration).

5.6.1.6 Traffic and Transportation

All construction activities on-site will be governed by a Construction Traffic Management Plan (CTMP), the details of which will be agreed in full with South Dublin County Council prior to the commencement of construction activities on site. The principal objective of the CTMP is to ensure that the impacts of all building activities generated during the construction of the Proposed Development upon both the public (off-site) and internal (on-site) workers environments, are fully considered and proactively managed / programmed respecting key stakeholders thereby ensuring that both the public's and construction workers' safety is maintained at all times, disruptions minimised and undertaken within a controlled hazard free / minimised environment.

5.6.1.7 Major Accident Hazards and Disasters

There are no specific mitigation measures required during construction in respect of Major Accident Hazards and Disasters.

5.6.2 Operational Stage

5.6.2.1 Business and Residences

Once construction works are completed there are no specific mitigation measures required in respect of local businesses and residences.

5.6.2.2 Landscape, Amenity and Tourism

Once construction works are completed there are no specific mitigation measures required in respect of amenity and tourism.

Grass cutting, tree, shrub and hedge maintenance and leaf and litter clearing are the primary landscape operations required, these will be supported with soil aeration, fertiliser application and tree, shrub and hedgerow assessment to maintain and management the primary landscape design features.

5.6.2.3 Land and Water Emissions

The design of proposed site levels (roads, buildings etc.) has been carried out in such a way as to replicate existing surface gradients where possible, therefore replicating existing overland flow paths, and not concentrating additional surface water flow in a particular location.

SuDS features such as permeable paving parking spaces, bioretention areas and brown roofs to provide additional storage and promote infiltration of and treatment of surface water run-off have been provided in landscaped areas.

5.6.2.4 Air Quality

Once construction works are completed there are no specific mitigation measures required in respect of air quality.

5.6.2.5 Noise and Vibration

With consideration at the detailed design stage, the selection and location of plant items within the Proposed Development and associated buildings will ensure that noise emissions from any mechanical and electrical building services plant do not exceed the relevant noise criteria outlined in Chapter 9.

Once construction works are completed there are no specific mitigation measures required in respect of noise and vibration.

5.6.2.6 Traffic and Transportation

A management regime will be implemented by the development's management company to control access to the on-site car parking spaces thereby actively managing the availability of on-site car parking for residents of the development.

A Mobility Management (MMP) is to be rolled out with the aim of guiding the delivery and management of a range of coordinated initiatives by the scheme promotor. The MMP ultimately seeks to encourage sustainable travel practices for all journeys to and from the Proposed Development site. The MMP will be developed in partnership with SDCC to specifically consider the opportunities of shaping all journeys and promoting sustainable transport habits at the proposed residential scheme.

5.6.2.7 Major Accident Hazards and Disasters

Once construction works are completed there are no specific mitigation measures required in respect of Major Accident Hazards and Disasters.

5.7 Residual Impact of the Proposed Development

The residual impacts discussed below are applicable to Site 3, Site 4 and Site 5.

5.7.1 Construction Stage

5.7.1.1 Residual Impacts on Businesses and Residences

No mitigation is proposed regarding this factor as impacts will be positive. The construction stage, therefore, is considered to have the potential to have a **positive, slight, short term** residual impact on the economy and employment of the local and wider area.

5.7.1.2 Residual Impacts on Landscape, Amenity and Tourism

Site hoarding will be implemented to screen ground level works, however, this is not effective once buildings grow above the ground floor, or in views from elevated vantage points. As such, the residual impact on populations from landscape, amenity and tourism remains **negative, slight** to **moderate** and **short term** during the construction phase.

5.7.1.3 Residual Impacts of Land and Water Emissions on Human Health

The implementation of the mitigation measures detailed in Section 5.6.1 (and Section 7.6.2 of Chapter 7: Land, Soils and Geology, and Section 8.6.2 of Chapter 8: Water) will ensure that the potential impacts on human health and populations during the construction phase are adequately mitigated. The residual effect on human health and populations from land and water emissions during the construction phase is considered to be **neutral, imperceptible** and **short-term**.

5.7.1.4 Residual Impacts from Air Quality on Human Health

Best practice mitigation measures are proposed for the construction phase of the Proposed Development, which will focus on the proactive control of dust and other air pollutants, to minimise generation of emissions at source. The mitigation measures that will be put in place during construction will ensure that the impact complies with all EU ambient air quality legislative limit values (set out in Directive 2008/50/EC), which are based on the protection of human health . Therefore, the predicted residual, dust-related, human health impact of the construction phase of the Proposed Development is **short-term, direct, negative, localised** and **not significant**.

5.7.1.5 Residual Impacts from Noise on Human Health

The application of binding noise limits and hours of operation, along with implementation of appropriate noise and vibration control measures (outlined fully in Section 9.6.1 of Chapter 9 Air (Noise and Vibration)), will ensure that noise and vibration impact is kept to a minimum as far as practicable. Residual noise impacts during the site clearance and ground preparation phase only at NSLs adjacent to Site 3 are likely to slightly exceed the CNT, with a **short term, negative** and **moderate** to **significant** residual impact. All remaining NSLs and phases of construction works will be effectively controlled by the proposed mitigation measures, with a **short term, negative** and **not significant** residual effect. The residual effect of construction vibration is **short term, negative**, and **not significant.**

5.7.1.6 Residual Impacts from Traffic on Human Health

Provided the mitigation measures and management procedures outlined in the Construction Management Plan (CMP) and the Construction Traffic Management Plan (CTMP) are incorporated during the construction phase, the residual impact upon the local population from traffic is predicted to be **short-term** in nature and **not significant, negative** in terms of effect.

5.7.1.7 Residual Impacts from Major Accident Hazards and/or Natural Disasters on Population and Human Health

Taking into account the mitigation measures outlined in Section 5.6 it is predicted that there will be no residual impacts with regard to the construction phase major accident hazards and/or natural disasters on population and human health.

5.7.2 Operational Stage

5.7.2.1 Residual Impacts on Businesses and Residences

No mitigation is proposed regarding this factor as impacts will be positive. The operational stage, therefore, is considered to have the potential to have a **positive, moderate, long term** residual impact on businesses and residences of the local population.

5.7.2.2 Residual Impacts on Landscape, Amenity and Tourism

No mitigation is required regarding amenity and tourism during the operational stage due to the positive nature of the identified potential impacts.

The proposed landscaping design is considered appropriate in terms of its character, zoning and context, and will ensure the residual effect on populations from changes to landscape character will be **positive, slight** to **moderate,** and **long term.**

5.7.2.3 Residual Impacts of Land and Water Emissions on Human Health

The implementation of the mitigation measures detailed in Section 5.6.2 will ensure that the potential impacts on human health and populations once the Proposed Development is constructed and operational are adequately mitigated. The residual effect on human health and populations from land and water emissions during the operational stage is considered to be **neutral, imperceptible** and **long term**

5.7.2.4 Residual Impacts from Air Quality on Human Health

Dispersion modelling of traffic emissions at sensitive receptors in proximity to impacted road links during the operational phase indicate pollutant emissions will be in compliance with the TII assessment criteria which is based on the impacts in the opening year. Therefore, residual impacts to human health related to air quality will be **long-term, localised, negative** and **imperceptible.**

5.7.2.5 Residual Impacts from Noise on Human Health

Following the implementation of the mitigation measures set out in Section 5.6.2, the predicted change in noise levels associated with additional traffic is expected to be **negative, not significant** and **long-term** along the surrounding road network. The impact from building services and plant is predicted to be **neutral, imperceptible** and **long term**.

5.7.2.6 Residual Impacts from Traffic on Human Health

As outlined in Chapter 13 Material Assets (Transport), with the implementation of a management regime and the Mobility Management Plan, the residual effect will be **negative, not significant** and **long term**.

5.7.2.7 Residual Impacts from Major Accident Hazards and/or Natural Disasters on Population and Human Health

It is predicted that there will be no residual impacts regarding operational phase major accident hazards and/or natural disasters on population and human health.

5.7.3 Worst Case Impact

The precautionary principle has been applied throughout this assessment.

5.7.4 Cumulative

5.7.4.1 Construction Stage

In a worst-case scenario, multiple developments in the area could be developed concurrently or overlap in the construction phase and contribute to additional impacts in terms of traffic, dust, and noise.

The implementation of mitigation measures within each chapter and detailed in Section 5.6.1., as well as the compliance of adjacent developments with their respective planning permissions, will ensure there will be minimal cumulative potential for change in soil quality or the natural groundwater regime during the construction phase of the Proposed Development.

Contractors for the Proposed Development will be contractually required to operate in compliance with a project-specific CEMP and Construction Traffic Management Plan, which will include the mitigation measures outlined in this EIAR. The construction phase for the overall development of the applicant owned lands would be restricted by the same binding limits for noise, dust, and emissions to water.

According to the IAQM guidance (2024), if the construction phase of the Proposed Development coincides with the construction phase of any other permitted projects within 500 m of the site, there is a possibility of cumulative dust impacts occurring at any nearby sensitive receptors. Should simultaneous construction phases occur, it would lead to cumulative dust soiling and dust-related impacts on human health, specifically localised to the works area associated with the proposed works. However, provided the dust mitigation measures outlined in Section 5.6.1, are implemented throughout the construction phase of the Proposed Development, significant cumulative dust impacts are not predicted. The predicted residual cumulative air quality impacts during the construction phase are **short-term, direct, negative,** and **slight**.

In terms of construction noise, there is potential for a temporary increase in cumulative construction noise if construction works on the three sites within the development take place concurrently, or other developments occur at the same time. Residual cumulative effects related to the construction phase, post-mitigation, are likely to be **not significant.**

The assessment of construction stage traffic outlined in Section 5.5.1.1 above incorporated traffic generated from cumulative committed developments. Th cumulative impact is therefore also **negative, not significant** and **short term**.

5.7.4.2 Operational Stage

The potential cumulative impacts of the Proposed Development during the operational phase in terms of Air Emissions, Noise generation and Traffic generation in the context of the Permitted Development have been considered in Chapter 10: Climate (Air Quality), Chapter 9: Air (Noise and Vibration) and Chapter 13: Material Assets (Transport). The assessments indicate that the Proposed Development is not likely to result in significant adverse impacts on Human Health either alone or in combination with any likely future projects.

There is the potential for cumulative impacts to air quality during the operational phase as a result of traffic associated with other existing and permitted developments within the area. The traffic data provided for the operational stage air quality assessment included cumulative traffic associated with existing and permitted developments in the wider area as required. The impact is predicted to be **long-term, localised, direct, negative** and **imperceptible** with regards to air quality.

With regard to operational noise, noise generated from additional traffic on the surrounding road network has the greatest potential for additional noise generation. Traffic volumes assessed in Section 5.6.2 above take account of the additional traffic from other permitted developments and therefore the traffic noise assessment presented is already assessing the cumulative impact. This assessment has concluded there will be **no significant** noise impact due to operational traffic.

The assessment of operational stage traffic outlined in Section 5.5.1.2 above incorporated traffic generated from cumulative committed developments. Th cumulative impact is therefore also **negative, not significant** and **long term**.

5.7.4.3 Worst Case Impact

The precautionary principle has been applied throughout this cumulative assessment.

5.8 Monitoring

The monitoring discussed below is applicable to Site 3, Site 4 and Site 5.

5.8.1 Construction Stage

The construction Contractor will prepare a detailed CEMP that will include all mitigation measures set out within this EIAR and any subsequent planning conditions relevant to the Proposed Development. It will also set out in detail the overarching vision of how the construction Contractor of the Proposed Development will manage the site in a safe and organised manner. The Contractor will appoint a competent person who will prepare and maintain the noise, vibration, dust, and groundwater monitoring plan.

Additional monitoring requirements are set out in Chapter 7: Land, Soil & Geology, Chapter 8: Water, Chapter 9: Air (Noise & Vibration), Chapter 10: Climate (Air Quality), Chapter 12: Landscape and Visual Impact Assessment and Chapter 13: Material Assets (Transport) of this EIAR.

5.8.2 Operational Stage

No additional monitoring other than that which is set out in Chapter 7: Land, Soil & Geology, Chapter 8: Water, Chapter 9: Air (Noise & Vibration), Chapter 10: Climate (Air Quality), Chapter 12: Landscape and Visual Impact Assessment and Chapter 13: Material Assets (Transport) of this EIAR is required.

5.9 Reinstatement

This is not applicable to Chapter 5 of this EIAR.

5.10 Difficulties Encountered / Forecasting Methods

No particular difficulties were encountered in preparing this assessment.

There are uncertainties in relation to assessing impacts on individuals or communities due to the lack of individual health data and the difficulty in predicting effects, which can only be based on general guidance and assumptions.

Forecasting methods and methodology, if any, are set out within the specialist chapters that this assessment relies upon.