CHAPTER 04:

HUMAN HEALTH AND POPULATION

04

CHAPTER CONTENTS

4.0 HUMAN HEALTH AND POPULATION

4.1 INTRODUCTION

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

The EU (2017) *Guidance on the preparation of the Environmental Impact Assessment Report* outlines that human health is a very broad factor that is be 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), notes 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 (EPA, 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 Environmental Impact Assessment Report (EIAR). The likely significant impacts on with 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 EIAR chapters:

- Chapter 5 – Land, Soils, Geology and Hydrogeology;
- Chapter 6 - Hydrology;
- Chapter 8 - Air Quality;
- Chapter 10 - Noise and Vibration;
- Chapter 12 - Traffic and Transportation; and
- EIAR Volume 3 - Heritage, Townscape, Landscape and Visual Impact Assessment

Where these topics are dealt with in further detail elsewhere in this EIAR, the relevant chapters have been cross referenced in this chapter to provide the Planning Authority with a context for their determination.

The assessment of other health and safety issues that are carried out 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 Directive, Floods or Nuclear Safety Directives. In keeping with the requirement of the amended Directive, an EIAR considers the results of such assessments without duplicating them.

4.2 METHODOLOGY

4.2.1 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 health effects relevant to the Proposed Development as they relate to the relevant study area.

The description of the sensitivity, magnitude, and significance, outlined within 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 within Section 3.7 of the 'Guidelines on information to be contained in Environmental Impact Assessment Reports' (EPA, 2022).

4.2.2 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 2016 Census Data (CSO) Made available from https://www.pobal.ie/
- Pobal HP Deprivation Index based on 2022 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/

4.2.3 Study Area

There is no specific guidance available on an appropriate study area to focus the assessment of existing land use and/or permitted projects. The research area has been established using expert judgement and based on the accessibility of data and taking into consideration 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 that only 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 further detail in the corresponding expert assessments that set out the chapters within this EIAR.

The project being considered is not expected to have Regional, National, or International, or Transboundary impacts on Human Health. 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 the use of Electoral Divisions (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 selection of ED within the study area has included ED that are either entirely contained withing or partially within 1 km of the Proposed Development site. In the case of the Proposed Development, the site is located within the North Dock C ED (268109), and within 1km of the development site are the EDs of North City (268106), Ballybough A (268009), Mountjoy A (268104), North Dock A (268107), North Dock B (268108), Mansion House A (268096), Mansion House B (268097) and South Dock (268143).

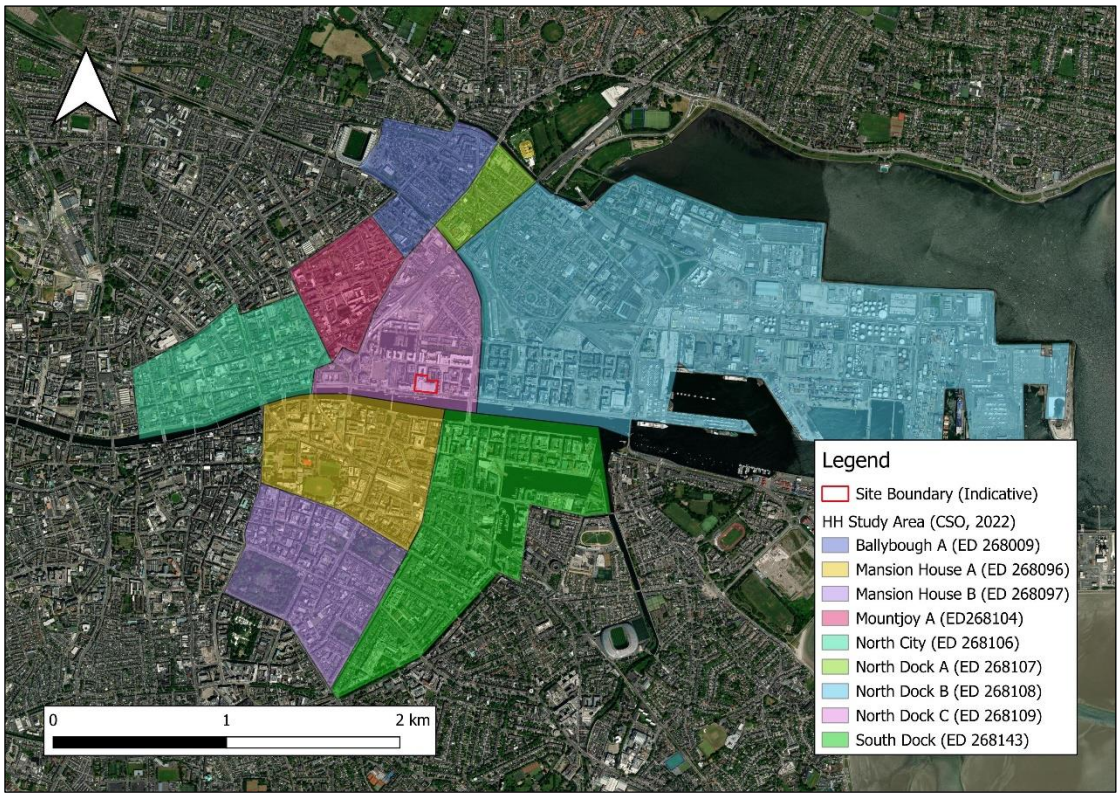

Figure 4.1 *Location of the Proposed Development within the Study Area*

4.2.4 Population Impact Assessment Categories

4.2.4.1 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 conceptual model of the different components of sensitivity (Figure 4.2). 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 availably 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.

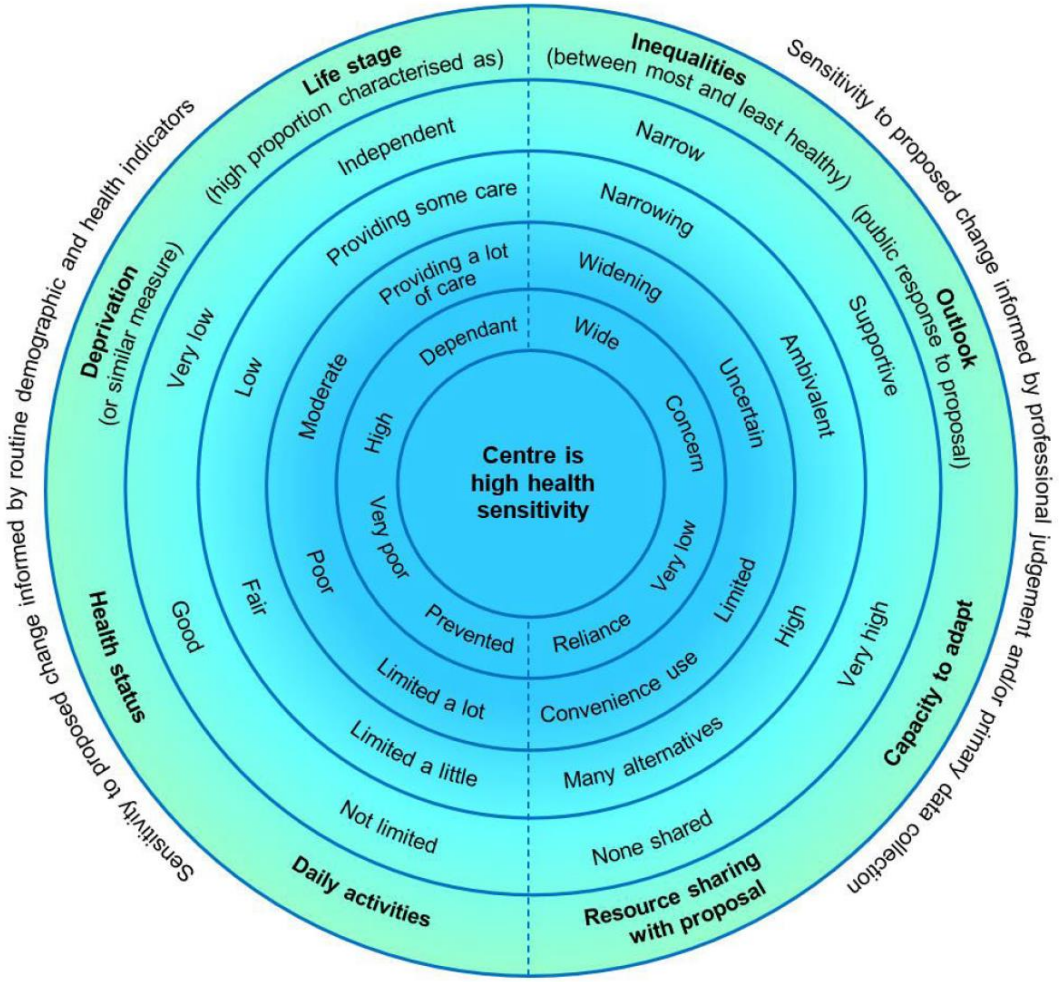

Figure 4.2 *Health sensitivity: conceptual model (Source: Health Impact Assessment Guidance (IPH, 2021))*

4.2.4.2 Magnitude of Impact

Magnitude considers the characteristics of the change which would affect the receptor because of the proposal. The Health Impact Assessment Guidance (IPH, 2021) sets out a conceptual model of the different components of sensitivity (Figure 4.3). 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.

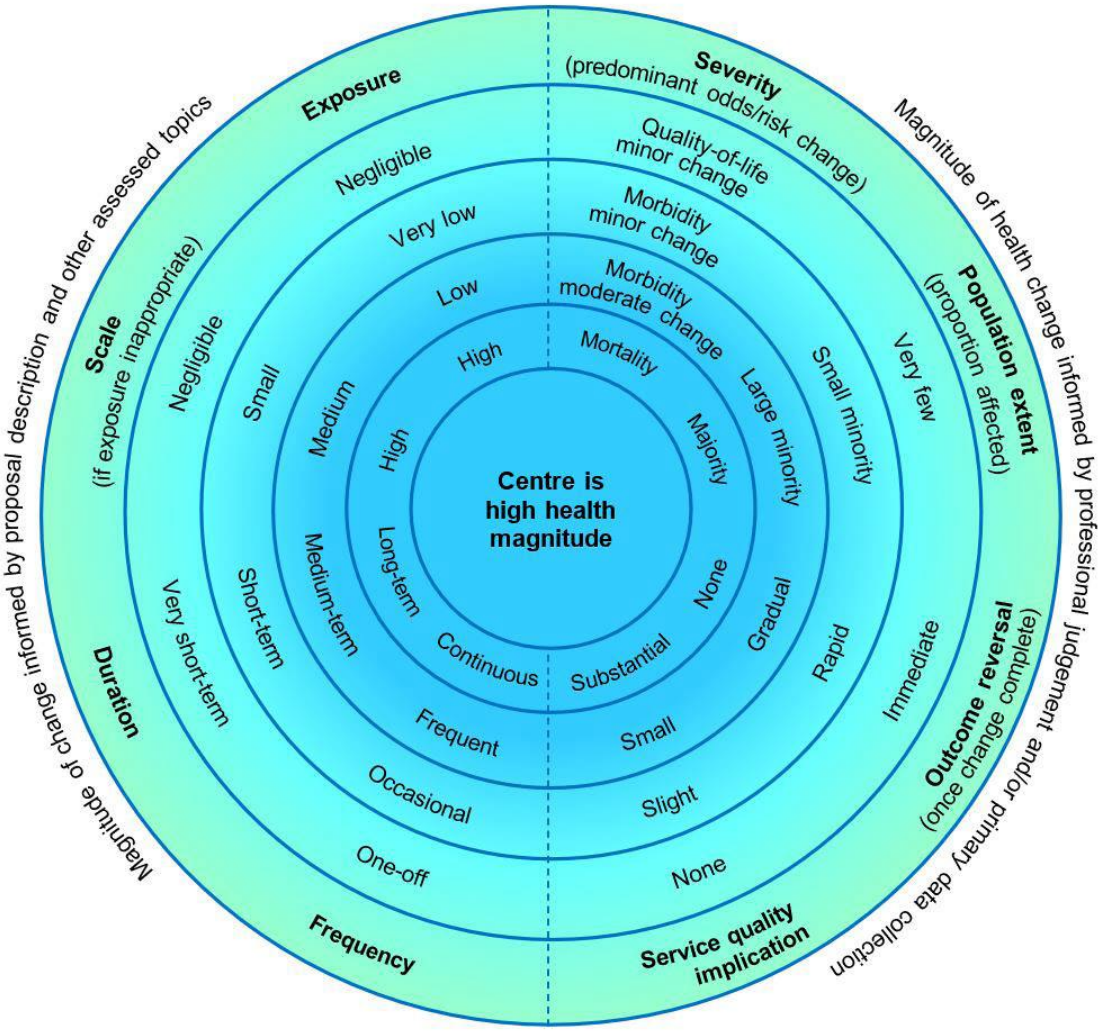

Figure 4.3 *Health magnitude: conceptual model (Source: Health Impact Assessment Guidance (IPH, 2021))*

4.2.4.3 Significance of Effects

Significance relies on informed, expert judgement about what is important, desirable, or acceptable with regards to changes triggered by the proposal in question. The assessment of the significance of effects in this assessment is a professional appraisal and has been 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 considers 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 Section 4.2.1 and Section 4.2.2 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.

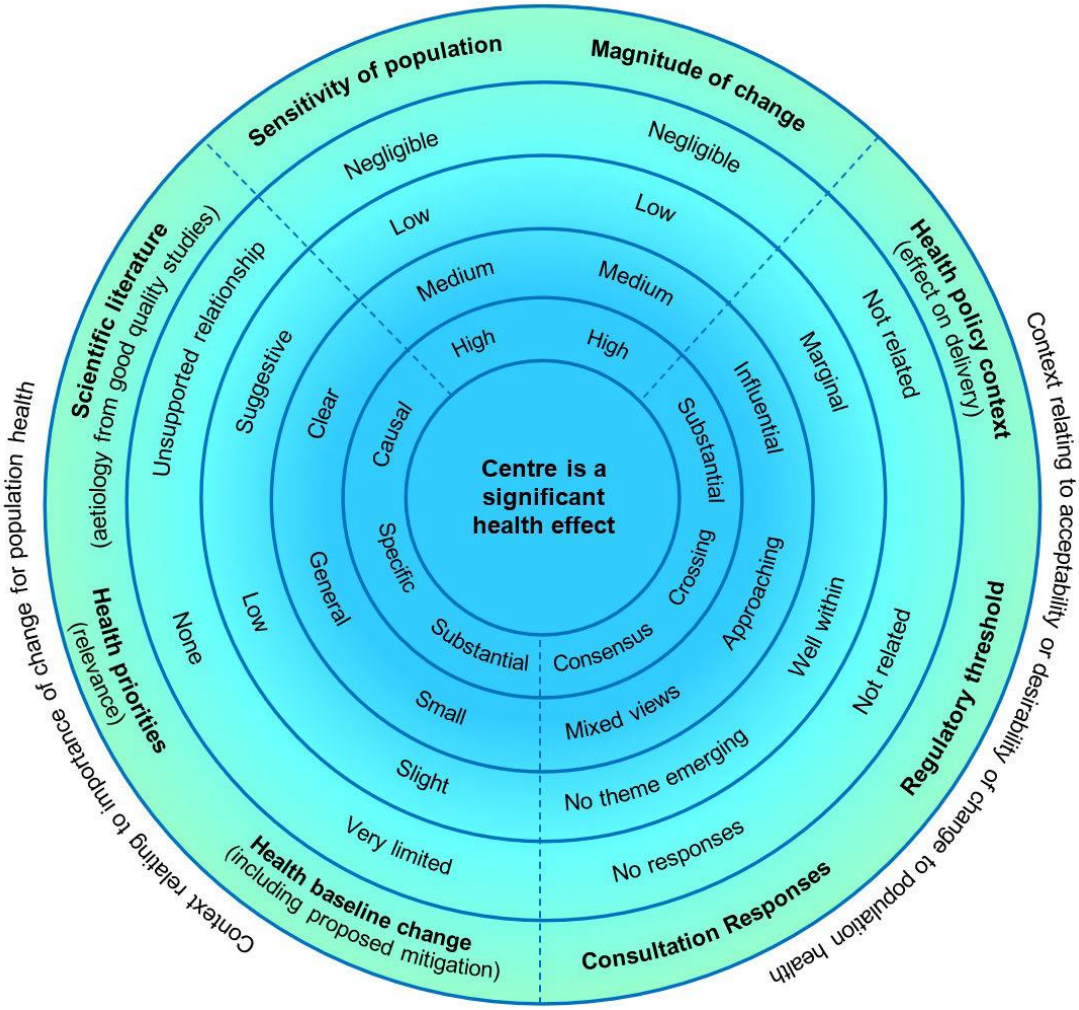

Figure 4.4 *Health significance: conceptual model*

4.2.5 Difficulties Encountered

No difficulties were encountered in preparing the population 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.

4.3 RECEIVING ENVIRONMENT

4.3.1 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 that 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 Planning Authority with a context for this assessment.

4.3.1.1 Population

The most recent census of population was carried out by the CSO on the 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 4.1 denotes the population change of the State and the electoral divisions which make up the study area for the census years 2016 and 2022. The latest census data (2022) shows that the populations in Mountjoy A ED, South Dock ED, North City and North Dock B ED saw a higher population growth as compared with the Republic of Ireland (ROI). North Dock C ED, North Dock A ED and Ballybough A ED also saw population growth, but lower than that of the ROI. Mansion House A ED and Mansion House B ED saw population decrease as compared with that of the ROI (Table 4.1).

Table 4.1 *Population changes at National, County and Electoral Division level from 2016 – 2022 (Source: www.cso.ie)*

Area	Population for Census Year		% Change 2016-2022
	2016	2022	
State - Republic of Ireland	4,761,865	5,149,139	+8.1%
North Dock C	4,214	4,328	+2.7%
Mansion House A	4,665	4,298	-7.9%
Mansion House B	1,311	1,021	-22.1%
Mountjoy A	5,389	7,374	+36.8%
North City	5,654	6,749	+19.4%
South Dock	7,004	8,320	+18.8%
North Dock A	1,365	1,406	+3.0%
North Dock B	7,695	10,173	+32.2%
Ballybough A	3,718	4,004	+7.7%

4.3.1.2 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 that shows the 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 that are measured by ten key socio-economic indicators from the Census of Population.

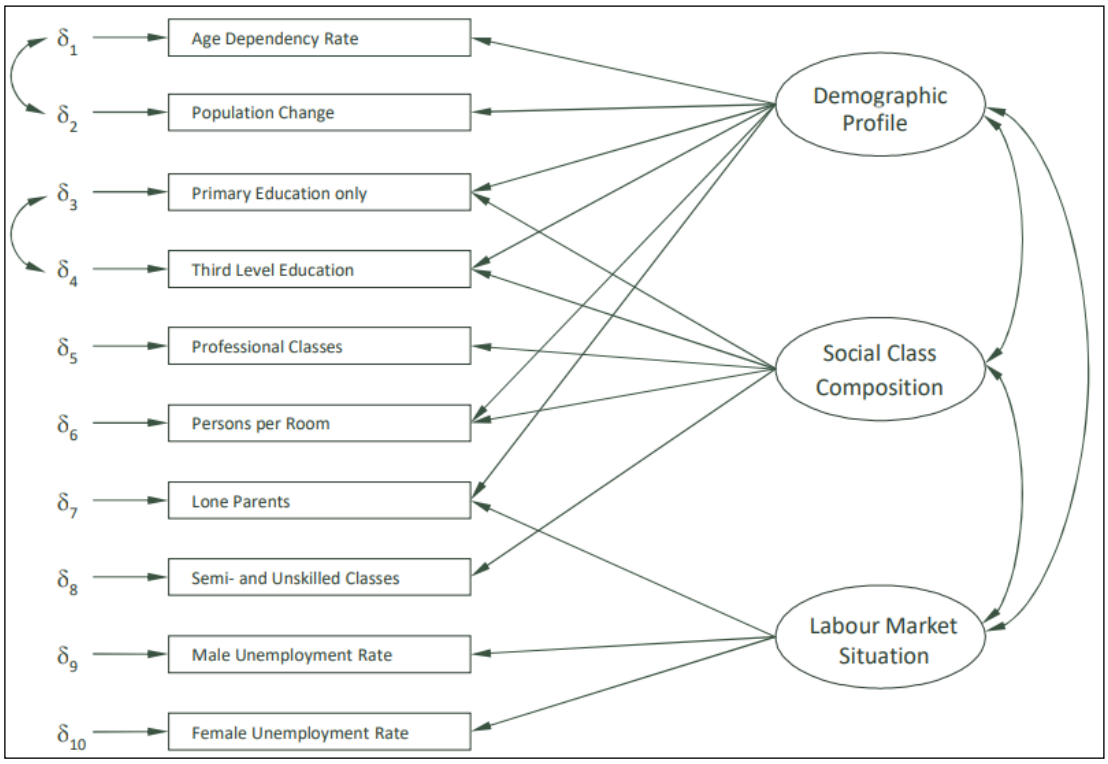

Figure 4.5 *Basic Model of the Pobal HP Deprivation Index*

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 4.2 below.

To make a uniform assessment using the conceptual model as set out in Figure 4.2 above a relative Population Sensitivity the Deprivation Score of 'Very disadvantaged', or 'Extremely disadvantaged' would represent a high sensitivity. Conversely, a 'Extremely affluent' or 'Very affluent' would represent a very low sensitivity.

Table 4.2 *Pobal HP Index Relevant Index Score labels (Source: Pobal HP Deprivation Index)*

Deprivation Score	Pobal HP Description	Sensitivity of Population
> 30	Extremely affluent	Very Low
20 to 30	Very affluent	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

The data in in Table 4.3 shows the Pobal HP Deprivation Index Relevant Index Scores for the Study Area based on the 2022 Census. Pobal have not released deprivation scores at the national level for 2022, so the Dublin County score has been utilised for

comparison here instead. These figures show for the year 2022 that the study area is 'Marginally Below Average' to 'Affluent' compared to Dublin County, which is 'Marginally Above Average'. This indicates a Low to Moderate Population Sensitivity (Deprivation) within the study area.

Table 4.3 *Deprivation Score within the Study Area (Pobal HP Deprivation Index, 2022 Census)*

Area	Deprivation Score	Pobal HP Description
Dublin County	2.69	Marginally Above Average
North Dock C	1.18	Marginally Above Average
Mansion House A	-2.02	Marginally Below Average
Mansion House B	12.83	Affluent
Mountjoy A	-4.08	Marginally Below Average
North City	6.43	Marginally Above Average
South Dock	11.48	Affluent
North Dock A	5.23	Marginally Above Average
North Dock B	8.52	Marginally Above Average
Ballybough A	-5.55	Marginally Below Average

4.3.1.3 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 dependants. 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. High dependency ratio can also indicate if 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 ratio is 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 4.4 below. From these dependency ratios we can tell that the study area is less dependent when compared with the national average. This indicates a largely 'independent' study area as compared with 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, and out of the home during the day, and would therefore be less likely to be impacted by a development within the area as compared to a more dependant population.

Table 4.4 *Age Dependency Ratio within the Study Area (Pobal Geo-Profiling, 2022 Census)*

Area	Age Dependency Ratio for Census Year	
	2016	2022
State - Republic of Ireland	52.70	53.22

North Dock C	15.78	19.96
Mansion House A	20.81	20.45
Mansion House B	15.34	20.76
Mountjoy A	17.20	22.85
North City	12.05	19.16
South Dock	13.39	17.79
North Dock A	23.95	22.97
North Dock B	18.91	19.36
Ballybough A	28.37	24.25

4.3.1.4 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 4.5 below shows the self-reported measure of population health within the Study Area compared to ROI. This shows the area predominately self-reports their health as 'Very Good 'in-line with national trends.

Table 4.5 *Self-reported measure of population health (CSO, 2022 Census)*

Area	% population describing their general health					
	Not Stated	Very Bad	Bad	Fair	Good	Very Good
State - Republic of Ireland	6.7%	0.3%	1.4%	8.6%	29.7%	53.2%
North Dock C	16.1%	0.3%	1.7%	8.1%	29.2%	44.5%
Mansion House A	20.9%	0.4%	1.9%	8.1%	27.1%	41.3%
Mansion House B	29.8%	0.0%	0.7%	4.3%	20.1%	44.9%
Mountjoy A	31.5%	0.4%	1.7%	7.1%	24.7%	34.4%
North City	43.2%	0.3%	1%	4.8%	21.9%	28.8%
South Dock	14.2%	0.2%	0.8%	5.7%	25. 6%	53.3%
North Dock A	15.9%	0.4%	1.8%	8.4%	30.1%	43.3%
North Dock B	17.7%	0.3%	1.3%	6.6%	25.9%	48.4%
Ballybough A	16.3%	0.7%	2.8%	9.8%	27.6%	42.7%

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

Table 4.6 details the number of persons with a disability compared to the total population of the ROI. The data shows that seven (7 no.) EDs within the study area have a lower % of Persons with a disability than the national average, indicating that for persons within the area there are relatively limited restrictions on daily activity. Two (2 no.) EDs within the study area have a higher % of Persons with a disability than the national average, indicating that there is a slight increase of restrictions on daily activity.

Table 4.6 *Persons with a disability (CSO, 2022 Census)*

Area	Persons with a disability	Population	% Persons with a disability
State - Republic of Ireland	1,109,557	5,149,139	21.5%

North Dock C	867	4328	20%
Mansion House A	914	4298	21.2%
Mansion House B	123	1021	12.0%
Mountjoy A	1,206	7374	16.3%
North City	786	6749	11.6%
South Dock	1,425	8320	17.1%
North Dock A	346	1406	24.6%
North Dock B	1,805	10173	17.7%
Ballybough A	932	4004	23.2%

4.3.1.6 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.

Seven (7 no.) EDs in the study area (North Dock C, Mountjoy A ED, North City ED, South Dock ED, North Dock A ED, North Dock B ED, and Ballybough A ED) have seen population growth between the 2016 and 2022 census. Two (2 no.) EDs in the study Mansion House A ED, Mansion House B ED have seen a population decrease between the 2016 and 2022 census. The Pobal HP Deprivation Index shows the area be Marginally Below Average to Very Affluent indicating a Very Low to Moderate Population Sensitivity (Deprivation) within the study area.

There is a low age dependency ratio, therefore a large proportion of the population is within working age, thus considered as largely independent and judged to be not sensitive to change. The information presented above for the study area shows, a high proportion [28.8 – 53.3%] describes their health status as 'Very Good' and low proportion as 'bad' or 'very bad'. The data shows that seven EDs within the study area have a lower % of persons with a disability than the national average, indicating that for persons within the area there are relatively limited restrictions on daily activity. Two EDs within the study area have a higher % of persons with a disability than the national average, indicating that there is a slight increase of restrictions on daily activity.

Taking these factors into consideration, it can be concluded that the population in the study area exhibits a relatively lower sensitivity to change, categorising it with regard to the criteria set out in Figure 4.2 as having a low to medium population sensitivity.

4.3.2 Location and Character of the Local Environment

The purpose of describing the location and character of the local environment provides useful information on the current local community and usage within the study area provide the Planning Authority with a 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. In this context it includes local business, residential areas, education, health facilities, emergency services, and places of worship, and green infrastructure.

Furthermore, the baseline identifies tourism and landscape amenity within the study Area which provides an indication on 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.

While a general study area of ED's 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.

4.3.2.1 Community and Social Infrastructure within the Study Area

Residential and Employment areas

The Proposed Development site is c. 0.9 hectares and is the site of the current Citigroup Building, at 1 North Wall Quay, Dublin 1 D01 T8Y1. The site is located in Dublin Docklands and is bound by North Wall Quay to the south and Commons Street to the west. Existing commercial and residential buildings adjoin the site to the north and east. Clarion Quay runs immediately adjacent to the northern boundary of the site.

The Proposed Development is located within lands designated *Zone Z5 – City Centre*, a zoning *to consolidate and facilitate the development of the central area, and to identify, reinforce, strengthen, and protect its civic design character and dignity*.

The proposed use is permitted under this zoning designation in the DCC Development Plan 2022 – 2028. Chapter 14 of the DCC Development Plan 2022-2028 states that '*Ideally, a mix of uses should occur both vertically through the floors of buildings as well as horizontally along the street frontage'* – this landmark office development will contribute to the vertical expansion of the city.

The subject site is strategically located at 1 North Wall Quay, fronting onto the River Liffey along the full length of its southern boundary. The site is in the city centre and within walking distance to the main areas of the city including the Docklands to the east, Grafton Street to the southwest, and O'Connell Street to the west. The site has direct access onto the Quays and is located to the east of the Custom's House and west of the Convention Centre, which are both also located on the north quays.

The closest shopping areas of note are the Grafton Street area, located c. 1 km southwest of the site, and the Henry Street area, located c. 1 km northwest of the site.

The nearest residential settlement occurs to the immediate east of the site in the mixed use development comprising residential and retail units. The land use in the immediate surrounding area is a mix of commercial office, hospitality, retail, education and residential buildings.

The surrounding area is currently evolving with numerous developments completed, underway or on stream. Such developments include the A & L Goodbody office development currently underway, located at 25 North Wall Quay c. 90m east of the Proposed Development.

Education, Childcare, Schools

There are several childcare facilities and schools in the vicinity of the Proposed Development including:

- Giraffe Childcare IFSC – 40 m north
- Giraffe Childcare National College of Ireland – 180 m northeast
- St Laurence O'Toole's CBS – 412 m north
- St Laurence O'Toole's National School – 330 m northwest
- Safari Childcare Hanover Street – 380 m southeast
- City Quay National School – 386 m southwest

- Hyde and Seek Creche and Montessori – 497 m southwest.
- Saint Andrews Childcare Centre – 622 m southeast
- Trinity College Day Nursey – 662 m southwest
- St Laurence O'Toole's Special School – 634 m north
- Central Model Senior School – 738 m northwest
- St. Paul's Special School – 780 m northwest
- Holy Child Pre-School – 740 m northwest
- Rutland National School – 795 m northwest
- Scoil Chaoimhín – 850 m northwest

Healthcare Services

The Healthcare Services within the vicinity of the site is the Custom House Square Medical Centre, located c. 130 m north of the site.

There is one (1 no.) hospital within the study area, the Rotunda Hospital located c. 1.2 km northwest of the site.

Emergency Services

Dublin Fire Brigade Headquarters are located c. 615 m southwest of the site, and Store Street Garda Station is located c. 500 m northwest of the site.

Places of Worship

There are several places of worship in the vicinity of the development:

- Selah Church – 90m east
- Immaculate Heart of Mary Catholic Church – 395 m southwest
- St Laurence O'Toole's Church – 330 m northeast
- St Mark's Church – 505 m southwest
- Trinity Church Dublin – 580 m northwest
- St Andrew's Parish Church – 580 m south
- Grace Bible Fellowship Church – 622 m southwest
- Abbey Street Methodist Church (Dublin Central Mission) – 825 m west
- Immanual Church Dublin – 975 m west
- Dublin Church of Christ – 982 m southwest
- Our Lady of Lourdes Catholic Church – 822 m northwest
- St Marys Pro Cathedral – 900 north west

Green Infrastructure and Landscape Amenity, within the Study Area

The nearest noteworthy features for recreational use are Merrion Square Park, located c. 910 m south of the site, St. Stephen's Green park, located c. 1.2 km southwest of the site.

The River Liffey flows to the immediate south of the site, flowing east before discharging into Dublin Bay.

In terms of landscape amenity, the site is located immediately adjacent to North Wall Quay with a view of Dublin's streetscape along the quays to the east and west.

The site and its surrounds are zoned *'Z5 – City Centre'* a zoning '*to consolidate and facilitate the development of the central area, and to identify, reinforce, strengthen and protect its civic design character and dignity'.*

The subject site falls into the River Liffey Conservation Area (CA) located on the same road as the Custom House. The River Liffey CA traverses the city centre, providing unobstructed views of many different buildings and character areas. Important elements of this character are the quays, the bridges, the curving nature of the river, the changing vistas along its course, the canals, basins and other waterways and the historic built fabric.

The O'Connell Street Architectural Conservation Area (ACA) is located c. 725 m from the Proposed Development at its eastern boundary. The area is both architecturally and historically significant and the most formal of all public streets in the city. It is also a place of public congregation both for statuary and architectural monuments.

There are no protected structures or National Monuments on the site. The closest protected structures to the site are the Former Exise Store (RPS ref. 5070), located c. 70 m north of the Proposed Development and the three RPS associated with Custom House Quay located c. 110 m west of the Proposed Development; the CHQ Building (RPS ref. 2094), the Custom House Quay Bridge (RPS ref. 896) and George's Dock (RPS ref. 8841).

Full detail on the CA, ACA and protected structures relevant to the Proposed Development can be found in Volume 2 (Heritage, Townscape, landscape and Visual Impact Assessment) of this EIAR.

4.3.2.2 Tourism within the Study Area

There are several policies and objectives within the Dublin City Development Plan 2022-2028, all of which focus on the recognition of the strong tourism asset in Dublin City Centre and the need to ensure that it is capitalised and augmented. The Dublin City Council Development Plan 2022-2028 plan calls out the Irish Emigration Museum (EPIC) on Custom House Quay which is situated on the opposite of the River Liffey from the Proposed Development. The Dublin City Development Plan 2022-2028 notes:

> *'Dublin is the most important overseas tourism destination in the country and tourism is a central pillar of the city's economy. Fáilte Ireland estimate that in 2019 Dublin welcomed 6.3 million overseas tourists and 1.7 million domestic trips, generating a total spend of €2.4 billion and supporting 65,000 jobs. The sector however, has been significantly impacted by the COVID-19 pandemic and a significant effort will be required to rebuild tourism in Dublin'.*

The Proposed Development will provide a significant mixed-use asset to the Tara Street area. It is a stated policy (Policy CEE26) of the Dublin City Council Development Plan 2022-2028 *'To promote and facilitate tourism as one of the key economic pillars of the city's economy and a major generator of employment and to support the appropriate, balanced provision of tourism facilities and visitor attractions'* and *'To promote and enhance Dublin as a world class tourist destination for leisure, culture, business and student visitors and to promote Dublin as a setting for conventions and cultural events'.*

With respect to Strategic Regeneration Areas, and the subject lands in particular, it is an aim of the Dublin City Council Development Plan 2022-2028 to promote sustainable

tourism including cultural, recreational, and business tourism, and to support Fáilte Ireland in implementing the aims of its Docklands Visitor Experience Development Plan (2020) including various projects promoting sustainable tourism. As noted in the Dublin City Development Plan 2022-2028:

> *'Fáilte Ireland initiated a number of tourism ventures of note such as the Docklands Visitor Experience Development (VEDP) Plan, a Visitor Orientation Strategy and have collaborated with Dublin City Council to develop 'Dubline', an international quality, walking heritage trail from Parnell Square to Kilmainham'.*

The Fáilte Ireland Docklands VEDP sets out several catalyst projects one of which is the creation of a Custom House Visitor Centre. One of the desired outcomes of this visitor centre is to '*review options to develop the public realm to enhance The Custom House area and entrance to the Docklands*'. The subject lands are contained within the Custom House visual envelope and form a corner stone in the townscape setting for the Custom House, presenting an ideal opportunity to mark the entrance to the docklands.

4.3.2.3 Natural Resources within the Study Area

Geological Heritage, and Economic Resources

A review of Geological Survey Ireland online maps has shown that there are no extractive industries, active quarries, mineral localities, or areas of geological heritage within the study area.

Recreational Waters and Bathing Waterbodies

A review of Environmental Sensitivity Mapping online maps that includes the Register of Protected Areas (RPA) under the Water Framework Directive (WFD) has shown that there are no protected Recreational Waters or Bathing Waterbodies within the study area. The site is adjacent to the River Liffey, which ultimately flows to Dublin Port, where there are no RPAs located.

Drinking Water Resources

A review of Environmental Sensitivity Mapping and Geological Survey of Ireland online maps that includes the Water Abstraction locations, and Groundwater Source Protection Areas has been undertaken. This shows no Groundwater Source Protection Areas or Water Abstraction locations within the development site.

4.3.2.4 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.

Landslides, Seismic Activity and Volcanic Activity

There is a negligible risk of landslides occurring at the site and in the immediate vicinity due to the topography and soil profile of the site and surrounding areas. There is no

history of seismic activity in the vicinity of the site. There are no active volcanoes in Ireland so there is no risk of volcanic activity. Further detail is provided in Chapter 5 (Land, Soils, Geology and Hydrogeology).

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.

Proximity to Seveso or Industrial Emissions Sites

The potential for major accidents to occur at the facility has also been considered with reference to establishments registered with the Health and Safety Authority in accordance with the Control of Major Accident Hazards (COMAH) Regulations that implements the implements the Seveso III Directive.

The Health and Safety Authority (HSA) list of Notified Seveso Establishments, and the Environmental Sensitivity Mapping webtool (https://enviromap.ie/), have been used to identify if the Proposed Development falls within the consultation distance of any nearby Seveso Establishments. The closest Notified Seveso Establishments to the Proposed Development is the Upper Tier establishment Circle K Ireland Holding Ltd, located c. 1.4 km from the site. The Proposed Development site is not located within the consultation distance of any notified establishment; therefore, there are no implications for major accident hazards.

The site is not a Seveso facility and is not within the consultation distance of any Seveso facility. There are no significant risks in relation to the Proposed Development and Major Accident Hazards.

The closest Integrated Pollution Control (IPC) and Industrial Emissions (IE) licensed facilities to the Proposed Development site according to the EPA (2023) is the Brooks Thomas Limited (P0345-01) on Upper Mayor Street, Dublin 1 which is c. 0.85km from the Proposed Development site. Licensed facilities are required to comply with specific licence conditions, including monitoring and reporting on their emissions (such as emissions into the air, water, and soil), to ensure that they do not pose a risk to human health or the environment.

It is important to note that the proximity of a licensed facility does not necessarily mean that the Proposed Development will be impacted by their emissions. 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.

Risk of Flooding

The potential risk of flooding on the site was also assessed. As stated in Section 6.3.5 of Chapter 6 (Hydrology), a Site-Specific Flood Risk Assessment (FRA) has been prepared by CS Consulting for the Proposed Development site. The FRA notes the site is predominantly within Flood Zone C of the CFRAM fluvial flood extents. A minor a portion of the application area (along Clarion Quay, at the site's north-eastern boundary) is within Flood Zone B, but this is generally outside the development site proper.

The FRA also considers sources of tidal flooding and pluvial flooding. The assessment indicates that the subject site is largely within the area at risk from a 0.1% AEP tidal

flooding event (i.e. a 1-in-1000-year occurrence). The Dublin City Development Plan 2022–2028 Strategic Flood Risk Assessment includes a map of modelled pluvial flooding depths for a 3-hour duration rainfall event with 1% AEP. For such a rainfall event, this model indicates that the development site may experience pluvial flooding up to a depth of approximately 0.5m.

Works have been completed to aid in the defence of the quays from tidal flooding; these flood defences extend up to the Loop Line Bridge. These defences shall defend North Wall Quay from a potential 1-in-200-year extreme high tide. While there is the potential for flood defence failure, the completed defences provide an acceptable degree of tidal flooding risk mitigation. In addition, the nearest node point to the development site indicates the flood level for the 0.1% AEP is 3.12m AOD. Therefore, a freeboard of 500mm shall be provided above this level. The FFL of the Proposed Development shall therefore be 3.650m AOD.

The Proposed Development shall have a storm water attenuation system to address a 1-in-100-year extreme storm event, increased by 30% for predicted climate change effects. This shall significantly reduce the volume of storm water leaving the site during extreme storms, which in turn shall have the effect of reducing the loading on the existing public drainage system and reducing the risk of flooding on neighbouring sites due to runoff from the development site.

The FRA concludes that the Proposed Development is deemed to be suitable for the site location, as historical and potential flood routes have been reviewed and the likelihood of the development being subject to flooding is low, given the implementation of the mitigation measures described.

4.4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The purpose of this section is to provide an overview of the key relevant details of the construction phase and operational phase of the Proposed Development particularly in areas where potential impacts to human health and populations may occur. The information presented in this section is informed by the project design, but it is not a complete description of the Proposed Development. Therefore, it should be read in conjunction with the full development package. For a more comprehensive understanding of the Proposed Development, please refer to Chapter 2 of the EIA Report. Chapter 2 provides a detailed overview of the lifecycle of the project, including reference to the architectural and civil engineering, drawings, plans, reports, and other relevant documents to define the Proposed Development.

4.4.1 Construction Phase

Construction activities can generate noise and vibrations, dust emission have the potential to impact air quality, which can potentially impact the health and well-being of nearby residents and workers. Dust emissions will primarily occur because of site preparation works, earthworks and the movement of trucks on site and exiting the site. The construction phase may result in temporary disruptions to nearby businesses, residents, and public amenities.

The construction phase can result in increased traffic congestion, particularly during the delivery of construction materials and equipment. It is anticipated that for the duration of the works all access and egress for deliveries will be via a dedicated temporary access on Commons Street, at the site's western boundary, allowing vehicles to avoid the Quays where possible. In addition, one or more separate

pedestrian only entrance(s) to the site shall be installed, to segregate vehicular and pedestrian movements to and from site. Due to the site's city centre location and constrained nature, no personal carparking is to be provided on or near the site for construction personnel or for visitors.

4.4.2 Operational Phase

The proposed Office developments provide job opportunities for the local population, contributing to economic growth and stability. The proposed office space can accommodate a total staff population of c. 4,723 persons. In addition the building itself will have staffing requirements, including building/property management staff, reception, security, maintenance and landscaping, IT etc.

The proposed community, arts and cultural space can contribute to the cultural fabric of a community by providing spaces for artistic expression, creativity, and learning. They offer opportunities for tourism, and for the local population to engage with different forms of art, promoting intellectual stimulation and cultural understanding.

The proposed retail, café or restaurant unit, in addition to job opportunities for the local population, will provide an additional amenity for the local population. The Proposed Development will also provide a publicly accessible external landscaped community park along the eastern boundary of the site.

4.5 POTENTIAL IMPACTS OF THE PROPOSED DEVELOPMENT

The main potential impacts on population and human health from the Proposed Development are potential for spills/leaks, air emissions, noise, visual, and traffic impacts. The baseline environment, pollution pathways, relevant mitigation measures and residual impacts have been assessed in greater detail within the corresponding specialist chapters; Chapter 5 (Land, Soils, Geology and Hydrogeology); Chapter 6 (Hydrology); Chapter 8 (Air Quality), Chapter 10 (Noise and Vibration); Chapter 12 (Material Assets - Traffic and Transportation) and Volume 2 (Heritage, Townscape, Landscape and Visual Impact Assessment).

A summary of the main potential impacts as they are relevant to human health criteria during construction, commissioning, operation, and decommissioning of the Proposed Development is presented herein.

4.5.1 Construction Phase

4.5.1.1 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 8 – Air Quality
- Chapter 10 – Noise and Vibration
- Chapter 12 – Material Assets (Traffic and Transportation)
- Volume 2 – Heritage, Townscape, Landscape and Visual Impact Assessment

The potential increase in the temporary population of the area during construction as a result of the employment of workers from outside the Dublin City Centre 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, not significant, short term*** impact on the economy and employment of the local and wider area.

4.5.1.2 Potential Impacts on Landscape Amenity and Tourism

There will be no significant impacts on the local parks or the larger amenity areas. The Proposed Development will not create any wastewater discharge which could have a potential impact on local amenities or the local population. There is no loss of historic or culturally significant buildings or sites, as outlined in the Heritage Significance Report (Citydesigner, 2023) included as Appendix I of Volume 2 of this EIAR.

Construction activities can generate significant noise, dust, and air pollution. These factors can negatively impact the amenity and tranquillity of the surrounding environment. Construction projects in tourism-dependent areas like central Dublin can result in a decline in tourism appeal. Potential tourists may be deterred by the presence of ongoing construction, resulting in a negative perception of the destination. It is not anticipated the Proposed Development will have any significant impact on local tourism or shopping amenities, Construction activities can lead to increased traffic congestion and limited access to certain areas. This can impact the ease of travel for tourists, potentially causing frustration and affecting the overall tourism experience. It is noted that these impacts are likely to occurring during the construction working hours. The potential impact is ***negative, short term,*** and ***moderate***.

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. The potential impact varies with proximity to the Proposed Development site, with the potential impact on the closest receptors considered to be ***negative, moderate*** to ***substantial*** and ***short term.*** This impact reduces with distance from the site, with the potential impact on the furthest receptors considered to be ***negative, slight*** to ***very slight*** and ***short term.***

4.5.1.3 Potential Impact from Land and Water Emissions on Human Health

With reference to Chapter 5 (Land, Soils, Geology & Hydrogeology), a reduction in groundwater quality via unmitigated pollutants entering the soil or Dublin GWB 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. Furthermore, humans can also be exposed to petroleum hydrocarbons or other contaminants by inhaling the fumes / dust from contaminated soil. Depending on the type of contaminant and the level of exposure, soil contamination can have serious health implications.

None of the wells listed are categorised as domestic use. The area is serviced by Local Authority mains therefore it is unlikely that any wells are used for potable supply. The site is not located near any public groundwater supplies or group schemes. There are no groundwater source protection zones in the immediate vicinity of the site, due to the separation distance between the Proposed Development site and the nearest groundwater source protection zones there are no potential impacts on groundwater source protection zones (proposed site is outside of the zone of contribution of this supply).

Therefore, 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 6 (Hydrology), a reduction in water quality via unmitigated pollutants entering the Liffey Estuary (as set out in Section 6.5.1.2) 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. A review of Environmental Sensitivity Mapping online maps that includes the Register of Protected Areas (RPA) under the Water Framework Directive (WFD) has shown that there are no Recreational Waters, Bathing Waterbodies, or Surface Water Drinking RPA, located downstream in the Liffey Estuary.

The Dollymount Strand and Sandymount Strand bathing water areas may be indirectly hydrologically connected to the Proposed Development site but are located further away than the Liffey Estuary (c. 5.3 km and 2.6 km from the subject site, respectively); therefore, they were excluded from the assessment due to their distance from the development and significant dilution factor through its pathway.

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 ***negative***, ***imperceptible*** and ***short term***.

4.5.1.4 Potential Impact 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 350 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 Dublin Airport meteorological station meteorological data

indicates that the prevailing wind direction is westerly to south-westerly with generally moderate wind (see Section 8.3.1 of Chapter 8).

In line with the UK Institute of Air Quality Management (IAQM) guidance document '*Guidance on the Assessment of Dust from Demolition and Construction'* (2014) as referenced in Chapter 8 Air Quality (Section 8.3.3) the overall sensitivity of the area to dust soiling impacts is considered **medium** based on the IAQM criteria outlined in Table 8.6. Based on the IAQM criteria outlined in Table 8.7, the worst-case sensitivity of the area to human health is considered to be **low**.

In the absence of mitigation there is the potential for ***direct, short-term, negative*** and ***imperceptible*** impacts to human health from air quality.

4.5.1.5 Potential Impact 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 10 (Noise and Vibration) of this EIAR.

A variety of items of plant will be in use for the purpose of demolition, 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 10 - Noise and Vibration, in the absence of mitigation there is the potential for ***brief*** to ***short-term, Imperceptible*** to ***profound*** and ***negative*** impacts to human health as a result of noise emissions from construction activities at the closest Noise Sensitive Location (NSL) at the eastern, northern and western boundaries of the site.

It is appropriate to consider the relative increase in noise level associated with traffic movements on existing roads and junctions with and without the Proposed Development, given that traffic from the development will make use of the existing road network. The calculated change in traffic noise associated with the addition of construction related traffic is less than 1 dB (A) along all site access roads, therefore the potential related impact of additional noise generated by traffic is ***negative, imperceptible*** and ***short-term.***

The main potential source of vibration during the construction programme is associated with excavation into hard ground and potentially the requirement for rock breaking. The

likely levels of vibration from this activity is expected to be significantly below the vibration criteria for building damage. In terms of human response, there is potential for a ***negative, moderate, brief*** impact for building occupants within 20m of this activity using a 6 Tonne Breaker or equivalent.

4.5.1.6 Potential Impact 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 12 – Material Assets (Traffic and Transportation), the Proposed Development's construction phase shall generate vehicular traffic comprising Heavy Goods Vehicles (HGVs), Light Goods Vehicles (LGVs), cars, and bicycles, increasing traffic flows at nearby existing junctions.

It is also recognised that there is potential during the construction phase for construction-related activity to impact upon the surrounding road network in ways beyond junction operational performance. These further impacts would potentially take the form of surrounding roads being temporarily obstructed by stopped/parked construction vehicles or by delivery/loading operations, or their condition being temporarily degraded by the presence of dirt/debris originating from the construction site.

The overall potential construction-phase effect of the Proposed Development on the operation of the surrounding road network (in the absence of mitigation measures) is therefore considered to be ***negative, short-term,*** and ***moderate.***

4.5.1.7 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 4.3.2.4 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 FRA prepared by CS Consulting, the site is located predominately in Flood Zone C. A minor a portion of the application area (along Clarion Quay, at the site's north-eastern boundary) is within Flood Zone B, but this is generally outside the development site proper. 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 30% allowance for climate change.

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.

4.5.2 Operational Phase

4.5.2.1 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 nuisances; 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 EIA Report as follows:

- Chapter 8 – Air Quality
- Chapter 10 – Noise and Vibration
- Chapter 12 – Material Assets (Traffic and Transportation)
- Volume 2 – Heritage, Townscape, Landscape and Visual Impact Assessment

The Proposed Development will result in an ***imperceptible, positive*** and ***long term*** impact on the local population due to increased employment opportunities during the operation phases, through both the office space provided and the staffing requirements of the building itself.

4.5.2.2 Potential Impacts on Amenity and Tourism

The Proposed Development once operational will have no impact shopping amenities. The Proposed Development will not create any wastewater discharge which could have a potential impact on local amenities or the local population.

The Proposed Development design includes spaces dedicated to community, arts and cultural uses. These dedicated spaces include a 'Liffey Experience' attraction, consisting of an entrance area, foyer, exhibition area and interactive public gallery. This will serve as both an amenity of interest to the local population, as well as an attraction of interest to tourists visiting Dublin City. In addition, the Proposed Development design includes a publicly accessible external landscaped community park along the eastern boundary of the site. Therefore, the Proposed Development when operational will have a ***positive, not significant*** and ***long term*** impact on local tourism and amenities.

With reference to Volume 2 (Heritage, Townscape, Landscape and Visual Impact Assessment), the high quality design of the Proposed Development ensures that it is likely to complement and enhance the character, legibility and connectivity of the North Wall Quay area, and it is considered that the Proposed Development would add interest to North Wall Quay's regenerated waterfront. 22 no. viewpoints were analysed and the potential impacts of the Proposed Development on the local population are ***permanent*** and range from ***neutral*** (the significance of ***neutral*** impacts are ***very slight*** to ***moderate*** to ***positive*** (the significance of ***positive*** impacts are ***slight*** to ***substantial***)***.***

4.5.2.3 Potential Impact from Land and Water Emissions on Human Health

With reference to Chapter 5 (Land, Soils, Geology and Hydrogeology), there are no abstractions of ground water, or discharges of contaminated waters to ground proposed during the operational phase, therefore there is no potential for impact on drinking water resources. There is no sensitive economic, or historical geology at the site. The Basement Impact Assessment undertaken by CS Consulting Group (2024) confirms that proposed basement shall have no impact on existing lateral groundwater flows during the operational phase of the Proposed Development.

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 contamination of soil and groundwater are ***neutral***, ***imperceptible*** and ***long term***.

With reference to Chapter 6 (Hydrology), a reduction in water quality via unmitigated pollutants entering the Liffey Estuary 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, it is noted that there are no recorded Recreational Waters, Bathing Waterbodies, or Surface Water Drinking RPA, located downstream in the Liffey Estuary. However, yet unknown recreational, bathing or surface water abstractions may exist.

The potential for unmitigated off-site flooding because of the increased hardstanding areas, and due to the flood risk at the site (as set out in section 4.3.2.4) the Proposed Development has the potential to impact on human health, populations, and material assets, located downstream of the site.

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 ***negative***, ***not significant,*** and ***long-term***.

4.5.2.4 Potential Impact from Air Emissions on Human Health

As outlined in Chapter 8 (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 significantly 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 ***direct, long-term, negative*** and ***imperceptible***.

4.5.2.5 Potential Impact from Noise and Vibration Emissions 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 10 (Noise and Vibration) of this EIAR.

Once operational, the cumulative operational noise level will be required to be designed/attenuated to meet the relevant BS 4142 noise criteria for day and night-time periods at the nearest noise sensitive location. Given the baseline noise levels discussed in Section 10.3.1 of Chapter 10 (Noise and Vibration), it is recommended that cumulative plant noise from associated with the development does not exceed 45 dB $L_{Aeq,15min}$ at the façade of the closest residential buildings at night and do not contain audible tones at NSLs outside of the site. This is set to ensure no significant increase in the prevailing background noise level occurs at existing residential NSLs. At commercial facades, an operational noise limit of 50 dB $L_{Aeq,15min}$ is proposed.

During the detailed design, a review of any additional plant items with potential to emit noise to the surrounding environment will be reviewed and the BS 4142 (BSI 2019) will be used to derive suitable external noise for any residential and commercial premises with potential for plant noise impacts.

4.5.2.6 Potential Impact 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 detailed in Chapter 12 – Material Assets (Traffic and Transportation), the Proposed Development will result in negligible changes to the existing vehicular traffic flows on the surrounding street network, due to elements of the development's design such as restricted car parking provision, a significant secure bicycle parking provision, and ancillary facilities such as showers and lockers to support active travel modes.

However, there is also the potential during the development's operational phase for the surrounding road network to be affected in ways beyond junction operational performance. This relates primarily to waste collection and deliveries, which, if not properly managed, could result in adjacent streets being temporarily obstructed by stopped/parked servicing vehicles. There is also a risk of overspill car parking on surrounding streets by development occupants driving to work but not being able to park on site.

Therefore, in the absence of mitigation measures, there is the potential for a ***negative, slight*** and ***long term*** impact on human health and local populations as a result of additional traffic generation.

4.5.2.7 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 4.3.2.4 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 noted in Section 4.3.2.4, the site is located predominately in Flood Zone C. A minor a portion of the application area (along Clarion Quay, at the site's north-eastern boundary) is within Flood Zone B, but this is generally outside the development site proper. 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 30% allowance for climate change.

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

4.6 MITIGATION MEASURES

Mitigation measures proposed to minimise the potential impacts on human health in terms of Land and Water Emissions, Air Quality, Noise and Vibration, Landscape and Visual and Traffic are discussed in the relevant sections of Chapters 5, 6, 8, 10 and 12 of this EIAR respectively, and Volume 2 of this EIAR.

4.6.1 Construction Phase

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.

4.6.1.1 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.

4.6.1.2 Landscape Amenity and Tourism

As outlined in Volume 2 – Heritage, Townscape, Landscape and Visual Impact Assessment, Section 7.14 – 7.18, the mitigation of potential construction effects will follow industry best practice construction standards, such as the use of appropriate

hoarding. Site lighting would be designed to minimise light pollution on the surroundings of the site, using light sources of the minimum intensity required and ensuring that light is only use where needed.

4.6.1.3 Land and Water Emissions

All excavated materials will be visually assessed by suitably qualified persons for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of potential contaminants to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted/licensed waste disposal contractor. All sampling and soil handling will be undertaken by suitably qualified and trained persons using suitable personal protective equipment to avoid risks to human health.

The mitigation measures set out in Chapter 6 Hydrology, Section 6.6.1, will be implemented during the construction works for the protection of human health and populations. These measures relate to suspended solids, cement/concrete works, hydrocarbons and other construction chemicals, rainfall runoff and perched water, and wastewater management.

4.6.1.4 Air Emissions

In order to mitigate the potential dust-related health impacts during the construction phase, dust related mitigation measures have been provided in Chapter 8 Air Quality of this EIAR. The mitigation measures draw on best practice guidance from Ireland (DCC, 2018), the UK (IAQM (2023), BRE (2003), The Scottish Office (1996), UK ODPM (2002)) and the USA (USEPA, 1997). The measures relate to site management and maintenance, operating vehicles and machinery, waste management, demolition, earthworks and trackout.

4.6.1.5 Noise and Vibration Emissions

Best practice noise and vibration control measures will be employed by the contractor during the construction phase in order to avoid significant impacts at the nearest sensitive buildings. 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 10 (Noise and Vibration).

4.6.1.6 Traffic and Transportation

With reference to Chapter 12 Material Assets (Traffic and Transportation) Section 12.6.1, to minimise construction impacts upon the surrounding road network, a Construction Traffic management Plan will be in place during the construction phase. All HGV construction traffic to and from the site will follow a designated route, ensuring that heavy construction vehicles avoid sensitive streets to the greatest extent possible and travel as little as possible within the city centre. Construction personnel will be encouraged to make use of the available high-quality public transport links to the area and/or to commute by bicycle, to minimise private car trips to and from the site.

4.6.1.7 Major Accident Hazards and/or Natural Disasters

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

4.6.2 Operational Phase

4.6.2.1 Businesses and Residences

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

4.6.2.2 Amenity and Tourism

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

As outlined in Volume 2 – Heritage, Townscape, Landscape and Visual Impact Assessment, Section 2.86 – 2.88, the most appropriate form of mitigation is 'primary mitigation' where mitigation is fully incorporated into a series of iterations on the design of the new development. The Proposed Development would incorporate primary mitigation through its high-quality design. Potential impacts on views more widely would also be mitigated by high quality detailing and a sensitive approach to the visibility and use of materials and colour.

In this case, the scale, proportion and composition of the Proposed Development would embody not only mitigation, as outlined above, but also significant benefits in terms of enhancement. The qualities of the design would be such that its visibility and high quality of design would add to the townscape, making it more legible and creating a more characterful frontage along North Wall Quay.

4.6.2.3 Land and Water Emissions

The Proposed Development stormwater drainage network design includes sustainable drainage systems (SuDS), these measures by design ensure the stormwater leaving the site is of a suitable quality prior to discharge into the Liffey Estuary. SuDS are drainage systems that are environmentally beneficial, causing minimal or no long-term detrimental damage. These features include Green Blue Roofs which provides attenuation storage equating to a volume of approx. 139m^3 of water.

4.6.2.4 Air Emissions

With reference to Chapter 8 (Air Quality), no additional mitigation measures in respect of Air Quality are proposed for the operational phase of the Proposed Development.

4.6.2.5 Noise and Vibration Emissions

With due consideration as part of the detailed design process, this approach will result in the site operating within the constraints of the best practice guidance noise limits that have been adopted as part of the detailed assessment included in Chapter 10 (Noise and Vibration).

Changes to traffic flows will not result in a perceptible increase in noise level in the surrounding environment. Therefore, no mitigation measures are necessary in this case.

4.6.2.6 Traffic and Transportation

With reference to Chapter 12 Material Assets (Traffic and Transportation) Section 12.6.2, a Travel Plan Coordinator shall be appointed for the Proposed Development,

with the remit to implement and oversee an ongoing Workplace Travel Plan (WTP). In conjunction with the development's intrinsic mitigation measures (reduced car parking, significant bicycle parking, and ancillary facilities), this shall assist development occupants and visitors in making the most of sustainable transport opportunities and in avoiding single-occupant car journeys to and from the development site, which shall in turn reduce the likelihood of overspill parking on surrounding streets.

On the basis that the AM peak is often the busiest hour for servicing, the operation of the development will spread deliveries throughout the day wherever possible. Refuse collection will be undertaken outside of peak hours where possible, with the specific collection times being arranged with the private waste contractors to minimise the impacts on the operation of the site and of the surrounding street network.

4.6.2.7 Major Accident Hazards and/or Natural Disasters

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

4.7 MONITORING OR REINSTATEMENT MEASURES

4.7.1 Construction Phase

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 Chapters 5: Land, Soils, Geology and Hydrogeology, 6: Hydrology, 8: Air Quality, 10: Noise & Vibration, 12: Material Assets (Traffic and Transportation) of this EIAR and Volume 2: Heritage, Townscape, Landscape and Visual Impact Assessment of this EIAR.

4.7.2 Operational Phase

No additional monitoring other than that which is set out in Chapters 5: Land, Soils, Geology and Hydrogeology, 6: Hydrology, 8: Air Quality, 10: Noise & Vibration, 12: Material Assets (Traffic and Transportation) of this EIAR and Volume 2: Heritage, Townscape, Landscape and Visual Impact Assessment of this EIAR are required.

4.8 RESIDUAL EFFECTS OF THE PROPOSED DEVELOPMENT

4.8.1 Construction Phase

4.8.1.1 Businesses and Residences

The construction stage is considered to have the potential to have a ***positive, not significant, short term*** residual impact on the economy and employment of the local and wider area.

4.8.1.2 Landscape Amenity and Tourism

With reference to Volume 2 (Landscape and Visual), the mitigation measures set out in Section 4.6.1.2 are likely to have the greatest effect in the areas closer to the site, where hoarding would screen views of the construction activities related to the lower elements of the Proposed Development. The residual effect on the local population regarding the landscape and visual environment is considered to be ***negative, slight*** to ***moderate,*** and ***short term.***

The residual effect on local tourism from the construction phase of the Proposed Development will remain ***negative, moderate*** and ***short term.***

4.8.1.3 Land and Water Emissions

The implementation of the mitigation measures detailed in Section 4.6.1 (and Section 5.6.1 of Chapter 5 Land, Soils, Geology and Hydrogeology, and Section 6.6.1 of Chapter 6 Hydrology) 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***.

4.8.1.4 Air Emissions

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, 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 ***direct, short-term, negative*** and ***not significant***.

4.8.1.5 Noise and Vibration Emissions

The application of binding noise limits and hours of operation, along with implementation of appropriate noise and vibration control measures (outlined fully in Section 10.6.1 of Chapter 10 Noise and Vibration, will ensure that noise and vibration impact is kept to a minimum as far as practicable. Residual noise impacts during the construction phase will be ***negative, imperceptible*** to ***significant*** and ***brief*** to ***short-term*** at the closest NSLs. Vibration impacts during the construction phase will be ***negative, not significant to slight, and brief to temporary***.

4.8.1.6 Traffic and Transportation

Provided the mitigation measures outlined in Chapter 13 – Material Assets (Traffic and Transportation) and Section 4.6.1.6 are incorporated during the construction phase, the residual impact upon the local population from traffic is predicted to be ***short-term*** in duration, ***negative*** in nature and of ***slight*** significance.

4.8.1.7 Major Accident Hazards and/or Natural Disasters

There are no significant potential impacts on Human Health from Major Accident Hazards and/or Natural Disasters; therefore, there are no residual impacts.

4.8.2 Operational Phase

4.8.2.1 Businesses and Residences

No mitigation is proposed regarding this factor as impacts will be positive. The operational phase, therefore, is considered to have the potential to have a ***positive, imperceptible, long term*** residual impact on the local population.

4.8.2.2 Amenity and Tourism

With reference to Volume 2 (Heritage, Townscape, Landscape and Visual Impact Assessment), the mitigation against visual impacts for the Proposed Development are embedded in the design of the building, therefore the residual effects are unchanged from the potential impacts. The residual effects of the Proposed Development on the local population are ***permanent*** and range from ***neutral*** (the significance of ***neutral*** impacts are ***very slight*** to ***moderate*** to ***positive*** (the significance of ***positive*** impacts are ***slight*** to ***substantial***)***.***

No mitigation is proposed regarding impacts on local tourism or amenities as impacts will be positive. The operational phase, therefore, is considered to have the potential to have a ***positive, not significant, long term*** residual impact on the local population.

4.8.2.3 Land and Water Emissions

The implementation of the mitigation measures detailed in Section 4.6.2.3 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.***

4.8.2.4 Air Emissions

As detailed in Chapter 8 (Air Quality) Section 8.8.2, emissions of air pollutants during the operational phase are predicted to be significantly below the ambient air quality standards, which are based on the protection of human health. Therefore, residual impacts to human health related to air quality will be ***direct, long-term, negative*** and ***imperceptible.***

4.8.2.5 Noise and Vibration Emissions

Following the implementation of the mitigation measures set out in Section 4.6.2.5, the predicted change in noise levels associated with additional traffic is expected to be ***neutral, imperceptible*** and ***long-term*** along the existing road network. The impact from building services and plant is predicted to be ***neutral, not significant*** and ***long term.***

4.8.2.6 Traffic and Transportation

The assessment of the additional traffic movements associated with the Proposed Development during the operational phase is presented in Chapter 13 (Traffic and Transportation). With the implementation of these additional mitigation measures, the overall residual operational-phase effect of the Proposed Development on the operation of the surrounding road network shall be ***negative*** in nature, ***long-term*** in duration, but ***not significant****.*

4.8.2.7 Major Accident Hazards and/or Natural Disasters

There are no significant potential impacts on Human Health from Major Accident Hazards and/or Natural Disasters; therefore, there are no residual impacts.

4.9 CUMULATIVE IMPACTS OF THE PROPOSED DEVELOPMENT

The potential for cumulative impact of the Proposed Development with any/all relevant other planned or permitted developments as outlined in Chapter 2 (Description of the Proposed Development) are discussed in Sections 4.9.1 and 4.9.2 below for construction and operational phases.

The likely cumulative impact of the Proposed Development in conjunction with these cumulative developments upon health in relation to noise, dust generation, construction traffic, visual impacts, etc., associated with the works; have been assessed in the respective EIA Report Chapters.

4.9.1 Construction Phase

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 4.6.1; as well as the compliance of adjacent development 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 EIA Report. 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 (2014) should the construction phase of the Proposed Development coincide with the construction phase of any other development within 350 m then there is the potential for cumulative construction dust impacts. However, best practice dust mitigation measures will be implemented across the site which will avoid significant dust emissions. Provided these mitigation measures are in place for the duration of the construction phase of the Proposed Development significant cumulative dust impacts are not predicted.

As noted in Chapter 10 (Noise and Vibration), if construction activities at nearby sites are taking place concurrently with the construction of the Proposed Development, there is potential for cumulative noise impacts to occur. Due to the nature of construction works associated with the Proposed Development, noise levels from this site will dominate the noise environment when occurring in proximity to the noise sensitive locations along its immediate boundary. The noise contribution from other construction sites would need to be equal to those associated with the Proposed Development to result in any cumulative effect.

4.9.2 Operational Phase

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 8 Air Quality, Chapter 10 Noise and Vibration and Chapter 12 Material Assets (Traffic and Transportation). 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.

As stated in Chapter 8 – Air Quality, the impact to air quality during the operational phase of the Proposed Development will be ***direct, long-term, negative*** and ***imperceptible.*** Therefore, there is no potential for significant cumulative impacts with other development and the impact is predicted to be ***direct, long-term, negative*** and ***imperceptible***.

The noise limits set for off-site noise sensitive locations are designed to avoid any significant increase in the prevailing background noise environment. Operational noise limits included in Chapter 10 (Noise and Vibration) refer to cumulative noise from all fixed installations on site. The design of plant and other fixed installations will be progressed during the design stage to ensure the noise limits at off-site noise sensitive locations are not exceeded.

As outlined in Chapter 12 – Material Assets (Traffic and Transportation), planning permission is in place for a number of committed developments close to the subject site, some of which are currently under construction. All of these committed developments are on brownfield sites and are not expected to result in significant increases in the vehicular traffic flows near the subject development site. In terms of traffic and transportation, it is therefore considered that cumulative effects shall not differ from the Proposed Development's residual effects.

4.10 REFERENCES

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