

5 POPULATION & HUMAN HEALTH

5.1 INTRODUCTION

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

This chapter has been prepared by Marcelle Jordaan and reviewed by Truc Vo.

Marcelle Jordaan is an Environmental Consultant at AWN Consulting. She has experience preparing Population and Human Health Reports, EIA Reports, and EIA Screening Reports, as well as providing EPA IE licence support, compliance reporting, site visits, environmental audits, and ongoing environmental support to licensed sites across a range of developments. She works with clients across different sectors, including pharmaceutical plants, ICT facilities, and residential projects. She holds a BSc in Environmental and Biological Sciences, specialising in Environmental Microbiology, from North-West University, South Africa.

Truc Vo is a Senior Environmental Consultant at AWN Consulting and has over 15 years of experience working in the environmental field, especially in industrial emissions/integrated pollution control licencing, compliance report assistance, environmental impact assessment, life cycle analysis and GHG calculation. Truc holds a Bachelor of Science, a Master of Science in Environmental Engineering, and a PhD in Energy Engineering. Truc has worked in Ireland, Thailand and Vietnam.

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

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

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

The EPA Guidelines (2022) 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 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 7 – Land, Soils, and Geology;
- Chapter 8 – Water;
- Chapter 9 - Air Quality;
- Chapter 12 - Noise and Vibration;
- Chapter 13 – Landscape and Visual Impact; and
- Chapter 14 – Material Assets (Transport)

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.

5.2 ASSESSMENT METHODOLOGY

5.2.1 Relevant Legislation and Guidance

This chapter has been prepared in accordance with:

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports. Environment Protection Agency (EPA, 2022).
- Health Impact Assessment Guidance. Institute of Public Health (IPH), (IPH, 2021).
- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report, European Commission (EU, 2017).

This chapter follows these guidelines and will examine the 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).

5.2.2 Data Sources of information

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

- 2022 Census carried out by the Central Statistics Office (CSO) 03 April 2022. Made available from <https://www.cso.ie/en/>
- 2016 Census carried out by the Central Statistics Office (CSO) 24 April 2016. Made available from <https://www.cso.ie/en/>
- Pobal HP Deprivation Index based on 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/>

5.2.3 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 than only the site itself. Generally, the closer to the works, the greater the potential for impacts. Based on our professional experience with similar developments, and the sensitivity of the surrounding source-pathway-receptor human baseline, the majority of the potential 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 has been utilised. Electoral Divisions are the smallest legally defined administrative areas in the state; developed with the intention of producing areas roughly equivalent in both population and "rateable value" (CSO).

The Proposed Development site is located in the Local Authority area of Louth County Council (LCC), and in the ED of Castletown (North) (147008). The selection of additional ED within the study area has included ED that are either entirely contained within or partially within 1 km of the Proposed Development site. In the case of the Proposed Development, the ED's included alongside Castletown (North) are the EDs of Dundalk Rural (North) (147019) and Dundalk No. 1 Urban (147040).

5.2.4 Population Impact Assessment Categories

5.2.4.1 Assessment Sensitivity of Population

The assessment of the significance of an impact is a professional appraisal based on the sensitivity of the receptor and the magnitude of effect. Within any area, the sensitivity of individuals in a population will vary. The Health Impact Assessment Guidance (IPH, 2021) sets out a conceptual model of the different components of sensitivity (Figure 5.1). It uses criteria (segments) and indicative classifications (levels) to explore, and explain, a finding of sensitivity. The conclusion may be summarised as a high, medium, low, or negligible sensitivity to change.

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

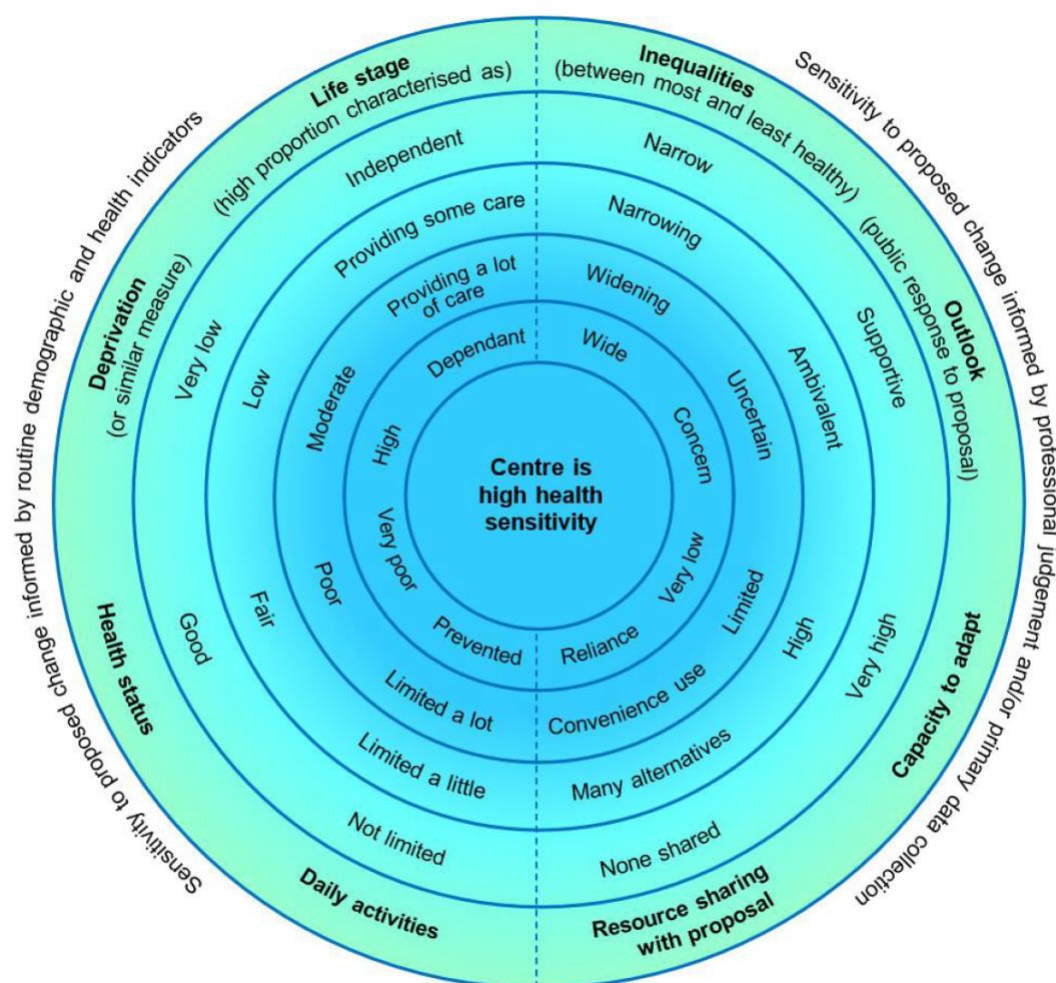


Figure 5.1: Health sensitivity: conceptual model (Source: Health Impact Assessment Guidance (IPH, 2021))

5.2.4.2 Magnitude of Impact

Magnitude considers the characteristics of the change which would affect the receptor because of the proposal. The Health Impact Assessment Guidance (IPH, 2021) sets out a conceptual model of the different components of sensitivity (Figure 5.2). Again, this model provides different components of magnitude. It uses criteria (segments) and indicative classifications (levels) to explore, and explain, a finding of magnitude. The conclusion may be summarised as a high, medium, low, or negligible magnitude of change.

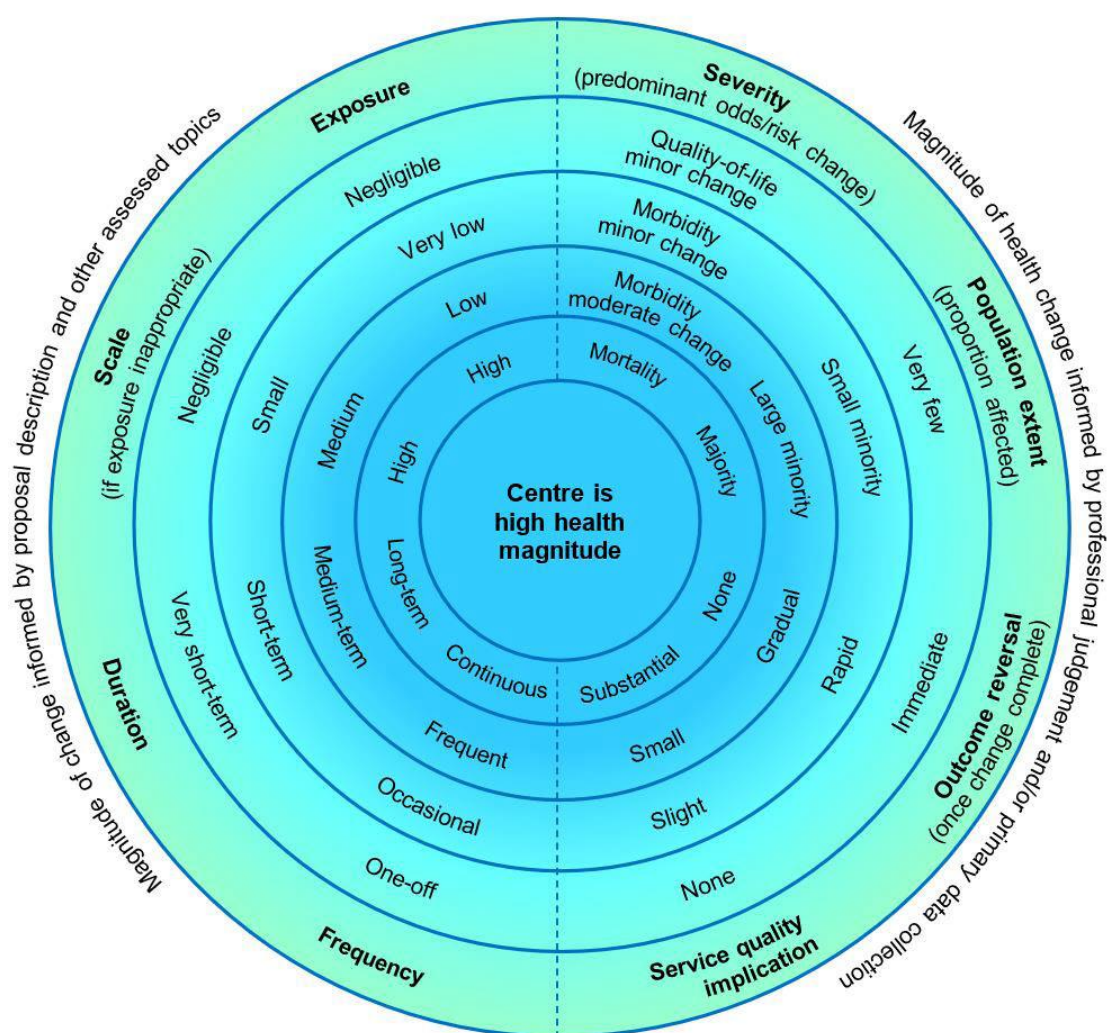


Figure 5.2Health magnitude: conceptual model (Source: Health Impact Assessment Guidance (IPH, 2021))

5.2.4.3 Significance of Effects

Significance relies on informed, expert judgement about what is important, desirable, or acceptable with regard to changes triggered by the proposal in question. The assessment of the significance of effects in this assessment is a professional appraisal 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 whether 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 5.2.4 above. This EIA assessment typically relies on regulatory thresholds, where there would be formal monitoring by regulators, to set out the acceptability or desirability of change to population health.

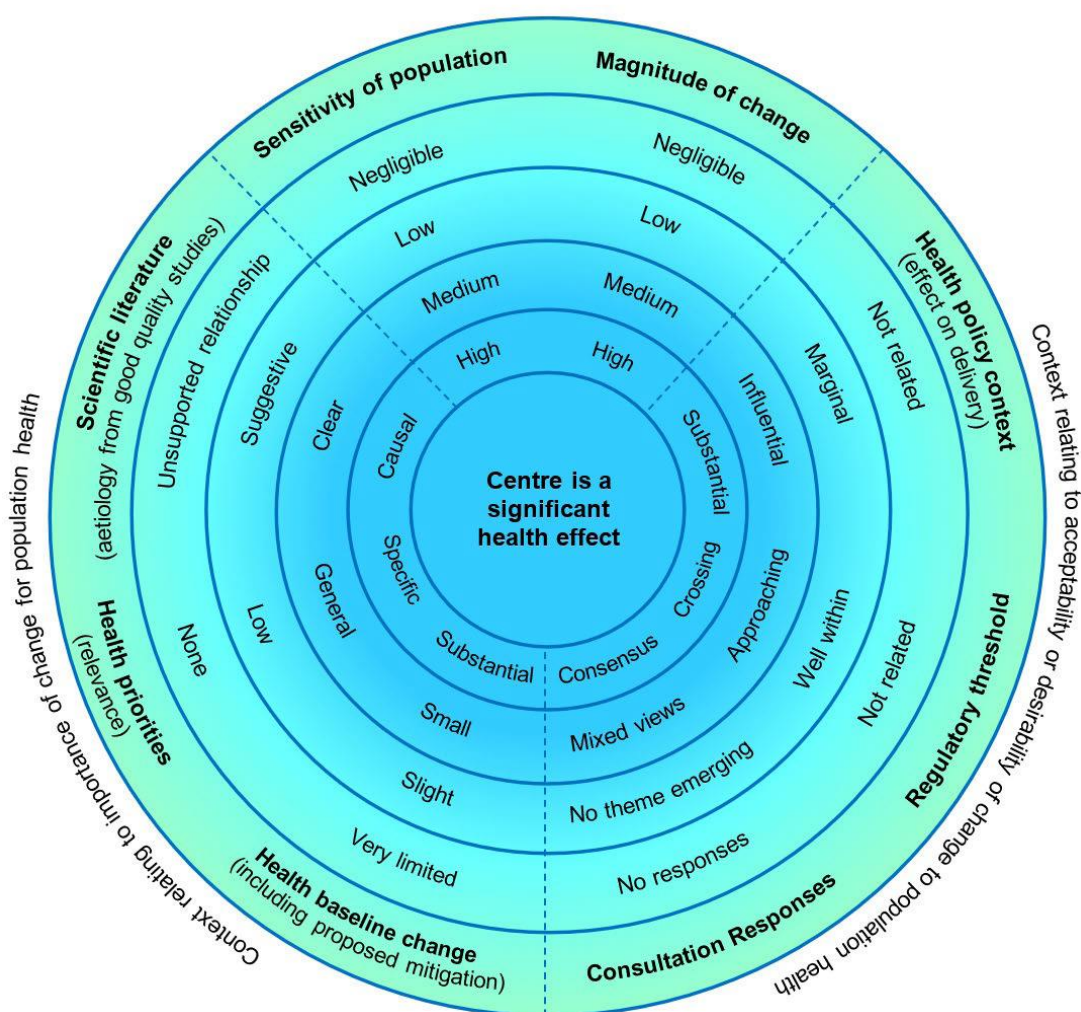


Figure 5.3 Health significance: conceptual model

5.2.4.4 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.

5.3 RECEIVING ENVIRONMENT

5.3.1 Population Health Sensitivity within the Study Area

The purpose of the population health sensitivity assessment is to identify the likely sensitivity of the local population and its capacity to absorb change. It is considered that for the purpose of this assessment the 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.

5.3.1.1 Population

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

Table 5.1 presents the population changes in the State and in the electoral divisions (EDs) that comprise the study area for the 2016 and 2022 census years. The latest census data (2022) indicates that Dundalk No. 1 Urban ED experienced slightly higher population growth compared to the national average (Republic of Ireland). In contrast, Castletown (North) and Dundalk Rural (North) show significant population decreases relative to national trends.

However, these EDs cannot be accurately analysed using percentage change statistics alone, as all have undergone boundary changes between 2016 and 2022. In the case of Dundalk Rural (North), the data shows a 64.6% population decrease, but this is not a true reflection of population decline. The original Dundalk Rural ED, which had a population of 19,265 in 2016, was subdivided into Dundalk Rural (North) and Dundalk Rural (South) prior to the 2022 Census.

Similarly, the Castletown ED was split into Castletown (North) and Castletown (South), making direct comparison with 2016 figures unreliable. There was also a minor boundary adjustment in Dundalk No. 1 Urban ED, further limiting the accuracy of these comparisons.

Area	Population for Census Year		% Change 2016-2022
	2016	2022	
State - Republic of Ireland	4,761,865	5,149,139	+8.1%
Castletown (North)	4,264	3,447	-19.2%
Dundalk Rural (North)	19,265	6,830	-64.6%
Dundalk No. 1 Urban	2,176	2,380	+9.4%

Table 5.1: Population changes at National, County and Electoral Division level from 2016 – 2022 (Source: www.cso.ie)

5.3.1.2 Deprivation

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

Deprivation statistics for Ireland are available from the Pobal HP Deprivation Index 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.

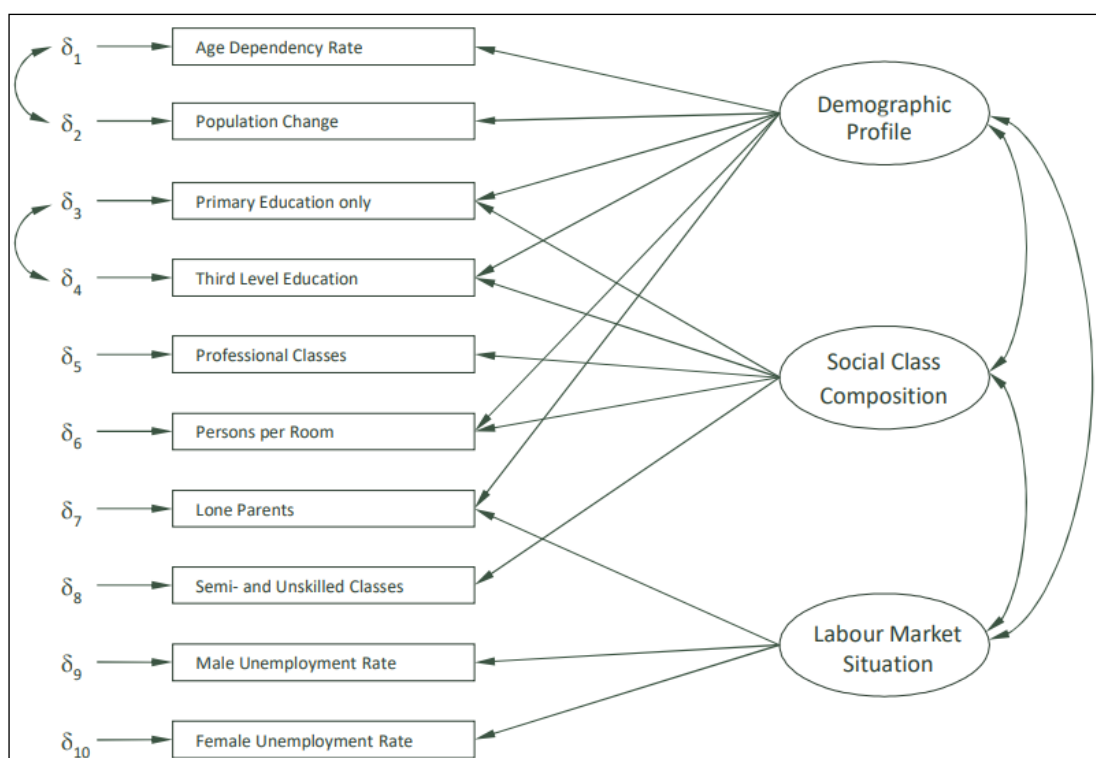


Figure 5.4 Basic Model of the Pobal HP Deprivation Index

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

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

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

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

The data in Table 5.3 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 Louth County score has been utilised for comparison here instead. The figures for 2022 show that the study area is 'Marginally Below Average' to 'Disadvantaged' compared to Louth County, which is 'Marginally Below Average'. This indicates a Moderate Population Sensitivity (Deprivation) within the study area.

Area	Deprivation Score	Pobal HP Description
Louth County	-3.59	Marginally Below Average
Castletown (North)	-10.76	Disadvantaged
Dundalk Rural (North)	-7.59	Marginally Below Average
Dundalk No. 1 Urban	-12.58	Disadvantaged

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

5.3.1.3 Life Stage (Age Dependency)

The Health Impact Assessment Guidance (IPH, 2021) outlines that life-course analysis is often used in public health and reflects differing health sensitivities and needs at different ages. Typically, children and older people are particularly sensitive to change, including due to being 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 the 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 the 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 5.4 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' population within the 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 the 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 dependent population.

Area	Age Dependency Ratio for Census Year	
	2016	2022
State - Republic of Ireland	52.70	53.22
Castletown (North)	35.50	35.22
Dundalk Rural (North)	35.24	35.14
Dundalk No. 1 Urban	34.76	35.21

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

5.3.1.4 Health Status (General Health)

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

Table 5.5 presents self-reported health status within the Study Area compared to the national average (ROI). The data shows that the majority of the population in the area reports their health as 'Good' to 'Very Good', broadly in line with national trends, though at slightly lower rates than the national average.

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%
Castletown (North)	9.58%	0.75%	2.96%	11.69%	29.27%	45.75%
Dundalk Rural (North)	14.39%	0.32%	1.89%	10.19%	28.38%	44.82%
Dundalk No. 1 Urban	12.90%	0.50%	2.69%	14.08%	33.32%	36.51%

Table 5.5 Self-reported measure of population health (CSO, 2022 Census)

5.3.1.5 Ability to perform daily activities

People's ability to perform day-to-day activities is relevant to population sensitivity, particularly where there are changes in access to services or community amenities. Persons with disabilities can also be more susceptible to 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 5.6 presents the number of persons with a disability relative to the total population of the Republic of Ireland (ROI). The data indicates that one ED (Dundalk Rural (North)) has a lower percentage than the national average. Conversely, two Eds (Castletown (North) and Dundalk No. 1 Urban) within the study area have a higher percentage of persons with a disability than the national average, suggesting a slightly higher level of activity limitations among residents.

Area	Persons with a disability	Population	% Persons with a disability
State - Republic of Ireland	1,109,557	5,149,139	21.5%
Castletown (North)	927	3,447	26.9%
Dundalk Rural (North)	1,448	6,830	21.1%
Dundalk No. 1 Urban	706	2,380	29.7%

Table 5.6 Persons with a disability (CSO, 2022 Census)

5.3.1.6 Summary of Population Health Sensitivity

The sensitivity of the surrounding area has been assessed using data from the Central Statistics Office (CSO) and Pobal.

Census data from 2016 and 2022 indicate population changes within the study area's EEDs; however, these are primarily due to boundary adjustments rather than actual demographic trends. Notably, Dundalk Rural and Castletown EDs were subdivided, and Dundalk No. 1 Urban ED experienced minor boundary changes, limiting direct comparison across years.

The Pobal HP Deprivation Index categorises the area as ranging from 'Marginally Below Average' to 'Disadvantaged', indicating moderate population sensitivity in terms of deprivation.

The age dependency ratio is low, meaning a large proportion of the population is of working age, suggesting a higher degree of self-sufficiency and resilience to change. Health data shows that 36.51% to 45.75% of the population describe their health as 'Very Good', while a low proportion report 'Bad' or 'Very Bad' health status.

Two EDs within the study area report a higher proportion of persons with a disability than the national average, indicating slightly greater restrictions on daily activity for some individuals.

Taking these factors into account, the population within the study area is considered to have a Low to Moderate sensitivity to change, in line with the criteria set out in Figure 5.2.

5.3.2 Location and Character of the Local Environment

The purpose of describing the location and character of the local environment is to provide useful information on the current local community and usage within the study area and 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 of current intrinsic values placed on the area for local, national, and international users that may be impacted by the Proposed Development.

The local environment also includes areas of natural resources that relate to populations and human health that may be impacted by the Proposed Development, including 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.

5.3.2.1 Community and Social Infrastructure within the Study Area

5.3.2.1.1 Residential and Employment areas

The proposed development comprises 1,058no. dwellings (765no. houses, 150no. duplex units, and 143no. apartments) including 2no. duplexes with an option to accommodate a childcare facility at ground floor level; a local centre comprising ground floor retail units, a medical unit, and mobility hub; provision of a childcare facility; all in buildings ranging in height from 1 to 6 storeys. All associated and ancillary site development and infrastructural works, hard and soft landscaping and boundary treatment works, including public, communal and private open space; public lighting; surface car parking spaces; bicycle parking; ESB substations; bin stores; provision of a foul sewage pumping station; laying a foul rising main along Castletown Road from the proposed new access to the development eastward to the Castletown Road and Bellewsbridge Road Junction. The proposed development will be accessed from two new combined vehicular, cyclist and pedestrian junction at Castletown and at Mount Avenue. A separate pedestrian and cyclist access is also provided at Mount Avenue. A Heritage Park, a playing pitch and a site reserved for a future educational/school facility are also being provided.

The proposed development is located at lands in the Townlands of Newtownbalregan, Castletown and Farrandreg, at Mount Avenue, Castletown, Dundalk, Co. Louth.

A detailed description of the development is provided in Chapter 3 – Description of the Proposed Development.

In accordance with the Louth County Development Plan 2021–2027, the subject lands are located within the area of the Dundalk Local Area Plan 2025–2031. As set out in the Dundalk LAP, the site is situated within the Mount Avenue area and comprises four distinct zoning categories: A2 – New Residential Phase 1, B2 – Neighbourhood Centre, C1 – Mixed Use, and H1 – Open Space. The Proposed Development site is specifically referenced in the Dundalk LAP and is identified under Masterplan No. 2 (the Mount Avenue Masterplan) as well as Spot Objective F. These provisions outline that the development of the lands will facilitate the creation of a new neighbourhood incorporating a diverse mix of housing typologies, community facilities, neighbourhood services, open spaces, and associated amenities. The lands are located approximately 1.8 kilometres northwest of Dundalk town centre.

The subject site is located within the Castletown suburb of West Dundalk, approximately 2 km northwest of Dundalk Town Centre; and it is currently agricultural greenfield. It is bounded by Castletown Road (N53) to the north, Mount Avenue to the east, and existing agricultural land to the south and west. The site benefits from its connectivity and accessibility, being situated approximately 400 metres from the M1 motorway, which provides direct regional links. Dundalk Train Station is located approximately 1.5 kilometres to the southeast, offering rail services southbound to Dublin

and northbound to Belfast. The nearest significant retail destination is the Marshes Shopping Centre, located approximately 2.1 kilometres to the south-east of the site.

The surrounding area is characterised by a mix of residential and commercial uses. Residential settlements are located to the north, east, and south of the site, forming part of a mixed-use context that includes retail units, commercial offices, hospitality venues, educational facilities, and other residential developments. This established urban fabric and proximity to key transport and service infrastructure support the site's strategic location for future development.

In terms of receptor sensitivity to dust soiling, there are between 10-100 no. high sensitivity residential properties within 20m of the proposed development planning boundary.

5.3.2.1.2 Education, Childcare, Schools

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

- St. Louis Secondary School – 299m northeast
- Saint Brigid's Special Needs School – 1.29 km southeast
- Redeemer Boys' National School – 929 m southeast
- Redeemer Girls National School – 929 m southeast
- Scoil an tSlanaitheora Buachailli – 985 m southeast
- Saol Christian School – 1.50 km east
- St. Nicholas Monastery National School – 1.48 km east
- Castletown Girls' School – 1.54 km east
- St. Malachy's Girls' School – 1.57 km southeast
- St. Malachy's Infants' School – 1.57 km southeast
- Dundalk Grammar School – 1.81 km southeast
- Coláiste Rís – 1.86 km east
- St Mary's College – 2.01 km east
- Louth Mixed National School – 2.04 km southeast
- Dun Dealgan National School – 2.29 km southeast
- St. Vincent's Secondary School – 2.49 km southeast

5.3.2.1.3 Healthcare Services

The healthcare service nearest the site is Carrick Road Medical Centre, located c. 862m southeast of the site.

The closest hospital, Louth County Hospital, is located c. 2.98 km southeast of the site.

5.3.2.1.4 Emergency Services

The closest fire station is Dundalk Fire Station, which is located c. 2.49 km south of the site, and Dundalk Garda Station is located c. 1.61 km m southeast of the site.

5.3.2.1.5 Places of Worship

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

- St Joseph's Church – 570 m north
- Holy Redeemer Catholic Church – 894 m southeast
- Island Church – 1.45 km east
- Saint Malachy's Dominican Church – 1.64 km southeast
- St Nicholas' Roman Catholic Church – 1.69 km east
- King's Church (CHEC) – 1.74 km east
- Yaqeen Islamic Community Centre of Dundalk Mosque – 1.75 km east
- Dundalk Baptist Church – 1.81 km south
- St Mary's Chapel, Marist Fathers – 1.85 km east
- Lighthouse Church Dundalk – 1.94 km southeast
- Dundalk Community Church – 2.02 km southeast
- St Patrick's Church – 2.10 km southeast
- Church of Immaculate Conception – 2.12 km west
- Emmanuel Community Church – 2.49 km southeast

5.3.2.1.6 Green Infrastructure and Landscape Amenity, within the Study Area

The nearest noteworthy features for recreational use include Ice House Hill Park, approximately 1.21 km east; The Hill Park, approximately 687 m southeast; and Aisling Park, approximately 631 m east. Recreational facilities within the Study Area include various sports clubs such as Dundalk Rugby Club, located approximately 246 m north of the site, and Oriel Park Stadium, located approximately 1.3 km southeast of the site.

The Cunnicar Stream runs along the site's northwestern boundary, while the Castletown Stream runs along the southern boundary.

In terms of landscape amenity, the area surrounding the site contains a mix of landscape elements, including Castletown Road (N53) to the north, the Mount Avenue residential development to the east, and existing agricultural land to the south and west.

The Louth County Development Plan (2021–2027) and the Dundalk Local Area Plan (2025–2031) list sites included in the Record of Monuments and Places (RMP). A standing stone (LH007-118006), known as the 'Lia Lingadon', lies within the eastern portion of the proposed development area. The northeastern section of the site also falls within the Zone of Archaeological Potential (ZAP) for the historic town of Castletown (LH007-118).

There are a further 27 archaeological sites within a 500m radius of the proposed development, all located within the townlands of Castletown, Farrandreg, Newtownbalregan, and Lisnawully. Of these, ten have been preserved by record as part of archaeological investigations (see Chapter 17 – Table 17.2; Figure 17.1; Appendix 17.1).

The proposed development area borders 'Dún Dealgan', a motte and bailey castle that is both a National Monument in state guardianship (Nat. Mon. 388) and a recorded monument (LH007-118007). A souterrain (LH007-118008) is recorded on the southern side of the National Monument, and a cist burial (LH007-118009) has been reconstructed on the avenue bank of the motte.

The Louth County Development Plan (2021–2027) and the Dundalk Local Area Plan (2025–2031) also include a Record of Protected Structures (RPS) and designate Architectural Conservation Areas (ACAs). Five structures listed on the RPS are located within 500m of the proposed development, all within the townland of Castletown (see Chapter 17 – Table 17.3; Figure 17.3; Appendix 17.2).

The proposed development area is not located within an ACA, and there are no designated ACAs in the wider study area.

There are no listed or scenic views, no landscape or amenity designations or protected trees pertaining to the site.

5.3.2.2 Tourism within the Study Area

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

The development site is located in the Dundalk area of Louth County, and the Dundalk Local Area Plan 2025–2031 outlines the potential for tourism in the area:

‘Dundalk has a wealth of natural and built heritage assets with the Castletown River flowing into Dundalk Bay, Castletown Motte and the rich architectural heritage within the town. A successful local tourism product creates resilient and indigenous revenue which has benefits for many other sectors such as agriculture, hospitality, transport, and retail. As a result, tourism is a vitally important industry for the economic prosperity of Dundalk.’

5.3.2.3 Natural Resources within the Study Area

5.3.2.3.1 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.

5.3.2.3.2 Recreational Waters and Bathing Waterbodies

A review of Environmental Sensitivity Mapping online map, which 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 subject site is within the Castletown River Catchment. The Cunnigar stream is located to the northeast of the subject site, and the Castletown stream is located south of the subject site. Both streams are tributaries to the Castletown River. The surface network will be separated into two catchments, with the northern catchment discharging to the Cunnigar stream and the southern catchment will outfall to the Castletown stream, which both ultimately outfall into the Castletown River.

The Cunnigar and Castletown stream are both Environmental Protection Agency (EPA) designated watercourses. The coast is approximately 5.6 km to the east.

5.3.2.3.3 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 that there are no Groundwater Source Protection Areas or Water Abstraction locations within the development site.

The current GSI well index indicates that no wells are located within the boundary of the proposed development site. However, up to ten wells are mapped within the wider Study Area, located within approximately 2 km of the site. None of these wells are categorised as domestic use, with all listed as having unknown source use.

There are no recorded public supply sources within the area. As the site is serviced by Local Authority mains, it is unlikely that any wells are used for potable supply. The site is not located near any public groundwater supplies or group water schemes, and there are no groundwater source protection zones in the immediate vicinity of the site.

5.3.2.4 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. Please refer to Section 5.3.2.4.3 for more information on Flood Risk Assessment.

5.3.2.4.1 Landslides, Seismic Activity and Volcanic Activity

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

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

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

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

5.3.2.4.2 Proximity to Seveso or Industrial Emissions Sites

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

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

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

The Health and Safety Authority (HSA) list of Notified Seveso Establishments has been used to identify if the Proposed Development falls within the consultation distance of any nearby Seveso Establishments. There are no Upper or Lower Tier Notified Seveso Establishments within the Study Area. The Proposed Development site is not a Seveso facility and is not within the consultation

distance of any Seveso facility. Therefore, there are no implications for major accidents or hazards at the Proposed Development site.

There are two EPA Licenced facilities within the Study Area that could potentially give rise to cumulative effects, detailed in Table 5.7 below. 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.

Registration number	Name	Category	Licence type	Distance (km)
P0441	Macardle Moore & Co. Ltd., t/a Dundalk Packaging	Food and Drink	IPC	1.75
P0996-01	Great Northern Distillery Limited	Food and Drink	IPC	1.5

Table 5.7 EPA Licenced Facilities nearby to the Proposed Development Site

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.

5.3.2.4.3 Risk of Flooding

The potential risk of flooding on the site was also assessed. A Site-Specific Flood Risk Assessment (SSFRA) has been prepared by DBFL (2025) for the Proposed Development site submitted with the planning application.

The CFRAM fluvial flood extents map indicates that most of the site is located within Flood Zone C (Low Probability of Flooding), apart from a small portion in the southeastern and northwestern parts of the site, which fall into Flood Zone A (High Probability of Flooding), and Flood Zone B. However, these areas designed in open space which is compatible. All finished floor levels throughout the development are set at a minimum 500 mm above this existing flood level.

The Site-Specific Flood Risk Assessment (SSFRA) also considers potential sources of tidal and pluvial flooding. A review of the Office of Public Works (OPW) flood records confirms that the proposed development site is not affected by tidal water bodies; therefore, the risk of tidal flooding is negligible. The site is located approximately 5 km west of Dundalk Bay, and a review of CFRAM maps indicates that the site lies outside the 0.1% Annual Exceedance Probability (AEP) flood extent, confirming that tidal flooding poses no threat to the development.

Pluvial flooding refers to overland flow caused by high-intensity rainfall events. The Source–Pathway–Receptor model identified a medium risk of pluvial flooding associated with proposed surface water drainage networks and potential human or mechanical error. This risk is mitigated through the design of the surface water drainage system in accordance with the Greater Dublin Strategic Drainage Study (GDSDS), including attenuation for the 1% AEP storm event and the implementation of Sustainable Drainage Systems (SuDS) measures.

The drainage network for the site has been designed to accommodate the 1% AEP storm event without any out-of-system flooding. Attenuation for the 1-in-100-year return period storm events will be provided via above-ground attenuation basins and underground geo-cellular attenuation systems (e.g., StormTech or similar).

The SSFRA concludes that the development meets the requirements of the FRA Guidelines and that the proposed development is appropriate to this flood zoning and a justification test is not required.

5.4 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; however, it is not a comprehensive description of the Proposed Development. Therefore, it should be read in conjunction with the full development package. For a comprehensive, more thorough understanding of the Proposed Development, please refer to Chapter 3 (Description of the Proposed Development) of the EIAR. Chapter 3 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.

5.4.1 Proposed Development

5.4.1.1 Construction Stage

Construction activities can generate noise and vibrations, dust emissions 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 due to 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 from Castletown Road

Carparking is to be provided on site within the site compound. Construction personnel will be encouraged to walk, cycle, or use public transport, and information on local transport services will be published on site.

It is estimated that there will initially be approximately 125 staff on site on a typical day once construction has started.

5.4.1.2 Operational Stage

The proposed development comprises 1,058no. dwellings (765no. houses, 150no. duplex units, and 143no. apartments) including 2no. duplexes with an option to accommodate a childcare facility at ground floor level; a local centre comprising ground floor retail units, a medical unit, and mobility hub; provision of a childcare facility; all in buildings ranging in height from 1 to 6 storeys. All associated and ancillary site development and infrastructural works, hard and soft landscaping and boundary treatment works, including public, communal and private open space; public lighting; surface car parking spaces; bicycle parking; ESB substations; bin stores; provision of a foul sewage pumping station; laying a foul rising main along Castletown Road from the proposed new access to the development eastward to the Castletown Road and Bellewsbridge Road Junction. The proposed development will be accessed from two new combined vehicular, cyclist and pedestrian junction at Castletown and at Mount Avenue. A separate pedestrian and cyclist access is also provided at Mount Avenue. A Heritage Park, a playing pitch and a site reserved for a future educational/school facility are also being provided.

5.4.2 Cumulative Development

Farndreg, Mount Avenue and Headford, Dundalk, Co. Louth and Mount Avenue, Dundalk. Co. Louth.

- LCC Reg. Ref. 18156/ ACP Ref. 303188

Permission granted by An Coimisiún Pleanála for proposed development comprising the demolition of an existing light industrial unit (995sqm) and development of an 88-bed nursing home and all necessary support facilities.

- LCC Reg. Ref. 18943

Permission granted on 18 January 2019 for proposed development of 80 no. dwellings are proposed comprising 50 no. houses in detached, semi-detached and terraced format and ranging in height from 1 to 2 storeys and 30 no. apartments accommodated in two linked 3 storey no. apartment buildings and associated site works at Farndreg, Mount Avenue and Headford, Dundalk, Co. Louth and Mount Avenue, Dundalk. Co. Louth.

- LCC Reg. Ref. 20210

Permission granted on 19 October 2020 for proposed development consisting of 47 no. dwellings comprising a mix of semi-detached and detached dwellings (including 4 no. bungalows) in a variety of types and sizes that range in height from 1 no. to 2 no. storeys. At lands at Farndreg, Mount Avenue/Headford, Dundalk, Co Louth

- LCC. Reg. Ref. 20211

Permission granted on 19 October 2020 for proposed development consisting of 67 no. dwellings comprising a mix of both houses and apartment/duplex units at Farndreg/Mount Avenue/Headford, Dundalk, Co Louth.

- LCC Reg. Ref. 2360190

Planning permission granted on 11 August 2023 for revisions to 25 no. dwellings that form part of the permitted residential development to be known as "Hearthfield" granted under P.A. Ref. No. 18/943 (An Bord Pleanála Ref. No. 303628-19) at Farndreg, Mount Avenue, Headford, Dundalk, Co. Louth.

- LCC Reg. Ref. 2460240.

Permission granted on 19 September 2024 for revisions to phases 2 and 3 of the permitted development at "Hearthfield" (LCC. Reg. Ref. 20210) at Farndreg, Mount Avenue, Headford, Dundalk, Co. Louth.

Mount Avenue

- LCC Reg. Ref. 211173

Permission granted on 11 January 2022 for proposed development of 93 no. residential units and all associated/ancillary works on lands at Mount Avenue, Dundalk, Co. Louth

- LCC Reg. Ref. 2460792

Further information submitted to Louth County Council on 28 July 2025 for 63 no. houses in semi-detached and terraced format and ranging in height from 2 -3 no. storeys at Mount Avenue, Farrandreg, Dundalk, Co. Louth

Mill Road, Dundalk Co. Louth

- LCC Reg. Ref. 18985

Permission granted on 31 May 2019 for proposed demolition of existing commercial units and the construction of 7 no. dwellings in 3 sets of semidetached dwellings and 1 no. detached dwelling at Mill Road, Dundalk Co. Louth

Castletown Cross, Castleblaney Road, Dundalk, Co. Louth

- LCC Reg. Ref. 2360406

Permission granted on 12 January 2024 for the construction of new two-storey dwelling, new site entrance and associated site works at Castletown Cross, Castleblaney Road, Dundalk, Co. Louth

- LCC Reg. Ref. 20861

Permission granted on 03 December 2020 for the construction of a dormer style dwelling house to include all associated site works at 2 Castletown Cross, Castletown Road, Dundalk Co Louth

- LCC Reg. Ref. 20711

Permission granted on 05 November 2020 for a proposed dormer style dwelling house and all associated site works at Castletown Cross, Newtownbalregan, Dundalk, Co Louth

5.5 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 7 (Land, Soils, and Geology); Chapter 8 (Water); Chapter 9 (Air Quality), Chapter 12 (Noise and Vibration); Chapter 13 (Landscape and Visual Impact) and Chapter 14 (Material Assets - Transport).

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.

5.5.1 Proposed Development

5.5.1.1 Construction Stage

Potential Impacts on Businesses and Residences

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

- Chapter 9 - Air Quality;
- Chapter 12 - Noise and Vibration;
- Chapter 13 – Landscape and Visual Impact; and
- Chapter 14 – Material Assets (Transport)

The potential increase in the temporary population of the area during construction, as a result of the employment of workers from outside the Dundalk 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.

Potential Impacts on Landscape Amenity and Tourism

Construction activities can generate significant noise, dust, and air pollution, which may negatively affect the tranquillity and amenity of the surrounding environment. As noted in Chapter 13 (Landscape and Visual Impact), the greatest impacts typically occur during the initial site disturbance or ground-breaking stage. A collection of 19 photomontages from 15 viewpoints surrounding the site has been prepared and is set out in Chapter 13 (Landscape and Visual Impact) to fully illustrate the physical and visual nature of the proposed development.

The adjoining residential properties along Castletown Road to the north, Greyacre Road to the east, and Mount Avenue to the west are likely to experience the most disruption from construction activities.

The development is expected to be phased, with different elements progressing at different times. As one phase is completed and another begins, the overall impact on construction will be reduced.

While visual and amenity impacts are inherently subjective and difficult to quantify, construction is generally considered unsightly and can contribute to negative perceptions. Nevertheless, the Proposed Development is not expected to have a significant impact on local tourism or shopping amenities.

Potential Impact from Land and Water Emissions on Human Health

With reference to Chapter 7 (Land, Soils, and Geology), a reduction in soil quality via unmitigated pollutants entering the soil 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.

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 **negative, significant and short-term**.

As stated in Chapter 8 (Water), potential significant effects during the construction phase of the proposed development primarily relate to the management of surface water and potential contamination of water resources. Surface water runoff from areas stripped of topsoil may contain increased silt levels or become polluted by construction activities such as vehicle movement, oil or fuel spills, and concrete works. In addition, accidental leaks or spillages during the storage, handling, or refuelling of construction machinery have the potential to contaminate nearby surface water and groundwater environments.

There is also a potential risk to human health from contamination of the potable water supply by surface water or groundwater, with possible pathways including damaged or incorrectly installed pipes within the supply network. The impact is assessed as a **moderate, neutral, short-term**.

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 (PM₁₀ 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 the human health impacts from PM₁₀ and PM_{2.5} emissions. While construction dust tends to be

deposited within 250 m of a construction site, the majority of the deposition occurs within the first 50 m. The extent of any dust generation depends on the nature of the dust (soils, peat, sands, gravels, silts etc.) and the nature of the construction activity. In addition, the potential for dust dispersion and deposition depends on local meteorological factors such as rainfall, wind speed and wind direction. A review of Casement Aerodrome meteorological data indicates that the prevailing wind direction is south-westerly, and wind speeds are generally moderate in nature (Section 9.5.3 of Chapter 9 (Air Quality) of this EIAR).

In line with the UK Institute of Air Quality Management (IAQM) guidance document “Guidance on the Assessment of Dust from Demolition and Construction” (2024), as referenced in Chapter 9 – Air Quality (Section 9.4.3), the overall sensitivity of the area to dust soiling impacts is considered high, based on the IAQM criteria outlined in Table 9-5. Based on the same criteria, the worst-case sensitivity of the area in relation to human health is considered low. Accordingly, there is at most a high risk of dust soiling impacts and a low risk of dust-related human health impacts associated with the proposed works.

Dust emissions from the construction phase of the Proposed Development have the potential to affect air quality through the release of particulate matter (PM₁₀ and PM_{2.5}). In the absence of mitigation, construction dust is predicted to result in a **direct, negative, short-term**, and **slight** impact on air quality, which is **not significant** overall.

There is also the potential for traffic emissions to impact air quality with respect to human health in the short-term over the construction phase, particularly, due to the increase in HGVs accessing the site. The construction stage traffic has been reviewed, and a detailed air quality assessment has been scoped out as none of the road links impacted by the proposed development satisfy the TII assessment criteria in Section **Error! Reference source not found.**

Therefore, it can be determined that the construction stage traffic will have an **imperceptible, neutral, short-term** and **not significant** impact on air quality.

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 can give rise to concern. In the case of road traffic, vibration becomes perceptible at approximately 0.5 mm/s and may be considered disturbing or annoying at higher magnitudes. Noise and vibration impacts associated with the Proposed Development have been fully assessed in Chapter 12 (Noise and Vibration) of this EIAR.

A variety of plant and machinery will be used for site clearance and construction works. There will also be vehicular movements to and from the site using the existing road network. Due to the nature of these activities, there is potential for elevated noise levels in the vicinity of existing noise-sensitive properties.

It is therefore appropriate to consider the relative increase in noise levels associated with traffic movements on existing roads and junctions, both with and without the Proposed Development, given that construction and operational traffic will utilise the existing road network. In the absence of specific mitigation measures, a negative, significant, and short-term effect is expected at the closest receptors.

With respect to potential vibration impacts, the only significant sources are expected to be rock-breaking and piling activities. As discussed in Section 12.5.3.1 of Chapter 12, vibration levels experienced at surrounding receptors will remain well below the thresholds for cosmetic building damage. However, vibration may be perceptible when works occur in close proximity to receptors. In terms of human response, there is potential for a **negative, slight-to-moderate to significant, short-term** impact at the two nearest Noise-Sensitive Locations (NSLs).

As detailed in Chapter 12 (Noise and Vibration), there is a **negative, not significant to moderate and short-term** impact on human health as a result of noise emissions from construction activities at the closest Noise Sensitive Location (NSL).

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 14 (Material Assets - Transport), the Proposed Development's construction phase shall generate vehicular traffic comprising Heavy Goods Vehicles (HGVs), Light Goods Vehicles (LGVs), cars, and bicycles, and increasing traffic flows surrounding the site. A Construction Traffic Management Plan (CTMP) will be implemented prior to the commencement of construction, to consider and manage all impacts of the construction stage traffic.

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, temporary and less significant** than the final operational stage impacts.

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

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

As outlined in Section 5.3.2.4 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 outlined in the SSFRA, the site is predominantly located within Flood Zone C, with only small areas in the southeast and northwest falling within higher-risk zones (Flood Zone A and Flood Zone B). These areas are designated as open space, which is considered compatible with their flood zoning. The drainage network has been designed to accommodate the 1-in-100-year storm event without out-of-system flooding, with attenuation provided via above-ground basins and underground geo-cellular systems.

The SSFRA concludes that the development complies with the Flood Risk Assessment Guidelines, is appropriate to the site's flood zoning, and does not require a justification test. Consequently, the potential flood risk impact on population and human health during the construction phase is considered imperceptible and unlikely.

5.5.1.2 Operational Stage

Potential Impacts on Businesses and Residences

The main potential impacts on local businesses and residences associated with the Proposed Development will be in relation to 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 9 – Air Quality
- Chapter 12 – Noise and Vibration
- Chapter 13 – Landscape and Visual Impact
- Chapter 14 – Material Assets - Transport

The proposed development includes 1,041 no. residential units. The addition of new residential accommodation to the area will have a positive impact on the vibrancy and vitality of the area and will help to support existing community and social infrastructure, in addition to further supporting nearby neighbourhood centre and commercial businesses. As set out in Section 5.3.2 of this Chapter, a range of existing community and social infrastructure, including schools and healthcare facilities, exists within a 2.5 km radius of the subject site. Residents will spend a portion of their income locally, which would not happen without the proposed development. As such, in providing this facility, the proposed development will also provide long-term job opportunities for people living in the area to operate the facility.

Once operational, the proposed development will give rise to much needed additional residential accommodation. The operational phase of the proposed development will result in the introduction of a greater intensity and density of residential development, delivering wider public realm improvements, in accordance with national and local planning policy objectives which seek to deliver compact growth at suitable locations. Adequate provision of high-quality housing to serve the existing and future population of the county is an important pre-requisite and contributor to the establishment and maintenance of good human / public health. The high-quality design of the proposed development will contribute to a positive impact on the wellbeing of future residents.

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

Potential Impacts on Amenity and Tourism

The Proposed Development once operational will have no impact on local tourism or shopping amenities. The Proposed Development will not create any wastewater discharge which could have a potential impact on local amenities or the local population. All wastewater generated at the Proposed Development will be connected to the existing public foul network and so will not impact local amenities or the local population.

With reference to Chapter 13 (Landscape and Visual Impact), post-construction the site will transition from agricultural land to a low- to medium-rise residential development. This change will be noticeable to adjoining residents but will be partly offset by extensive public open spaces, enhanced green infrastructure and biodiversity features, and the inclusion of a heritage park that integrates the scheme into the existing landscape.

Taller apartment buildings of up to six storeys will be visible from various directions, particularly along the R934 Castletown and Mount Avenue Roads. While nearby residential properties will experience some visual impact, existing vegetation and the limited shared boundary will help mitigate effects. Overall, the visual impact is consistent with emerging trends toward higher-density, sustainable development that respects the site's ecological and historical context.

Potential Impact from Land and Water Emissions on Human Health

With reference to Chapter 7 (Land, Soils, and Geology), no abstractions of groundwater or discharges of contaminated water to ground are proposed during the operational phase. Therefore, there is no potential for impact on drinking water resources. The site does not contain any sensitive economic or historical geological features. Accordingly, upon completion of the construction phase, no further impacts on land, soils, or the geological environment are anticipated, and there is no potential impact on human health.

With reference to Chapter 8 (Water), surface water outflow from the site ultimately discharges to the Castletown River. If surface water is not adequately treated and managed in accordance with the Greater Dublin Strategic Drainage Study (GSDSDS), it has the potential to impact aquatic life and human health. Surface water drainage for the development has been designed in accordance with the GSDSDS; therefore, the risk to human health has been mitigated.

There is also a potential risk to human health from contamination of the potable water supply by surface water or groundwater. Possible pathways include damaged or incorrectly installed pipes within the groundwater or supply network. Considering the low infiltration rates recorded during the preliminary site investigation undertaken by Ground Investigations Ireland, the risk of groundwater contamination from surface water run-off associated with the development is considered low.

During the operational phase, the impact is assessed as a **slight, neutral, and permanent**.

Potential Impact from Air Emissions on Human Health

As outlined in Chapter 9 (Air Quality), traffic-related air emissions have the potential to affect air quality and, consequently, human health. The potential impact of the Proposed Development was assessed through air dispersion modelling of emissions generated by development-related traffic. A Transport Assessment, prepared by DBFL (refer to Chapter 14 – Material Assets - Transport), informed the traffic data used in this assessment.

Based on the results of the air dispersion modelling and in accordance with TII criteria (Section 9.7.2), the impact of traffic emissions on air quality and human health during the operational phase is predicted to be **long-term, direct, localised, negative, and not significant**.

Potential Impact from Noise and Vibration Emissions on Human Health

Once the proposed development is operational, the potential noise impacts to the surrounding environment are expected to be minimal. The residential aspect of the development is not expected to generate any significant noise sources over and above those which form part of the existing environment at neighbouring residential areas (road traffic noise, estate vehicle movements, children playing, etc.) and, hence, no significant effects are predicted in this regard.

The main potential noise impact associated with the proposed development is considered, therefore, to relate to the generation of additional traffic to and from the site as a result of the new residential buildings and noise associated with the proposed creche. Potential noise impacts also relate to operational plant serving the buildings where relevant. As discussed in Section 12.5.3.2 of Chapter 12, the predicted effects in relation to increased traffic are **neutral to negative, not significant, and long-term**.

Once operational, there are no noteworthy sources of vibration associated with the development site.

Potential Impact from Traffic and Transportation on Human Health

As identified in Section 5.5.1.6, traffic-related impacts can have negative consequences for human health. As detailed in Chapter 14 (Material Assets – Transportation), the Proposed Development will result in changes to existing vehicular traffic flows on the surrounding street network, including the 15 junctions analysed as part of the traffic assessment.

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.

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

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

As outlined in Section 5.3.2.4 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 outlined in the SSFRA, the Proposed Development's drainage network has been designed to accommodate a 1-in-100-year storm event without out-of-system flooding. The likelihood of on-site flooding from groundwater due to hydrogeological conditions is considered minor and within acceptable limits. The development will incorporate SuDS, with attenuation provided via a combination of above-ground basins and underground geo-cellular systems, designed with a 20% allowance for climate change.

The SSFRA concludes that the development complies with the Flood Risk Assessment Guidelines and is appropriate to the site's flood zoning. Consequently, the potential flood risk impact on population and human health during the operational phase is considered imperceptible and unlikely.

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

5.5.2 Cumulative

The potential for cumulative impact of the Proposed Development with any/all relevant other planned or permitted developments as outlined in Chapter 3 (Description of the Proposed Development) are discussed in Sections 5.8.2.1 and 5.8.2.2 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 EIAR Chapters.

5.6 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 7, 8, 9, 12, 13 and 14 of this EIAR, respectively.

5.6.1 Construction Stage

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

5.6.1.1 Businesses and Residences

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

5.6.1.2 Landscape Amenity and Tourism

As outlined in Chapter 13 (Landscape and Visual Impact), consideration of landscape and visual aspects was integral to the design and layout of Proposed Development. The design intent is to integrate the Proposed Development into its surrounding environment. This will be achieved through the retention of existing vegetation and hedgerows where possible, supplemented by additional screen planting to enhance visual buffers and promote biodiversity. These measures will also support the creation of habitats for local bird and wildlife species.

Mitigation measures have been embedded in the design from the outset to minimise potential visual and landscape impacts, ensuring that the development responds sensitively to its setting. The layout and design of the buildings in relation to the existing landscape, together with the retention of a significant amount of mature tree planting at the site boundaries and within the site, are key considerations in the landscape design process. A number of specific mitigation measures have been incorporated at the design stage and are listed in Section 13.10.1.1 of Chapter 13.

As noted in Section 13.10.1.2, mitigation of potential construction effects will follow industry best practice standards, including the use of appropriate site perimeter hoarding. Additional mitigation measures during the construction phase will focus on the implementation of site management procedures, such as the control of site lighting, appropriate storage of materials, strategic placement of site offices and compounds, management of vehicular access, and effective dust and dirt control measures.

5.6.1.3 Land and Water Emissions

The mitigation measures outlined in Chapter 7 (Land, Soils and Geology) and Chapter 8 (Water) will be implemented during construction to protect human health and populations. Both chapters set out specific measures addressing activities such as topsoil stripping, subsoil excavation, weather conditions, surface water runoff, dewatering, accidental spills and leaks, and protection of the geological environment.

Additionally, Chapter 8 includes mitigation measures for the discharge of wash water from concrete trucks, improper discharge of foul drainage from the contractor's compound, and potential cross-contamination of the potable water supply to the construction compound.

5.6.1.4 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 9 (Air Quality) of this EIAR. The mitigation measures draw on best practice guidance from Ireland (DCC (2018), DLRCC (2022)), the UK (IAQM (2024), BRE (2003), The Scottish Office (1996), UK ODPM (2002)) and the USA (USEPA, 1997). The measures relate to communications, site management, preparation and maintenance, operating vehicles and machinery, waste management, demolition, earthworks, construction, trackout and monitoring.

5.6.1.5 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 exceedance of the adopted construction noise threshold values at the nearest NSLs. The best practice measures set out in BS 5228 (2009 +A1 2014) Parts 1 and 2 will be complied with. Further details on best practice noise and vibration measures are provided in Chapter 12 (Noise and Vibration) Section 12.6.1.1 and relate to selection of quiet plant, noise control at source, screening, liaison with the public and project phasing programme.

5.6.1.6 Traffic and Transportation

With reference to Chapter 14 (Material Assets – Transport), Section 14.6.1.1, a Construction Traffic Management Plan will be implemented during the construction phase to minimise impacts on the surrounding road network. Traffic and transport mitigation measures will include the provision of appropriate on-site parking and compound areas to prevent overflow onto surrounding roads, the use of shared transport such as vans and minibuses to reduce worker trip numbers, and the scheduling of deliveries throughout the day to limit the volume of HGV movements during peak hours.

5.6.1.7 Major Accident Hazards and/or Natural Disasters

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

5.6.2 Operational Stage

5.6.2.1 Businesses and Residences

Once construction works are completed, no specific mitigation measures are required for local businesses and residences.

5.6.2.2 Amenity and Tourism

As outlined in Chapter 13 (Landscape and Visual Impact), Section 13.10.1.3, mitigation has been integrated into the design process through a strong emphasis on design quality. Measures have been incorporated across multiple design iterations to minimise visual impact and ensure the Proposed Development integrates sensitively with its surroundings. These measures include consistent and effective maintenance of hard and soft landscape areas (in particular entrance areas, open space areas and gathering spaces), which, together with quality site and building management, are key to avoiding or minimising negative landscape and visual impacts arising from the operation of the proposed development.

The landscape contractor and future landscape maintenance providers will be required to adhere to the project “Landscape Specification and General Maintenance” standards.

5.6.2.3 Land and Water Emissions

As noted in Chapter 7 (Land, Soils & Geology), no specific mitigation measures are required during the operational phase, as no further impacts on land, soils, or the geological environment are anticipated.

In accordance with Chapter 8 (Water), several best practice measures are proposed to safeguard human health and populations during the operational phase of the Proposed Development. To prevent potential contamination from surface water runoff originating from roads and hardstanding areas, a Sustainable Drainage System (SuDS) will be implemented. The SuDS measures include:

- Permeable paving in driveway areas;
- Routing of roof runoff to the surface water network via porous aggregates beneath permeable driveways;
- Drainage of road runoff to swales for treatment and runoff reduction, where feasible;
- Attenuation of 1-in-100-year storm events with a 20% allowance for climate change;
- Installation of flow control devices (Hydrobrake or similar) to limit surface water discharge to greenfield runoff rates at outfalls to the Cunnicar Stream and Broad and Castletown Stream;
- Treatment of surface water discharge via Class 1 fuel/oil separators, sized in accordance with permitted discharge limits.

5.6.2.4 Air Emissions

With reference to Chapter 9 (Air Quality), no additional mitigation measures are required for the operational phase of the Proposed Development. As the impact of operational traffic on air quality is predicted to be **not significant** in the **long-term**.

5.6.2.5 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 12 (Noise and Vibration). No further mitigation is required.

Changes to traffic flows will result in an imperceptible to not significant increase in noise level within the surrounding environment. Therefore, no mitigation measures are necessary.

5.6.2.6 Traffic and Transportation

With reference to Chapter 14 (Material Assets – Transport), Section 14.6.1.2, a package of integrated mitigation measures has been identified to offset the additional local demand that the Proposed Development may generate as a result of the forecast increase in vehicle movements by future residents. These measures, discussed in detail in Chapter 14, include a parking management strategy, mobility management initiatives, infrastructure improvements, and car-sharing provisions.

5.6.2.7 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.

5.7 MONITORING OR REINSTATEMENT MEASURES

5.7.1 Construction Stage

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

Additional monitoring requirements are set out in Chapters 7: Land, Soils, and Geology, 8: Water, 9: Air Quality, 12: Noise & Vibration, Chapter 13: Landscape and Visual Impact, 14: Material Assets - Transport of this EIAR

5.7.2 Operational Stage

No additional monitoring other than that which is set out in Chapters 7: Land, Soils, and Geology, 8: Water, 9: Air Quality, 12: Noise & Vibration, Chapter 13: Landscape and Visual Impact, 14: Material Assets - Transport of this EIAR are required.

5.8 RESIDUAL IMPACTS OF THE PROPOSED DEVELOPMENT

5.8.1 Proposed Development

5.8.1.1 Construction Stage

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.

Landscape Amenity and Tourism

With reference to Chapter 13 (Landscape and Visual Impact), the predicted impacts from the analyses of photomontages are **short-term** and **negative**, as discussed in section 13.11.1.

Land and Water Emissions

The implementation of the mitigation measures detailed in Section 5.6.1 (and Section 7.6.1 of Chapter 7 Land, Soils, and Geology, and Section 8.6.1 of Chapter 8 Water) will ensure that the potential impacts on human health and populations during the construction phase are adequately mitigated. The residual effect on human health and populations from land and water emissions during the construction phase is considered to be **neutral, slight** and **short-term**.

Air Emissions

Best practice mitigation measures are proposed for the construction phase of the proposed development which will focus on the pro-active 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 of the proposed development will ensure that the impact of the development complies with all EU ambient air quality legislative limit values which are based on the protection of human health. Therefore, the impact of construction of the proposed development will be **direct, short-term, negative, localised** and **not significant** with respect to human health.

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 12.6.1.1 and 12.7.1.1 of Chapter 12 - Noise and Vibration), will ensure that noise and vibration impact is kept to a minimum as far as practicable. During the bulk of the construction the construction works will implement general construction techniques where the residual construction noise impacts relating to general construction are predicted to be controlled to within the CNT, thus resulting in the residual impact being **negative, not significant** to **moderate** and **short-term**.

The residual effect of construction vibration is **short-term, negative** and **moderate - significant**.

Traffic and Transportation

Provided the mitigation measures outlined in Chapter 14 (Material Assets - Transport) are incorporated during the construction phase, the residual impact upon the local population from traffic is predicted to be **neutral** and **temporary**.

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.

5.8.1.2 Operational Stage

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, moderate, long-term** residual impact on the local population.

Amenity and Tourism

With reference to Chapter 13 (Landscape and Visual Impact), the residual effects of the Proposed Development on the landscape and visual amenities are **neutral, moderate and long-term**.

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.

Land and Water Emissions

The implementation of the mitigation measures detailed in Section 5.6.2.3 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, slight and long-term**.

Air Emissions

As detailed in Chapter 9 (Air Quality), Section 9.9.2, dispersion modelling of traffic emissions at sensitive receptors in proximity to impacted road links during the operational phase indicates that pollutant emissions will be in compliance with the TII assessment criteria. As outlined in Section 9.7.2.1, the resulting impact on air quality and human health from increased traffic volumes during operation is assessed as **localised, direct, long-term, negative, and not significant**.

Noise and Vibration Emissions

Once operational noise emissions are controlled within the development site, noise emissions outside the site will be imperceptible. The residual noise effect is **neutral, not significant and long-term**.

The predicted change in noise levels associated with additional traffic is expected to be **neutral to negative, imperceptible to not significant, and long-term** along the existing road network.

Traffic and Transportation

The assessment of the additional traffic movements associated with the Proposed Development during the operational phase is presented in Chapter 14 (Material Assets - Transport). 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, not significant to moderate to significant and long-term**.

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.

5.8.2 Cumulative

The potential for cumulative impact of the Proposed Development with any/all relevant other planned or permitted developments as outlined in Chapter 3 (Description of the Proposed Development) are discussed in Sections 5.8.2.1 and 5.8.2.2 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 EIAR Chapters.

5.8.2.1 Construction Stage

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

The implementation of mitigation measures within each chapter and detailed in Section 5.6.1; as well as the compliance of adjacent 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 500m then there is the potential for cumulative construction dust impacts. The dust mitigation measures outlined in Section **Error! Reference source not found.** will be applied during the construction phase which will avoid significant cumulative impacts on air quality. With appropriate mitigation measures in place, the predicted cumulative impacts on air quality associated with the construction phase of the proposed development is short-term, negative, direct and not significant. No significant cumulative impacts to air quality predicted for the construction phase.

As noted in Chapter 12 (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. Residual noise cumulative effects related to the construction phase, post-mitigation, are likely to be **short-term, negative and not significant to moderate.**

5.8.2.2 Operational Stage

The potential cumulative impacts of the Proposed Development during the operational phase in terms of air emissions, noise generation and traffic generation in the context of the Permitted Development have been considered in Chapter 9 (Air Quality), Chapter 12 (Noise and Vibration) and Chapter 14 (Material Assets - Transport). The assessments indicate that the Proposed Development is not likely to result in significant adverse impacts on human health either alone or in combination with any likely future projects.

As stated in Chapter 9 (Air Quality), there is the potential for cumulative impacts to air quality during the operational phase as a result of traffic associated with other existing and permitted developments within the area. The traffic data provided for the operational stage air quality assessment included specific cumulative developments within the area (see Traffic and Transport Assessment and Chapter 14: Material Assets - Traffic & Transport for further details).

The cumulative operational phase impact is assessed within Section **Error! Reference source not found.** and was found to have a neutral impact on air quality as per the TII significance criteria (**Error! Reference source not found.**). The cumulative operational stage impact is long-term, localised, direct, negative and not significant.

The operational noise limits set for on-site buildings are designed to avoid any significant increase in the prevailing background noise environment external to the site. Operational noise limits included in Chapter 12 (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 14 (Material Assets - Transport), planning permission is in place for a number of committed developments in the vicinity of the subject site, some of which are currently under construction. Taking into account all relevant development areas as well as planned infrastructure such as new avenues, streets, and connections to the external network, no further cumulative impacts are anticipated.