3. Population and Human Health

3.1. Introduction

This chapter describes the Population and Human Health setting in the general area of the proposed residential development at Blackrock, Dundalk, Co. Louth. The assessment addresses the potential impact of the construction and operation of the proposed development on these factors, together with any mitigation measures that may be required to eliminate or reduce potential impacts. A more complete description of the proposed development is presented in Chapter 2 – Project Description.

Population and human health comprise an important element of the 'environment', and any potential impacts which may result from the construction and operation of the proposed development must therefore be comprehensively addressed. There are three key considerations in this regard: -

1. To ensure that human beings experience no significant unacceptable diminution in an aspect, or aspects of 'quality of life' via. potential impacts to population, employment and economic activity, land-use, community and recreation.
2. To improve the general health and wellbeing of the proposed residents through encouraging activities such as walking and cycling by means of inclusion of pedestrian and cyclist facilities and open green spaces.
3. To ensure that there are no human health impacts via. potential environmental pathways including soil, water, air and noise.

3.2. Methodology

This chapter provides an assessment of the potential impacts of the construction and operation of the proposed development on the broader human environment under two considerations: -

- Population and Associated Factors; and,
- Human Health.

Mitigation measures are proposed where appropriate in order to address any likely impacts associated with the construction and operation of the proposed residential development. This Population and Human Health Assessment has been undertaken in accordance with the following Environmental Protection Agency's (EPA) Guidance: -

- *"Revised Guidelines on Information to be Contained in Environmental Impact Statements''*, (EPA, 2015) and ''*Advice Notes on current Practice; in the preparation of Environmental Impact Statement"* (EPA, 2015).
- *"Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports*" (EPA, 2017).

The importance of human health and potential associated risks that could arise as a result of a proposed development are highlighted in recent regulations, S.I. No. 296 of 2018 (European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018) transposing the EIA Directive 2014/52/EU which included a change in the title of '*Human Beings*' as an environmental factor to '*Population and Human Health'*. While no specific guidance on the meaning of the term human health has been issued in the context of this Directive, according to the EPA (2017) human health should be considered through assessment of the environmental pathways through which it could be affected, such as air, water or soil. The human health assessment will also consider unplanned events (in addition to construction and operational activities). Examples of such unplanned events include the following; spill from traffic accidents, floods or land-slides affecting the Site, fire, collapse or equipment failure on the Site.

For the purposes of this report human health has been assessed using two separate approaches, as follows;

- Preparation of a Health Impact Assessment (HIA); and,

- Preparation of a Human Health Risk assessment via. Source-Pathway-Receptor (S-P-R) model.

3.2.1. Preparation of a Health Impact Assessment (HIA)

A specific human health assessment has been undertaken in accordance with available UK guidance entitled '*Health Impact Assessment Tools: Simple tools for recording the results of the Health Impact Assessment*' published by the UK Department of Health (DH) (2010). This guidance provides an overview of the 5-Stage Health Impact Assessment (HIA) process as follows: -

- **Stage 1** - Screening;
- **Stage 2** - Identify Health Impacts;
- **Stage 3** - Prioritise Important Health Impacts;
- **Stage 4** - Analysis: Quantify or Describe Health Impacts; and,
- **Stage 5** - Recommendations to Improve Policy.

Stage 1 comprises an initial risk screening process with five key criteria to be considered as follows:

1. *Will the proposal have a direct impact on health, mental health and wellbeing?*
2. *Will the policy have an impact on social, economic and environmental living conditions that would indirectly affect health?*
3. *Will the proposal affect an individual's ability to improve their own health and wellbeing?*
4. *Will there be a change in demand for or access to health and social care services?*
5. *Will the proposal have an impact on global health?*

If no potential impacts are identified at the Stage 1 - Screening, then the HIA is complete and no further assessment is required. This screening approach is consistent with the preliminary HIA Screening process recommended by the World Health Organisation (WHO)[1].

3.2.2. Preparation of a Human Health Risk assessment via. Source-Pathway-Receptor (S-P-R) model

A preliminary assessment of direct and indirect impacts on health which could potentially arise due to the construction and operation of the proposed development, and also unplanned events, has been evaluated using a simple Source-Pathway-Receptor (S-P-R) model. This approach involves the identification of contaminant sources, environmental pathways and receptors, and the identification of any valid direct / indirect potential pollutant linkages. This risk-based approach is advocated by the EPA in relation to human health impact assessment. Risk assessment is defined by the EPA (2017) as follows;

> *'An analytical study of the probabilities and magnitude of harm to human health and the environment associated with a biological, physical or chemical agent, activity or occurrence.'*

3.3. Receiving Environment

3.3.1. Population and Associated Factors

3.3.1.1. Land-Use and Community

Existing land-use at the proposed development Site is agricultural. The greenfield Site is bounded to the north by residential housing and Bóthar Maol Road. Further north, various industrial units are located within the Finnabair Industrial Estate, including Horseware Products Ltd. and Teva Pharmaceuticals Ireland. The western portion of the Site is bounded by Dundalk Golf Course, while the eastern portion is bounded by urban residential properties and agricultural land, and the southern portion is bounded by agricultural land. Access to the Site is currently provided off Bóthar Maol to the north of the proposed development lands. As outlined previously, residential properties are located

[1] http://www.who.int/hia/tools/en/

adjacent to the northern and eastern boundaries of the Site; a hedgerow currently divides the Site from these properties.

In addition to the industries mentioned above there are numerous other Industrial / Business Parks within the vicinity of the Site including Dundalk Retail Park, Xerox Technology Park and Dundalk Logistics Park. Dundalk Institute of Technology (DKIT) is located c. 600m north east of the Site. A number of other education and training facilities including pre-schools, primary schools, a driving school and drama and music academies are located within c. 2km of the Site. There are a wide range of healthcare service located within the vicinity of the Site including Louth County Hospital (located c. 2km north east), a Health Centre, Blackrock Abbey Nursing Home (c. 3.5km south west), Bluebird Care Northeast (c.3km north) and Home Care facilities for the elderly including My Home Care and Homecare Independent Living which are located within the town of Dundalk c. 3.5km north of the Site.

There are a range of fitness and recreation facilities and classes within 2km of the Site, including Dundalk Golf Club adjacent to the Site, a Sports Centre, Fitness and Spa Facility, Yoga Studio and Athletic Club amongst others. Blackrock Community Centre is located c. 1.5km south of the Site.

Blackrock Garda Station is located c. 1.3km south of the Site with access to Dunleer and Dundalk Fire Departments. Numerous religious buildings are located within c. 2km of the Site including St. Oliver Plunketts Church and St. Furseys Church. Various Community Groups are located within Blackrock village, including Irish Countrywomen's Association (I.C.A), Senior Citizens Bridge Club, and a parent and toddler group (located within the Blackrock Community Centre).

3.3.1.2. Population

Recent demographic trends are examined at State, County and local level. The Site is located within the Haggardstown Electoral Division (ED), with the Dundalk Rural ED located adjacent to the northern Site boundary. Figures published in the 2016 Census indicate that the population of Ireland grew by 3.8% since the 2011 Census (CSO, 2018). Louth has undergone reasonable growth in recent times with 2016 Census results indicating a population increase of ca. 4.9% since 2011 when the population was 122,897. According to the CSO (2018) *'Census 2016 results show that Drogheda has maintained its position as the largest town in the State with 40,956 persons. Swords was in second place with 39,248 persons and Dundalk occupied third place with a population of 39,004'.* There are reportedly 9,891 families living in Dundalk (CSO, 2018).

The population in the immediate vicinity of the Site increased significantly in percentage terms since the 2011 census. Haggardstown ED experienced an increase of approximately 8.3% in population between 2011 and 2016, while the population of Dundalk Rural ED increased by approximately 5.7% during the same period. Both the Haggardstown and Dundalk Rural EDs therefore show recent strong population growth, as presented in Table 3.1.

Table 3.1 - Population at Country, County and Local Level from 2011-2016.

Area	Total Population		% change
	2011	2016	
State	**4,588,252**	**4,761,865**	**3.8**
Louth	**122,897**	**128,884**	**4.9**
Haggardstown ED	**6,390**	**6,919**	**8.3**
Dundalk Rural ED	**18,160**	**19,200**	**5.7**

3.3.1.3. Employment and Economic Setting

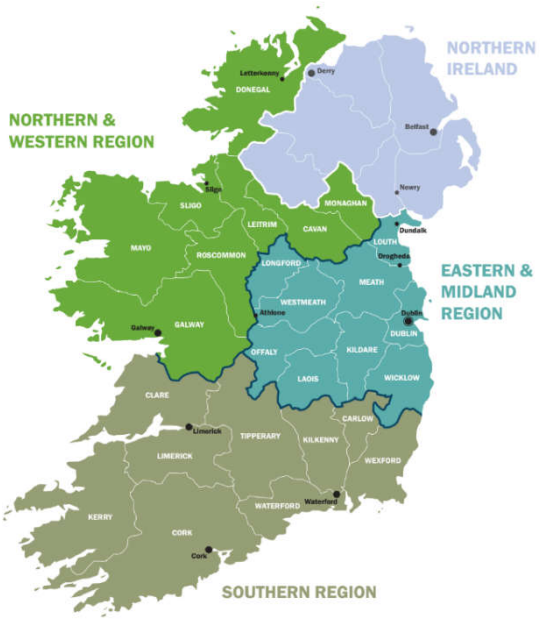
On a national scale, employment rates increased between 2011 and 2016 by 11%, rising from 1,807,360 to 2,006,641, respectively (CSO, 2018). Average 2016 unemployment rates in Ireland, of 12% for women and 13.7% for men are reported (CSO, 2018). The following sectors have experienced the greatest increase in employment levels over the preceding five years; residential care and social work, IT, restaurant and food services, and construction (CSO, 2018).

The Economic and Social Research Institute (ESRI) have recently published a review of the overall outlook for the Irish economy, in a local and international context (ESRI, Autumn 2018). The general current outlook with respect to the Irish economy is positive. The review states the following' *Most key domestic economic indicators for 2018 suggest the Irish economy look set to register another strong performance in the present year'*.

However, the ESRI do note the following; *'Allied to the Brexit issue, increased global trade tension highlights the uncertain external outlook for the Irish economy in 2019…The single biggest threat to the medium-term outlook of the domestic economy is the nature of the UK exit from the European Union.'*

Some of the main findings of the analysis are summarised as follows: -

- Continued growth in employment levels noted, with the largest year-on-year growth rates being recorded in the construction, accommodation and food and administrative and support services.
- Agricultural employment has decreased by 7.8% since the outcome of the Brexit referendum.
- Gross Domestic Product (GDP) rates of 8.9% have been revised upwards for 2018 since the previous quarterly report. This increase is as a result of a significant reduction in the rate of imports of highly valued research and technology related services amongst a select few multinational firms, and also due to the fact that the underlying rate of economic activity, as captured by consumption and modified investment, appears to be growing at a faster pace than previously expected.
- Household consumption is set to continue benefitting from improving household earnings and more resilient household balance sheets. If the continued growth in the domestic economy withstands international shocks, household spending will continue to remain robust.



At a regional and local level, as outlined previously, Dundalk town and its environs has experienced significant population growth between 2011 and 2016.

Dundalk has been identified as a key urban centre, within Eastern and Midland Region in the National Development Plan (NDP, 2018-2027) for further development and investment (Figure 3.1). This priority ranking is based on the towns importance in the context of the Dublin-Belfast economic corridor, and important cross border networks for regional development. The NDP notes the following '*the continued strengthening of the economic relationship between Dublin and Belfast can help reinforce the competitiveness of the Eastern and Midland Region, while also helping to mitigate the adverse effects of Brexit'.* Therefore, Dundalk town and its environs will be targeted as a key growth zone in terms of economic and employment opportunities over the next ten years.

Figure 3.1 - Three Regional Assembly Areas and Northern Ireland (Source: NDP 2018-2027)

This fact, coupled with the existing presence of DKIT, and key industrial and commercial facilities, as well as a developed retail business within the town centre, and a vibrant tourism trade given the areas association with 'Irelands Ancient East' tourism initiative, suggests a promising future for both employment and economic prospects in the local Dundalk area.

3.3.2. Human Health

The proposed development will be utilised by people of all ages as it will provide for families of all sizes and types. The population within the immediate vicinity of the development Site comprise residents of the adjacent residential properties, industrial / commercial workers of the Finnabair Industrial Park and users of local amenities including education, childcare and health care facilities.

The key potential environmental pathways identified in the receiving environment comprise air, noise, soil and water. A detailed evaluation of the receiving environment for each of these considerations are presented in Chapter 6 - Air Quality & Climate, Chapter 7 – Noise & Vibration, Chapter 9 - Land, Soils and Geology, and Chapter 10 - Water.

3.4. Potential Impacts on Population and Human Health

For the purposes of this assessment, the potential impacts of the construction and operation of the proposed development have been assessed. No demolition works are required as part of the proposed development.

3.4.1. Population and Associated Factors

3.4.1.1. Land-use and Community

Dundalk has been identified as a key urban centre and will be prioritised in terms of investment and employment opportunities at a national level over the next ten years, as detailed previously. The economic future of this core town is positive; this along with the significant population increase in Dundalk and its environs since 2011, suggests that that the proposed residential development is in line with existing and emerging trends for the area. Compliance with Louth Development Plan Zoning and Site specific local objectives are discussed separately in the Planning Report, submitted as part of this application.

One of the strategic aims of the Louth County Development Plan (2015-2019) is as follows;

> *'Promote and support the integration of land use and transport and to encourage a model shift to greater use of sustainable modes of transport, including walking, cycling and public transport'.*

The provision of pedestrian and cyclist facilities as part of the proposed development will aid in achieving this particular aim.

With regards to land-use, the proposed residential development is in a zoned residential area with existing low-density housing and higher density housing under construction further south. Therefore, while the proposed development will result in a permanent change in land-use from agricultural to residential, this change is consistent with existing and emerging development trends, and the Louth County Development Plan (2015-2019).

As detailed previously the proposed development is located in the vicinity of Finnabair Industrial Park which includes businesses such as Teva Pharmaceuticals Ireland among others. None of the industries / businesses within the immediate vicinity of the Site will be impacted by the proposed development.

The construction and operation of the proposed development will not result in significant adverse impacts on any of the adjoining land-uses or properties including agricultural land and residential properties located along Bóthar Maol and the R172 road. There will be no impact to Dundalk Golf Course, or DKIT. Properties within the immediate vicinity of the development will not be adversely impacted by the traffic flows associated with the proposed development. This is described in further detail in Chapter 8 – Traffic. If permission is granted for the proposed development, therefore none of the key educational, healthcare, amenity or community services in the vicinity will be affected.

The proposed development will provide high quality housing at a sustainable level to the local community in the vicinity of Haggardstown and Blackrock. The proposed residential development will therefore have a slight positive permanent impact on the local community.

3.4.1.2. Population

Should permission be granted for the proposed development, a variety of house types will be provided for families of all ages and needs. Blackrock is in a suitable location for families who want to live in a

rural area, whilst also being located within close proximity to Dundalk town, and within commuting distance of Dublin and Belfast Cities and their surrounding areas. All of the required educational, healthcare and community services to cater for this wide demographic are located within the immediate vicinity of the proposed development; this coupled with the strong employment and economic prospects as detailed previously would ensure that the proposed development will have a moderate positive permanent impact on the population in the immediate vicinity.

3.4.1.3. Employment and Economic Activity

Dundalk and its environs including Blackrock and Haggardstown, is primed for major investment and economic growth over the next ten years, as detailed previously. The proposed development will serve to provide a source of high quality housing and will help drive the local economy.

During the construction phase it is envisaged that the proposed development will provide employment to between 40 to 50 construction staff for the duration of the project, based on previous experience of similar developments. In addition, the construction of the proposed development will generate significant revenues for the local economy through spin-off services including quarries, precast cement, and material and hardware supplies. This would result in a moderate positive medium-term impact to the local economy during the construction phase, anticipated to be on a phased basis over the 5-year duration of the requested planning permission.

During the operational phase the proposed development will require a number of support staff, including security, maintenance staff and crèche personnel, resulting in a slight positive impact to the local economy through the creation of sustainable employment opportunities in the long-term if permission is granted for the proposed development.

3.4.2. Human Health

A Stage 1 Human Health screening assessment has been undertaken, in accordance with relevant UK guidance (UK DH, 2010) based on five key screening criteria. The construction and operation of the proposed residential development will not negatively impact on mental health and wellbeing, will not negatively impact on social, economic and environmental living conditions that would indirectly affect health, will not affect an individual's ability to improve their own health and wellbeing, will not result in a change in demand for or access to health and social care services, and will not have an impact on global health.

Potential impacts on human health have also been considered in the context of valid environmental pathways and associated transport mechanisms, using the risk-based approach advocated by the EPA (2017). Refer to the Source-Pathway-Receptor (S-P-R) preliminary conceptual model for human health assessment presented in Table 3.2.

Source	Pathway (and transport mechanism)	Potential Human Health Receptors	Plausible Health Impact?
Increased Air / Dust Emissions	Dust emissions (inhalation)	New Residents (onsite) Crèche users (onsite) Maintenance Workers (onsite) Construction Workers (onsite) Existing residents (offsite) Commercial / industrial Workers (offsite) Golf course users (offsite)	Yes. Mitigation measures required. Refer to Chapter 6 – Air Quality and Climate.
Kerosene / Fuel / Chemical Spills / Leaks	Soil (direct contact, ingestion, volatilisation)	New Residents (onsite) Crèche users (onsite) Maintenance Workers (onsite) Construction Workers (onsite)	Yes. Mitigation measures required. Refer to Chapter 9 – Land, Soils and Geology.
	Surface water (direct contact)		No (Refer to Chapter 10 - Water)
	Groundwater (direct contact, ingestion)		No (Refer to Chapter 10 - Water)
Storm Water Discharge	Attenuated storm water (direct contact)	New Residents (onsite) Existing residents (offsite) Maintenance Workers (onsite) Construction Workers (onsite)	Yes. Mitigation measures required. Refer to Chapter 10 – Water
	Transitional Waters (direct contact, ingestion)	Local bathers (offsite)	No (Refer to Chapter 10)
Increased Noise Emissions	Noise emissions	New Residents (onsite) Crèche users (onsite) Maintenance Workers (onsite) Construction Workers (onsite) Existing residents (offsite) Commercial / industrial Workers (offsite) Golf course users (offsite)	Yes. Mitigation measures required. Refer to Chapter 7 – Noise and Vibration.

Table 3.2 - Preliminary S-P-R Model for Human Health Assessment.

The following plausible impacts to human health have been identified;

- Potential risk to receptors (i.e. construction workers, onsite residents including crèche users, and offsite residents) through inhalation of dust emissions during the construction phase.
- Potential risk to receptors (i.e. construction workers) through direct contact, ingestion or inhalation with any soils which may potentially contain low level hydrocarbon concentrations from Site activities (potential minor leaks and spills of fuels, oils and paint) during the construction phase. Given the current and historic land use and based on Site-specific soils chemical data, the potential risk of exposure via. ingestion or volatilisation associated with baseline soil quality is negligible.
- Potential risk to receptors (i.e. maintenance workers) through direct contact with attenuated storm water which may potentially contain low level hydrocarbon concentrations from Site activities (potential minor fuel leaks) during the operational phase.
- Potential risk to (i.e. construction workers, onsite residents including crèche users, and offsite residents) through noise emissions, during the construction phase.

The proposed development will have a slight positive permanent impact on mental health and wellbeing during the operational stage through the provision of pedestrian and cyclist facilities, open spaces and child care facilities via. a crèche. The provision of pedestrian and cyclist facilities within the proposed development is consistent with Louth County Councils vision of encouraging a modal shift to greater use of sustainable modes of transport, including walking, cycling and public transport.

3.4.2.1. Unplanned Events

There is always the possibility of unplanned events (including traffic / machinery accidents, fire, collapse / equipment failure and spill / leaks of fuel, chemicals or paint) occurring during the construction phase of a development of this scale given the type of work being carried out. However, the potential human health risk will be reduced and managed through the implementation of mitigation measures as detailed further in Section 3.5.

In the case of unplanned events occurring within the development while operational, key potential risks considered include the following:

- Significant traffic accidents (and associated spills);
- Risk of onsite / offsite flooding;
- Risk of onsite fire / emergency;
- Risk of onsite landslides;
- Risk of onsite building collapse or equipment failure; and,
- Risk of onsite / offsite dust emissions.

With regards to the potential for traffic accidents, all vehicular, cyclist and pedestrian routes, along with the internal and external road layouts have been carefully designed in order to reduce any potential for traffic accidents / collisions. Louth County Council have recommended 30 km/h as an appropriate speed limit in a housing estate such as the proposed development. Thus, the risk of significant traffic accidents (and associated spills) is considered to be low during the operational phase of this development.

The risk of onsite and offsite flooding posed by and to the proposed development has been considered at length at each stage of this planning application. The proposed storm water drainage system has been designed to ensure that all storm water run-off from the internal road system will be attenuated to greenfield run-off rates (flow restricted through the use of a flow control device) and will pass through a by-pass separator prior to discharge. An alarm system will be fitted to the by-pass separator on each of the storm water networks; this will activate when hydrocarbon pollutants reach a pre-determined level, signalling that maintenance and cleaning will then be required. An emergency shut-off valve has also been designed into the system to ensure that in the highly unlikely event of an onsite spill or contamination event, any contaminated surface water that may arise on the Site can be removed and prevented from discharging to Dundalk SAC and SPA.

A detailed Stage 1 and Stage 2 'Flood Risk Assessment Report' has been prepared by Finn Design Partnership (2019) for the proposed development and is presented in Appendix H of this EIAR. With respect to potential human health impacts, based on available information, the R172 and the existing wetlands in the area of the main entrance to the development will be prone to coastal flooding during extreme weather events when there is a combination of high tide level, storm surges and wave action. However, this potential risk has been addressed through detailed flood risk assessment and modelling which have informed the final development design. The following design measures have been incorporated into the engineering design specifically to reduce and manage this potential risk;

- The small increases in flood levels associated with discharging the greenfield runoff rate to the existing open channel on the periphery of the Dundalk Bay Estuary are imperceptible and immeasurable and would not result in an adverse impact to the existing hydrological regime or result in an increased flood risk to adjacent properties.
- Finish floor levels of all proposed dwellings will be sufficiently above the maximum predicted flood level of 3.94 m AOD. The lowest proposed floor level for a dwelling is 8.10 m AOD. No part of the site should be subject to flooding under the design flood scenario.
- While some level of flooding of the R172 will take place at the entrance to the development during an extreme coastal weather event the predicted depth (110mm depth) will be such that vehicles can still safely enter and leave the site. Pedestrian access will be provided through the provision of footpaths where their levels will be above the predicted flood level.
- The proposed flood management measures will further reduce the residual risk to the development by incorporating an allowance for climate change and provide provisions for emergency services access.
- The proposed mitigation measures are Site specific and are not dependent on any existing or future communal flood protection system being put in place.
- All houses shall be connected to the public sewer and public water supply. Any Coastal flooding shall have no adverse environmental impact on the operation of on-site wastewater pumping station or contamination a drinking water supply well.

Accordingly, the risk of onsite or offsite flooding associated with the proposed development has been fully addressed and will not result in any significant environmental or human health risks during the operational phase. The potential future risk of impact to the proposed development caused by rising sea levels associated with climate change is considered to be low based on the Site topography, and the findings of the Site-specific flood risk assessment report (Finn Design Partnership, 2019) which takes into account climate change.

Regarding the risk of onsite fire or emergency, fire assembly points which will be clearly marked throughout the development. Permanent 24-hour emergency access and egress to the development will be provided. As noted previously, Blackrock Garda Station is located c.1.3km south of the Site with access to Dunleer and Dundalk Fire Departments. The proposed development will be designed, constructed and maintained in accordance with all relevant statutory building and fire safety requirements.

With regards to the potential risk of landslides or building collapse, there is no evidence of significant historic landslides in the vicinity of the proposed development. Based on available Site-specific geological records, the potential risk of landslides / ground instability at the Site is considered to be low.

The proposed development will be designed, constructed, certified and maintained in accordance with all relevant statutory building and health and safety requirements. Accordingly, the risk of onsite building collapse or equipment failure are considered to be low.

Dust may be generated during the construction phase and impact on air quality onsite and offsite. However, dust will be controlled in accordance with Transport Infrastructure Ireland "*Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Schemes*" (TII 2011). Therefore, the potential impact from unplanned dust emissions is considered to be low.

3.5. Mitigation Measures

3.5.1. Construction phase

The following mitigation measures will be put in place and implemented during the construction phase of the development;

- All standard Safety and Health procedures will be implemented at every stage of this project including the preparation of a Preliminary Safety & Health Plan, and a project specific Risk Assessment and Method Statement prepared by the Contractor which will address the health and safety steps that will be put in place and implemented by all Site operatives.
- The proposed transport routes of all machinery entering and egressing the Site, for the full duration of the five year phased construction period shall be through the proposed entrance off the R172, as presented above in Figure 2.6. All construction activities will be managed and directed by a Construction Traffic Management Plan (CTMP). The details of the CTMP will be agreed with the roads department of the Local Authority in advance of construction activities commencing on-Site.
- The construction of the proposed development will be in accordance with the Outline Construction Environmental Management Plan (CEMP) which takes account of the Schedule of Environmental Commitments presented within this EIAR and is submitted as part of this planning application. This live document will be further detailed within the project specific Detailed CEMP prepared by the Contractor.
- An Emergency Response Plan will be prepared by the Contractor and will be kept on Site for the duration of the construction phase.
- The residual risks of flooding can be further managed by incorporation of good building practice in the detailed design and construction of the development.
- The following mitigation measures will be applied which will fully address identified risks to human health receptors during the construction phase;

Chapter 6 – Air Quality and Climate

- Mitigation measures during the construction phase, as set out in mitigation section of this Chapter will apply to the proposed development. A review of construction phase traffic has been undertaken to assess the impact of the development with reference to EU ambient air quality standards which are based on the protection of human health. Reviewing this with respect to baseline background concentrations of air pollution and with all National and EU ambient air quality limit values it is predicted that the impact of the proposed development will not result in a significant impact on human health.
- When the dust minimisation measures detailed in the mitigation section of this Chapter are implemented, residual fugitive emissions of dust from the Site will be insignificant and pose no nuisance at nearby receptors. Therefore, the overall impact of the construction phase is considered short-term, negative and not significant. Nonetheless, it is recommended that dust monitoring (Bergerhoff Method) should be conducted during the construction phase as this will ensure the efficiency of the dust mitigation measures and will also highlight when more measures may need to be implemented.

Chapter 7 – Noise and Vibration

- Mitigation measures during the construction phase, as set out in mitigation section of this Chapter will apply to the proposed development.
- The construction phase is short term and therefore any elevated levels of noise to off-Site receptors will be temporary and, as a result, are not expected to pose any risk to human health. In terms of the noise exposure of construction workers and potential hearing damage that may be caused due to exposure to high levels of noise, the Safety, Health and Welfare at Work (General Application) Regulations 2007 (Statutory Instrument No. 299 of 2007) provides guidance in terms of allowable workplace noise exposure levels for employees. The Regulations specify two noise Action Levels at which the employer is legally obliged to reduce the risk of exposure to noise. The appointed contractor will be required to comply with the Regulations and provide appropriate noise exposure mitigation measures where necessary. The noise exposure level to off-Site receptors during the construction phase will

be below the lower Action Level and therefore the risk of noise exposure resulting in potential hearing damage to off-Site receptors is minimal. Nonetheless, it is good practice for the appointed contractor to monitor levels of noise and vibration during critical construction periods at nearby sensitive locations and/or development Site boundaries.

Chapter 9 – Land, Soils and Geology

- Mitigation measures during the construction phase, as set out in mitigation section of this Chapter will apply to the proposed development.
- Based on all available evidence, current soil quality beneath the greenfield Site are not considered to pose an unacceptable risk to human health, building and services, environmental receptors or third-party Sites.
- During the construction phase, soils and bedrock may be at risk of becoming contaminated through Site construction activity; in particular the risk of fuel spillages and leakage. There is a risk of direct contact, ingestion or inhalation of volatile hydrocarbons from localised contamination (to onsite construction workers) via. potential onsite leaks. When the industry standard construction management and Health and Safety practices detailed in the mitigation section of this Chapter are implemented, the potential risk of human health impacts to construction workers arising from construction activities will be minimised. The potential overall impact of the construction phase with regards to human health is therefore considered to be short-term, and slight negative.

3.5.2. Operational Phase

While specific engineering design measures have been incorporated into the overall design of the proposed development, thereby reducing the potential human health risk associated with unplanned events, namely an extreme, 1 in 1000-year storm event, the following mitigation measure will be put in place and implemented during the operational phase of the development in order to further reduce this risk;

Chapter 10 – Water

- Mitigation measures during the operational phase, as set out in mitigation section of this Chapter will apply to the proposed development.
- During the operational phase, there is a potential risk of direct contact with contaminated storm water (to onsite maintenance workers) via. potential onsite leaks / spills during routine maintenance, or in the unlikely occurrence of unplanned events (traffic collision, emergency onsite fuel / oil spill, fire water arising from a property fire or SuDS failure). Taking account of the baseline environmental setting and proposed mitigation measures during both the construction and operational phases, any human health risks to onsite or offsite receptors as a result of groundwater or surface water impacts will be imperceptible. No human health risks associated with long term exposure to contaminants (via. surface water or groundwater pathways) resulting from the proposed development are anticipated.

3.6. Residual Impacts

Taking account of the nature and extent of the proposed development, the preliminary project specific engineering design, detailed impact assessments which have been completed in respect of air quality and climate, noise and vibration, land soils and geology, and water (presented in Chapter 6, Chapter 7, Chapter 9 and Chapter 10 respectively), and proposed mitigation measures, no residual adverse impacts to population or human health are anticipated as a result of the proposed development. All identified potential key risks associated with unplanned events occurring have been evaluated, and do not pose an unacceptable risk to human health.

The overall impact on population and human health will be slight positive and permanent, as the proposed development will provide employment and will also benefit the local economy through spin-off activities and will provide high-quality housing at a sustainable level to the local community. The provision of onsite facilities, including pedestrian and cyclist facilities, high-quality amenity open space and child care facilities via. a crèche, will also result in a positive contribution to the mental health and wellbeing of the residents and local amenity users.