

4.0 POPULATION AND HUMAN HEALTH

4.1 Introduction

The 2014 EIA Directive (2014/52/EU) has updated the list of topics to be addressed in an EiAR and has replaced 'Human Beings' with 'Population and Human Health'. The 2014 Directive does not provide specific guidance on the meaning of the term Human Health but it is considered a broad factor that is highly project specific covering the existence, activities and health of people, usually considering people as groups or 'populations'¹.

While most developments by people will affect other people, this section of the EiAR concentrates on those topics which are manifested in the environment, such as land use and patterns and employment.

It is noted that there are inter-related environmental topics described throughout this EiAR document which are also of relevance to Population and Human Health. Issues such as the potential likely and significant impacts of the proposed development on landscape and visual impact, biodiversity, archaeology & cultural heritage, air quality & climate, noise & vibration, water, land & soils, material assets including traffic & transport and built services are of direct and indirect consequence to human health. For detailed reference to particular environmental topics please refer to the corresponding Chapter of the EiAR. In accordance with EPA advice, the proposed project has the potential for significant impacts are likely to affect the following topics relating to population and health-

- Land use and settlement patterns
- Population and Housing Supply
- Employment
- Community Infrastructure Capacity
- Human Health and Wellbeing

This Chapter of the EiAR will address the potential significant impacts, if any, of the proposed residential led mixed use development on population and human health under these topics. For a full description of the project please refer to Chapter 3.

4.2 Study Methodology

This Chapter of the EiAR has been prepared with reference to the document produced by the European Union, 'Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU)' (EU, 2017) as well as National Guidelines which provide guidance on the 2014 EIA Directive including the 'Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment' (2018) and the 'Draft Guidelines on the information to be contained in environmental impact assessment reports', published by the EPA in August 2017 as well as Draft Advice Notes for preparing Environmental Impact Statements (September, 2015).

¹ EPA Advice Notes

To establish the existing receiving environment / baseline, site visits were undertaken to appraise the location and likely and significant potential impact upon human receptors. Desk based study of published reference documents such as Central Statistics Office Census data, CSO online Statbank, Pobal online services, the National Planning Framework, the Regional Spatial and Economic Strategy for the Eastern and Midland Region as well as the Louth County Development Plan 2015 and the Drogheda Borough Council Development Plan 2011 (as extended).

4.2.1 Principal Receptors

As outlined above, the application site is surrounded mostly by undeveloped land and large infrastructural instalments including the railway line to the south, Drogheda Waste Water Treatment Plan to the north east and Flogas LPG site to the north. For these reasons the location is not particularly sensitive due to its urban character and existing settlement pattern.

In terms of sensitive receptors that may be potentially impacted by the construction and operational stage of the proposed development, there are two existing residential dwellings located on McGrath's Lane to the south west and south east of the application site. The two dwellings either end of McGrath's Lane have been identified as sensitive receptors due to their proximity to the built form of the proposed development. Railway Terrace itself is not considered a sensitive receptor as other than during the undertaking of the improvement works to this road, which will be managed in accordance with the Construction Management Plan, no construction or operational traffic will access or egress the application site via Railway Terrace/McGrath's Lane. Existing residential developments are also located to the north west (Weirhope) and south of the railway line (Wheaten Hall). Other potential receptors of impacts include transient populations such as car drivers, walkers, cyclists and train passengers coming and going from the train station.



Figure 4.1– Sensitive Receptors

4.3 The Receiving Environment – Baseline Scenario

4.3.1 Land Use and Settlement Patterns

The development lands are located in the townland of Newtown within the environs of Drogheda, and extend to an area of approximately 9.68 hectares. The lands are contiguous with the existing surrounding residential development in the area.

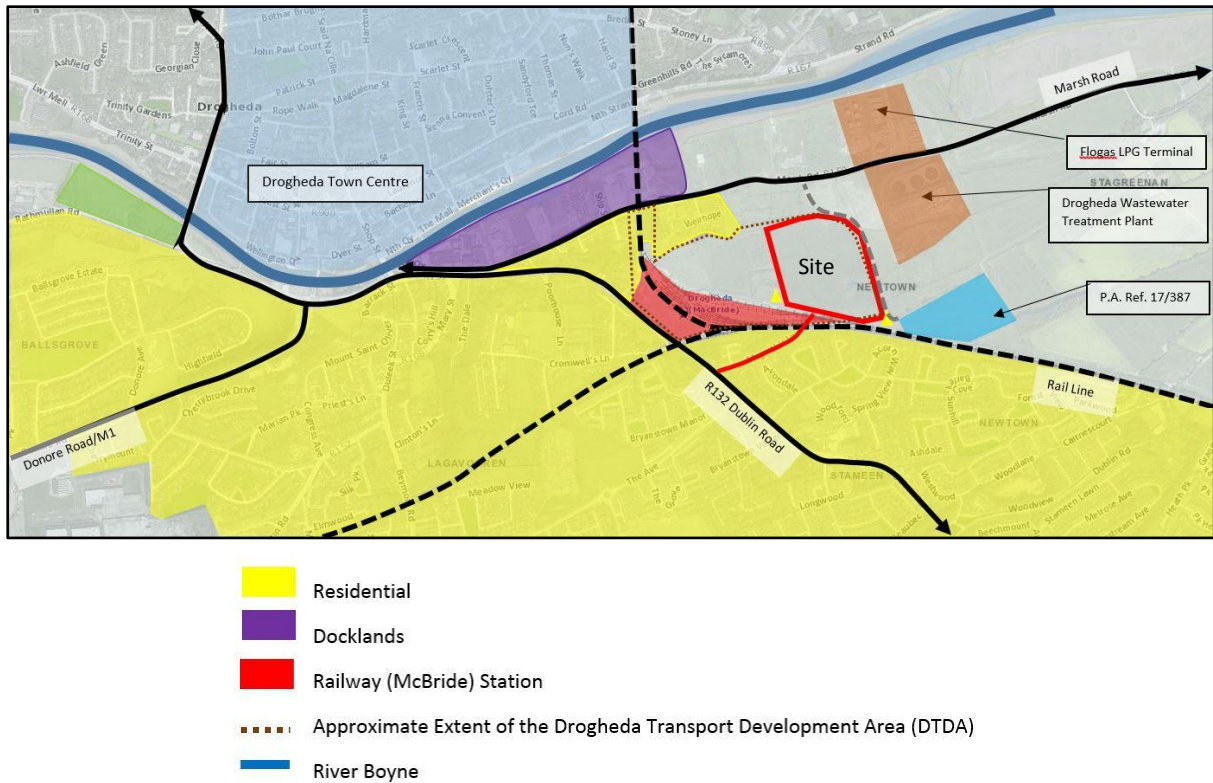


Figure 4.2 – Settlement Pattern

The lands are currently in agricultural use. The immediate area can be described as semi-urban, featuring the Drogheda wastewater treatment plant to the north east, the Drogheda Train Station to the south west, existing residential development to the east and south and the main Dublin-Belfast train line immediately south. Flogas Liquid Petroleum Gas Terminal is located to the north of the subject lands on the south bank of the River Boyne.

Planning permission has been granted for 133no. houses to the south east of the site together with an access road (P.A. Ref 17/387) with funding awarded under the Local Infrastructure Housing Activation Fund. The proposed project will join to the permitted access road and secure its funding by providing the required 260 units by 2021.

The development area is zoned 'Drogheda Transport Development Area' by the Drogheda Borough Development Plan 2011-2017 (as varied and extended). The identification of the DTDA is based on the promotion of a high density mixed use development area. Acceptable land uses within the DTDA are stated to include, high density housing development, neighbourhood scaled community services and amenities including appropriately scaled retail provision, and mixed-use development including retail and high value-added enterprise developments. These lands are excluded from the Core Strategy for Drogheda.

4.3.2 Population and Housing Supply

The Drogheda Borough Development Plan 2011-2017 notes the overall population of the Drogheda contiguous area as 35,090 in 2006 and predicted it to grow to 39,651 and 42,108 in 2011 and 2016 respectively. Since the Development Plan was adopted there have been two censuses; in 2011 and 2016. The 2011 census recorded the population of the Drogheda Borough and environs area as 38,578 and the 2016 census records the settlement of Drogheda as 40,956. The population of the Drogheda area has steadily increased from 2006 to 2016. Indeed, Census 2016 identified Drogheda as the fastest growing town in the Country. Drogheda sits at Level 1 of the County settlement hierarchy and growth is directed towards Drogheda and Dundalk as the two major urban areas in County Louth. Further growth has been allocated to Drogheda with its designation as a Regional Growth Centre by the National Planning Framework and recently adopted Regional Spatial and Economic Strategy, set to achieve a population of 50,000 by 2031.

Small Area Population Statistics for the settlement of Drogheda show that of the 13,311 households who stated the year their house was built, only 2% were built in the period 2011 or later, which reflects the downturn in the economy. The greatest percentage of households were built in Drogheda during the period 2001-2010 (28%). The Louth County Development Plan 2015-2021 has allocated 952 residential units to Drogheda and its environs within County Louth for the period 2016-2021. The Plan states this level of provision is acceptable given the status of Drogheda within the County. While statistics are not available at the settlement level for dwellings completions, the CSO records that there have been 1,354 new dwelling completions in the area of Louth County Council between 2016Q1 and 2019Q1. This represents 44% of the total number of unites required within the County to meet project need. Unfortunately figures are not available for the individual urban centres within the County, however the figures clearly show that housing completions are falling short of the requirements of the County Development Plan. It is also worth noting that 25% of the new dwellings completed between 2016Q1 and 2019Q1 are categorised as 'single house' meaning that a quarter of completions were probably not even on the market.

Figure 4.3 below illustrates the Census 2016 recorded private households by type of accommodation for Drogheda. It is clear that the majority of housing in Drogheda (88%) consists of traditional houses. Looking to potential supply, an examination of planning permissions granted for new houses and apartments for Louth indicate that 62% of units were houses and 23% were apartments. 14% were one off houses (2018Q1-2019Q1).

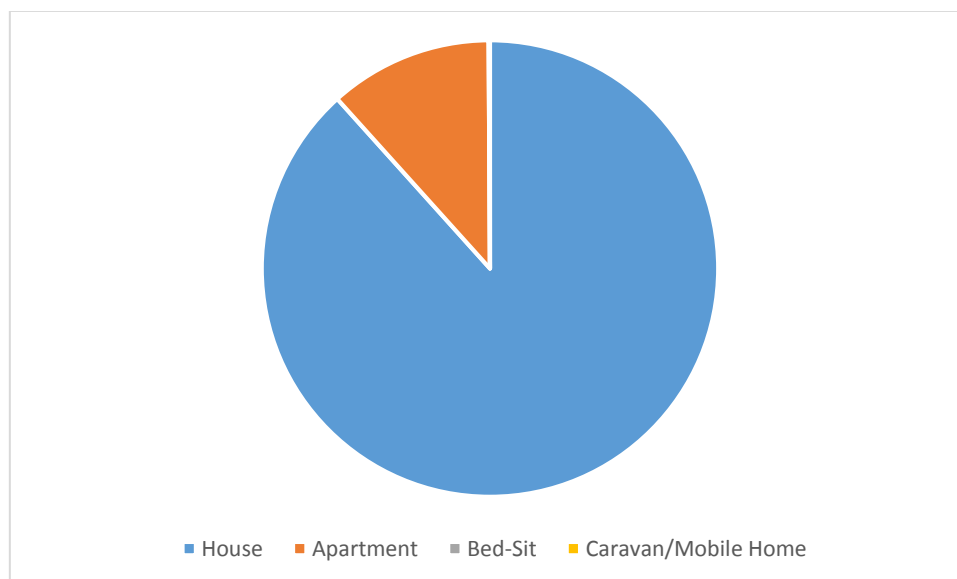


Figure 4.3 -Private Households by Type of Accommodation in the Settlement of Drogheda (Census 2016)

4.3.3 Employment and Commuting Pattern

The development lands are zoned 'Drogheda Transport Development Area' (DTDA). Acceptable employment land uses within the DTDA are stated to include, neighbourhood scaled community services and amenities including appropriately scaled retail provision, and mixed use development including retail and high value added enterprise developments. Industry and Industry (Light) are not permitted under the DTDA zoning objective. Thus there is ample scope and planning policy support for the level of employment uses proposed in the application.

Using statistics from Central Statistics Office-Small Area Population Statistics for Drogheda Legal Town & Environs from the 2006 Census; of the total population aged 15 years and over of the area (27,241), 1,800 (6.6%) were unemployed having lost or given up a previous job, and 15,841 (58%) were at work.

Using statistics from Central Statistics Office-Small Area Population Statistics for Drogheda Legal Town & Environs from the 2011 Census; of the total population aged 15 years and over of the area (29,298), 4,228 (14.4%) were unemployed having lost or given up a previous job, and 14,224 (48.5%) were at work.

Between the two Census periods of 2011 and 2016 80 legal towns were abolished under the Local Government Reform Act 2014 including Drogheda. Census towns which previously combined legal towns and their environs have been newly defined using the standard census town criteria.

Using statistics from Central Statistics Office-Small Area Population Statistics for the settlement of Drogheda; of the total population aged 15 years and over of the area (31,191), 3,072 (9.8%) were unemployed having lost or given up a previous job, and 16,274 (52%) were at work.

It is apparent that the economic crisis caused unemployment rates to increase from 6.6% to 14.4% in the period 2006-2011. The 2016 Census results have shown signs of recovery with unemployment dropping to 9.8% and the employment rate rising to 52%.

The National Planning Framework was published in May 2018 and is the Government's high-level strategic plan for shaping the future growth and development of our country out to the year 2040. Appendix 2 of the NPF records Drogheda with a jobs to resident workers ratio of 0.767.

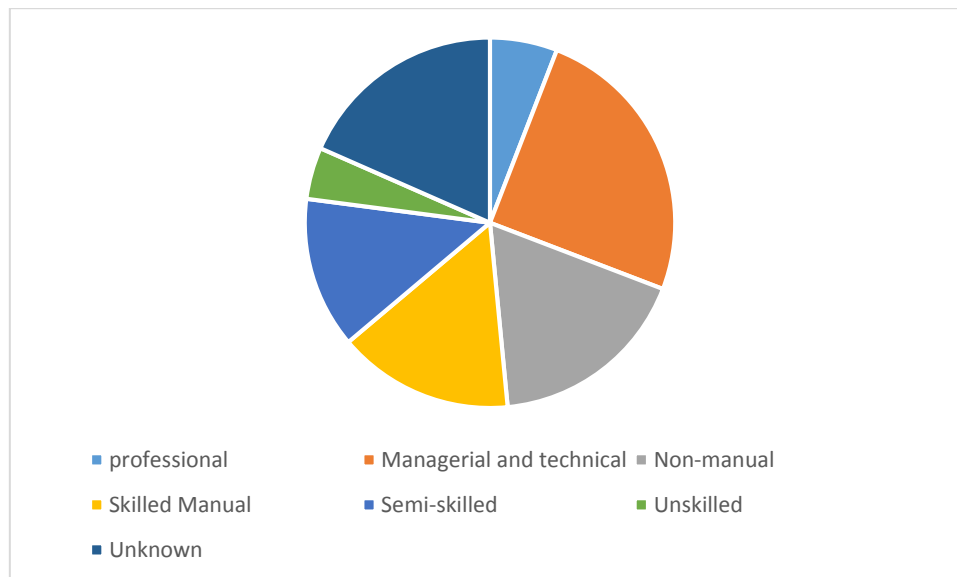


Figure 4.4: Social Class and Socio Economic Group of population gainfully occupied (Census 2016)

Census 2016 figures on commuting patterns indicate that Drogheda has a negative commuter flow with 6,845 persons leaving the town to work and 6,144 persons commuting to Drogheda to work. Of the 24,148 persons who stated their means of travel to school, college and work in the Census 2016, only 3% used the train and 12% used the bus. The majority (57%) travelled by car with a further 23% travelling on foot.

4.3.4 Community Infrastructure Capacity

The site's proximity to the Town Centre of Drogheda and established neighbourhood areas means that it close to a wide range of existing amenities and services including public transport, schools, recreation, medical and retail facilities.

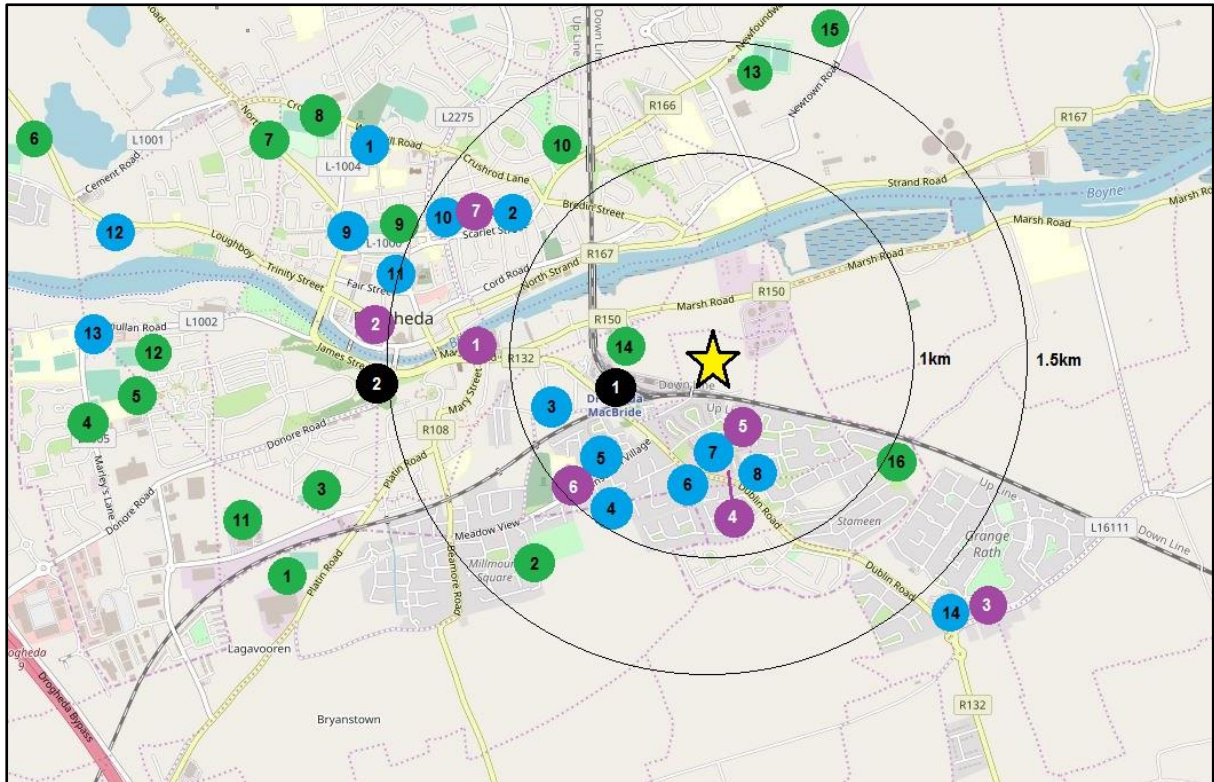








Figure 4.5 – Audit of Community Services and Amenities

Application Site		<i>Table 4. 1 – Services & Amenities in Surrounding Area</i>	
Transport Services		Medical / Health Facilities	
Drogheda ‘McBride’ Train Station		Retail/Local Shopping Facilities	
Drogheda Bus Station		Sports & Leisure Facilities	

There are a number of both primary and post-primary schools located within the area. Using data provided by the Department of Education and Skills on individual schools (Primary Schools 2018-2015 and Post Primary Schools 2014-2015) it is possible to establish the current number of students in existing schools in the area. This is set out in Table 4.2 below.

Primary Schools	Total No. of Girls	Total No. of Boys	Total Pupils
Le Cheile – Educate Together	182	255	437
St Mary's Parish Primary School	559	544	1103
SN Aonghusa	104	105	209
Scoil na mBraithre SN	-	296	296
SN Naomh Peadar	39	52	91
SN Padraig NAOFA B	-	268	268
SN Bhride C	293	-	293
Gealscoil An Bhradain Feasa	229	219	448
Specialist Schools	Total No. of Girls	Total No. of Boys	Total Pupils
Drogheda ABACAS Special School	4	26	30
St Ita's Special School	46	90	136
Post Primary Schools	Total No. of Girls	Total No. of Boys	Total Pupils
Drogheda Grammar School	152	199	351
Sacred Heart Secondary School (Girls)	634	-	634
St Mary's Diocesan School (Boys)	-	845	845
St. Joseph's Secondary School (Boys)	-	789	789
Our Lady's College (Girls)	941	-	941

Table 4.2

There has also been an additional secondary school approved for construction in the Laytown area which will serve the application site with capacity for 600 students. Enrolments are being taken for September 2019.

Pobal records indicated there are 13no. childcare facilities within 1.5km of the subject lands.

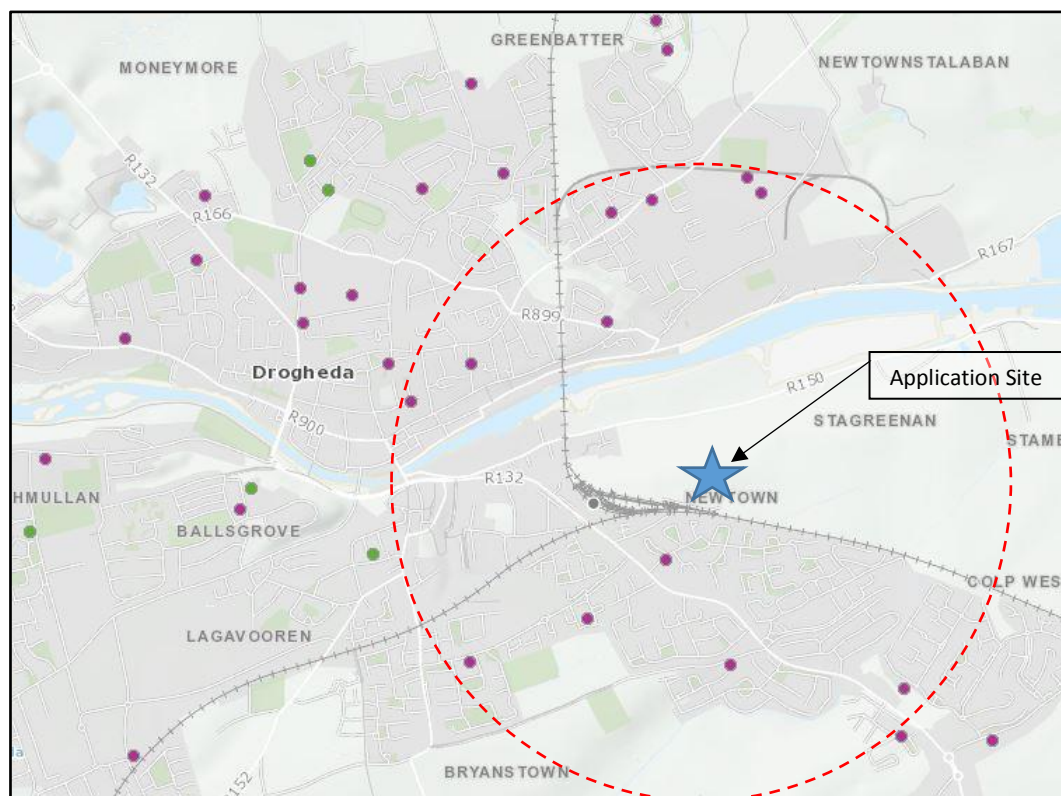


Figure 4.6 – Existing Childcare Facilities within 1.5km of the application site – source Pobal

Drogheda is well served by public transport with McBride Train Station located to the south east of the town centre and Bus Station to the south with interconnecting bus routes both local and regional extending along the main roads. The DART is to be extended to Drogheda and will improve the existing heavy rail services available.

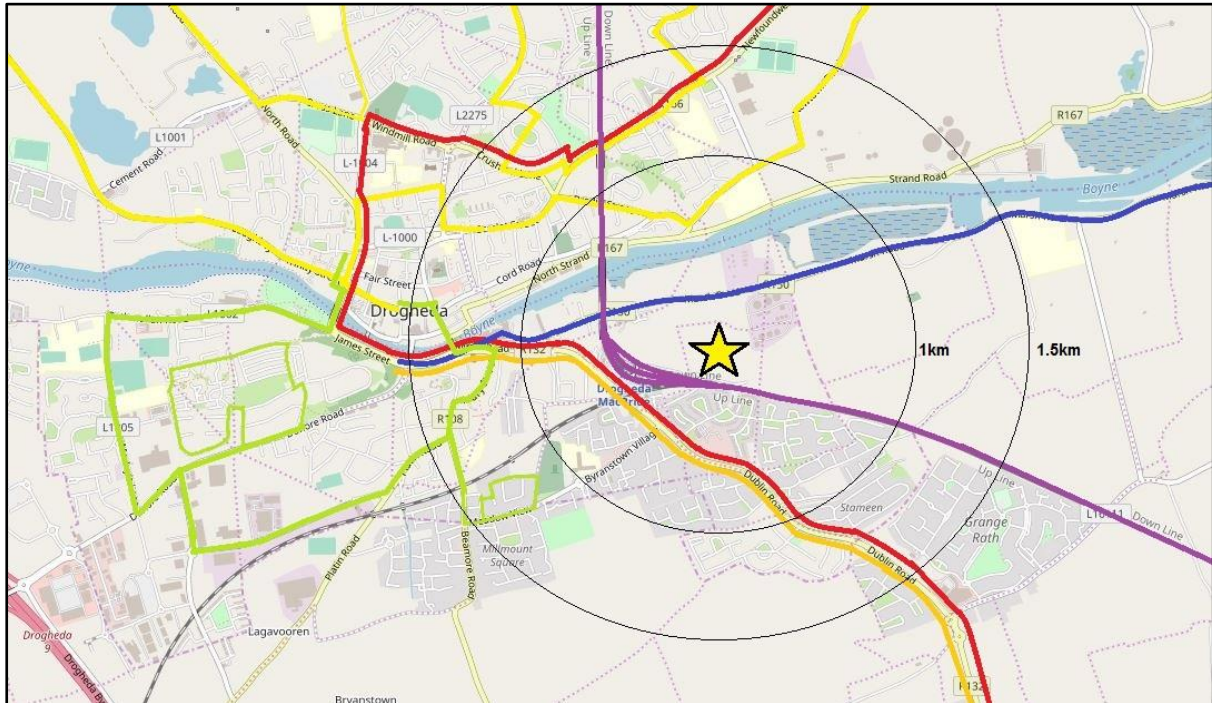


Figure 4.7 Transport Routes

Train / Bus route(s)	Table 4.3 – Public Transport Routes
Northside bus route (173)	
Southside bus route (173)	
Drogheda – Balbriggan – Dublin Airport – Dublin (101)	
Aston Village – Drogheda Bus Station – Balbriggan – Dublin Busaras – Dublin Merrion Square – Dublin Wilton Terrace (101x)	
Drogheda – Bettystown – Laytown (D1)	
Commuter / Intercity / Enterprise Services to Belfast / Dundalk / Dublin / Rosslare Harbour	

4.3.5 Human Health

The Pobal HP Deprivation Index is a method of measuring the relative affluence/ disadvantage of an area using various census information. The scoring is based on a national average of 0 and ranges from -35, this being the most disadvantaged to +35, this being the most affluent.

Using the online Pobal Maps viewer, the electoral Divisions directly relevant to the site and those adjoining the site were ranked as follows under the 2016 census results:

- St. Mary’s (Louth Pt): -2.54. Marginally below average.
- St. Laurence Gate: -1.11. Marginally below average.
- West Gate: -8.95. Marginally below average.
- Fair Gate: -7.23. Marginally below average.

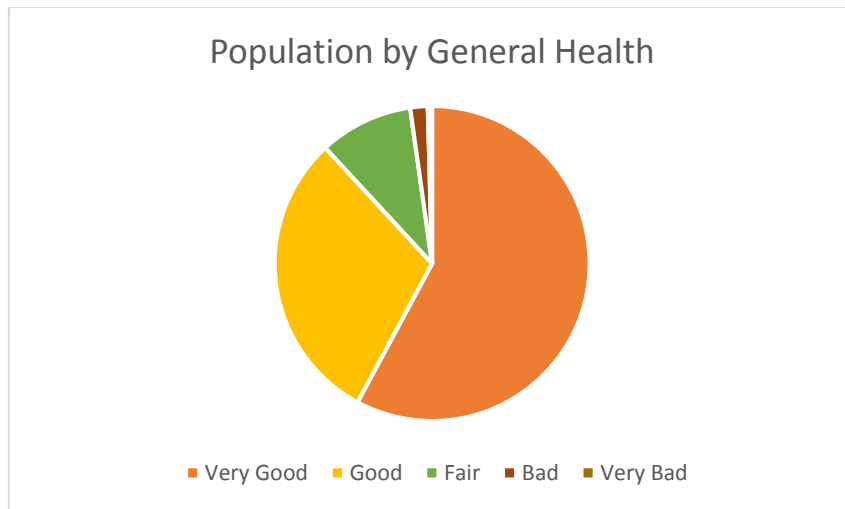


Figure 4.8 – Population by General Health

As illustrated above, the population of Drogheda in general enjoys good health and this is reflecting at the local level with 87% of respondents stating they were in very good or good health (Census 2016, St.Laurence Gate ED).

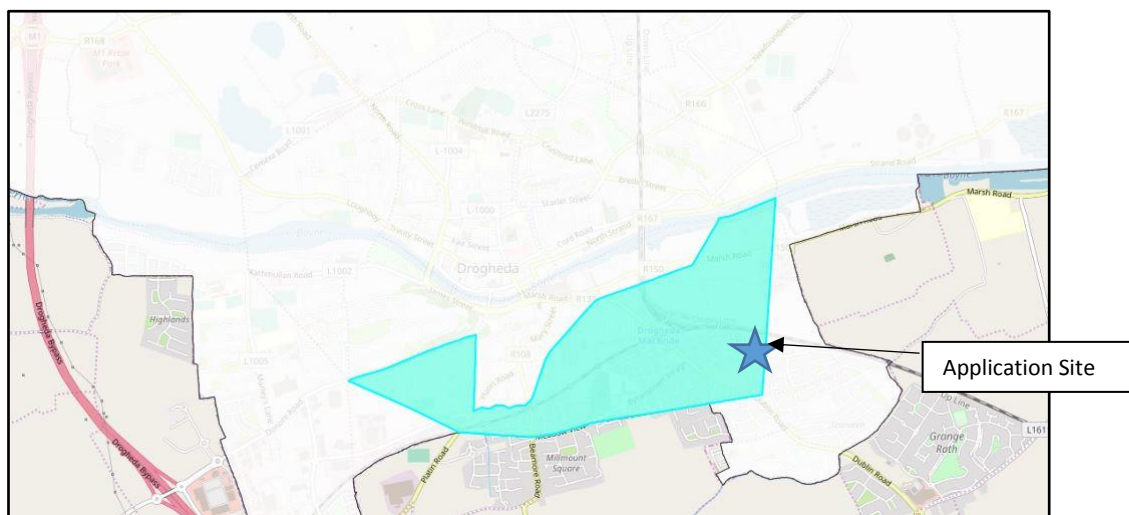


Figure 4.9 - St. Laurence Gate ED highlighted

4.4 ‘Do Nothing Scenario’

In the do-nothing scenario, the proposed project would not occur and the lands would remain undeveloped and in agricultural use. It is submitted that this would be an inefficient use of zoned serviceable lands in proximity to a train station and an existing town centre and in a clearly sequentially preferred location.

As stated above, P.A. Ref 17/387 includes the provision of 133no. houses to the south east of the application site and an access road leading to Marsh Road. Therefore, the area will very likely undergo residential development and provide the infrastructure to serve the development area even in the absence of the proposed development.

By not developing the subject lands for residential use, it would result in 'leapfrogging' of development further in to the suburbs which is in direct conflict with planning policy. The identification of Drogheda as a Rent Pressure Zone further detracts from the do-nothing scenario.

In the do-nothing scenario, potential employment opportunities within the area will be lost both at construction and operation stages.

The do-nothing scenario is found to be unacceptable in terms of population and human health.

4.5 Cumulative Impacts

This EiAR takes account of cumulative impacts. In particular, permitted development (P.A. Ref 17/387) for 133no. houses and access road. The permitted access road has been included within the application site for the proposed SHD application.

4.6 Likely Significant Effects on Receiving Environment

4.6.1 Land Use and Settlement Patterns

The proposed project will change the land use from agricultural lands to a new neighbourhood area. This semi-urban area is surrounded by large scale infrastructure and existing residential developments. The lands are appropriately zoned and contiguous to the urban area of Drogheda. This is a permanent moderate effect but will be positive as it will consolidate the urban area where there currently exists a 'wedge' of undeveloped serviceable lands.

4.6.2 Population and Housing Supply

Using statistics from the Central Statistics Office, it is calculated that the average household size for the Drogheda Settlement Area is 2.8 persons per household. Given the proposal contains 450 residential units, it could accommodate a population of 1,260 persons. This would assist in the achievement of a population of c.50,000 in Drogheda by 2030 as envisaged by the Regional Guidelines and support the public transport services including the extension to the DART to Drogheda. This is seen as a moderate positive impact.

The Electoral Division in which the site is located is St.Laurence Gate. This ED is recorded in 2016 has having a population of 4,075 and housing stock of 1,662. The proposed development represents a 27% increase in housing stock in this ED and a 2.8% increase to the overall housing stock in Drogheda. In addition, the proposed development will add variety to the existing and permitted housing stock of Drogheda with 82% of the units proposed as apartments. Drogheda is recognised as a Rent Pressure Zone. As such, the additional housing units will have a permanent and positive impact on the housing stock levels in Drogheda.

4.6.3 Employment and Commuting Pattern

The proposed development will provide for additional employment in the area during both the construction and operational phase. This will have a moderate positive impact on the local economy with the creation of new jobs, reducing levels of unemployment in the area and increasing the resident workers to jobs ratio.

It is estimated that approximately 120 direct jobs created during the construction phases, with additional “spin-off” economic and employment benefits also generated.

The crèche facility has been designed to accommodate up to 120 children. Childcare Regulations² require strict child to adult ratios and based on these, it is estimate this facility could provide jobs for 21 members of staff. Based on available employment density guidelines³ it is estimated that the neighbourhood units (1,278sq.m) could provide employment for 54no. workers while the office building (1,903sq.m) could accommodate a further 127. The variety in uses proposed also allows for the a variety of socio-economic groups and skill levels. The location of employment uses in proximity to residential promotes a better quality of life.

The application site is strategically located within walking distance to Drogheda Train Station being c.650m from the neighbourhood centre and c.750m from the centre of the site via McGrath’s Lane/Railway Terrace, with bus services serving the Dublin Road to the south and Marsh Road to the north. The site is c.960m from Scotch Hall Shopping Centre from the norther site boundary and c.1km from the centre of the site via Marsh Road. The ethos behind the new neighbourhood promotes sustainable modes of transport, prioritising pedestrian and cyclists with more direct routes throughout the site and the improvement of McGrath’s Lane/Railway Terrace pedestrian link. A mobility management plan also accompanies this application as part of the SHD documentation. It is considered that this will increase the number of residents who use the train and support existing and future public services including the DART extension programme.

The predicted impact of the proposed development on employment and commuting patterns will be permanent moderate and overall positive.

4.6.4 Community Infrastructure Capacity

The proposed development will increase the population within the community by c. 1,260 persons. Figure 2 above illustrates the supply of community facilities available to the residents of Drogheda. The area is adequately served by existing social infrastructure. The proposal includes the provision of a crèche which will support the new neighbourhood and provide a service that is currently not available in the immediate area. The provision of retail/café/offices will serve local residents and enhance the facilities available in the area. A high percentage of the lands are allocated as public open space, including a civic square and improvement works to McGrath’s Lane/Railway Terrace to provide a safe and secure a pedestrian/cycle linkage. This will also benefit existing residents.

² Child Care Act 1991 (Early Years Services) Regulations 2016

³ Employment Density Guide (2015) Homes and Communities Agency, UK.

40,956 persons were registered within Drogheda Settlement as part of the 2016 Census, of which approx. 19.8% of the population (8,144) were of school age i.e. 5-18 years. Translating this to the proposal, the estimated population increase of 1,260 persons results in c.250 persons of the future population of school going age. There is sufficient capacity for this future population within the existing school network as illustrated by Table 4.2.

The location of the application site in proximity to the Drogheda Train Station and bus routes serving the Dublin Road (R132) and south of an existing local bus route will encourage people to use sustainable modes of transport over the car and support the expansion of the DART to Drogheda as confirmed in the Regional Spatial and Economic Strategy. Car Parking locations for the apartments are intentionally and specifically designed to be accessible but at a remove from apartments to discourage use of the private car as a 'first thought' option.

The overall impact of the proposed project is permanent moderate but positive in terms of the addition of community facilities and amenity space and will have slight to moderate impact on existing social infrastructure including schools.

4.6.5 Human Health

The proposed project will not result in any deterioration in human health to the existing population of Drogheda. This is predicted based on the findings of the Environmental Impact Assessments undertaken as part of this EiAR. The proposed development has been planned in keeping with Development Plan policy and is in keeping with National and Regional Guidelines, all of which have undergone Strategic Environmental Assessment. This is demonstrated in the Chapters of this EiAR which relate to the environmental factors of landscape and visual impact, biodiversity, archaeology, cultural heritage, air quality and climate, noise and vibration, water, land and soils, material assets including traffic and transport

It is submitted that the development of the subject lands, including the improvements to McGrath's lane/Railway Terrace will increase security in the area and public safety. The location and design of the development will also encourage walking/cycling and public transport use thus further contributing to public health and well-being.

4.7 Mitigation Measures

Mitigation measures proposed during the construction phase will ensure that impacts relating to noise, dust and air quality are minimal. Further details are outlined in the relevant section of this EiAR. No mitigation is required for the operational stage with regard to population and human health.

4.8 Risk of Major Accidents and Disasters

4.8.1 Introduction

The amended 2014 Directive requires the expected significant adverse effects of a project on the environment deriving from the vulnerability of the project to risks of major accidents and/or disasters to be addressed.

The development site is located approximately 225 metres south west of Flogas LPG Terminal. The LPG terminal is an Upper Tier COMAH establishment, and is subject to the provisions of the European Communities (Control of Major Accident Hazards Involving Dangerous substances) Regulations, S.I. 209 of 2015 (2015 COMAH Regulations). This is due to the presence of quantities of LPG above the threshold quantity specified in the 2015 COMAH Regulations (> 200 tonnes for Upper Tier establishments).

During the operational phase the principal human health concern will arise due to the proximity of the proposed development to the Flogas Ireland Ltd. LPG Terminal at Marsh Road, Drogheda, Co. Louth. A COMAH Land Use Planning assessment was completed by AWN Consulting Ltd. (report ref. MMcK/17/9757RR01) in accordance with guidance published by the HSA (HSA, 2010). The COMAH Land Use Planning assessment is attached as Appendix 4.1.

4.8.2 Assessment Methodology

In order to assess potential health effects to people at the proposed development, a COMAH Land Use Planning assessment was completed by AWN Consulting Ltd. (report ref. MMcK/17/9757RR01) in accordance with guidance published by the Health and Safety Authority (HSA) in the *Policy and Approach of the Health and Safety Authority to COMAH Risk-based Land-use Planning* (HSA, 2010). See Appendix 4.1. The assessment was completed in the following steps:

- Identify major accident scenarios at the Flogas LPG Terminal
- Determine the consequences of major accident scenarios using modelling methodologies described by the HSA (HSA, 2010)
- Determine the consequence/severity using the probit functions specified by the HSA;
- Determine the frequency of major accident scenarios using frequency data specified by the HSA for land use planning purposes
- Calculate the individual risk of fatality (severity x frequency)
- Model individual risk of fatality contours and identify the level of risk at the proposed development site
- Identify the sensitivity level of the proposed development with reference to the sensitivity levels specified by the HSA. Four sensitivity level are defined:
 - Level 1 Based on normal working population
 - Level 2 Based on the general public – at home and involved in normal activities
 - Level 3 Based on vulnerable members of the public (children, those with mobility difficulties or those unable to recognise physical danger)

- Level 4 Large examples of Level 3 and larger outdoor examples of Level 2 and Institutional Accommodation
- Assess the suitability of the proposed development with respect to its sensitivity level and the level of individual risk of fatality to which persons at the development will be exposed
- Assess societal risk

4.8.3 Assessment of Major Accident Hazards and Impacts on Human Health

A Boiling Liquid Expanding Vapour Explosion is an explosion which occurs when a storage vessel containing a liquid at a temperature significantly above its boiling point at normal atmospheric pressure experiences a catastrophic failure. A BLEVE involving flammable liquid produces an explosion overpressure and should the vapour be ignited, a short lived buoyant fireball whose radiant energy can burn exposed skin and ignite nearby combustible materials.

The physical effects of a Boiling Liquid Expanding Vapour Explosion were determined using the LPG BLEVE/fireball model described in Appendix 2.1 of the HSA Policy and Approach to COMAH Risk-based Land-use Planning document (HSA, 2010). Model inputs and outputs are described in detail in Appendix 4.1. The model predicts that the hazard range due to fireball thermal radiation effects is larger than that due to BLEVE overpressure effects. Figure 4.2 illustrates mortality contours for an LPG Fireball at the LPG vessel nearest to the proposed development (LPG Vessel 1001).

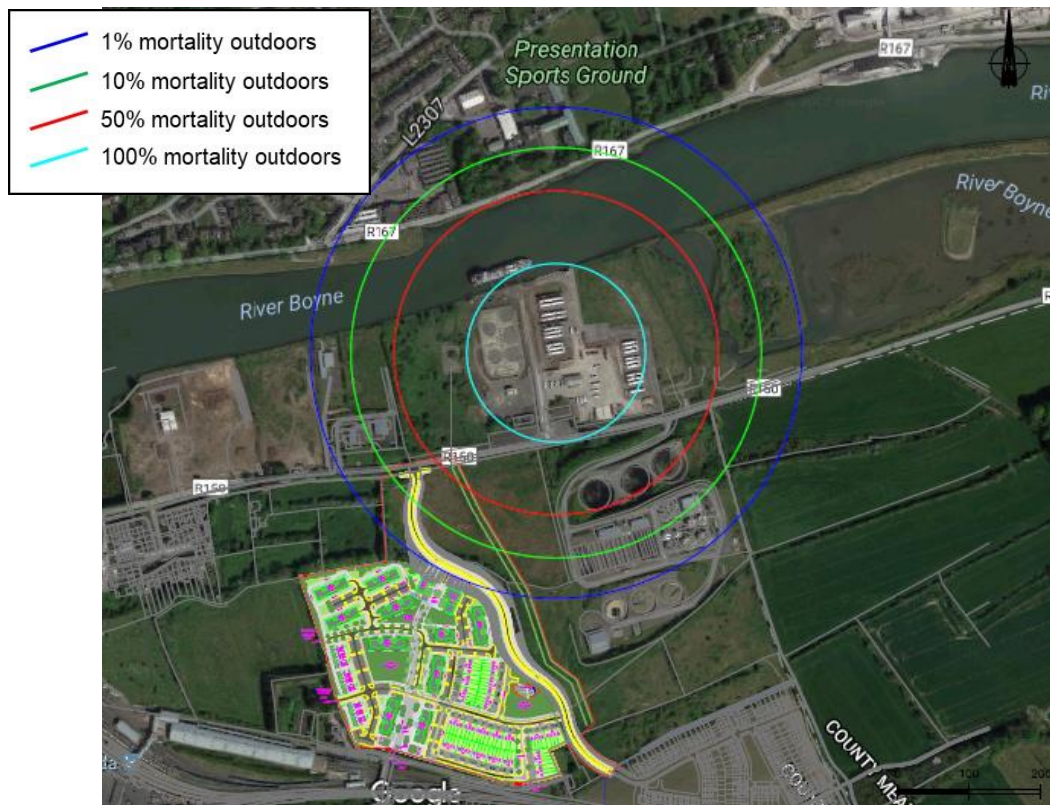


Figure 4. 10 LPG Fireball at Vessel 1001: Mortality Contours

It is concluded that the 1% mortality contour extends to the footprint of the development but does not reach any building or normally occupied area. It is predicted that an LPG BLEVE at the Flogas Terminal will not result in any fatalities at the proposed development site.

Individual risk of fatality contours corresponding to the boundary of the inner, middle and outer risk based land use planning zones were modelled using TNO Riskcurves Version 10.1 risk modelling software. It is concluded that the land use planning zones for the Flogas LPG terminal at Marsh Road do not extend to the proposed development site. The outer zone falls in close proximity to the development site boundary, but does not reach the development site boundary itself. This is illustrated on Figure 4.3 below.

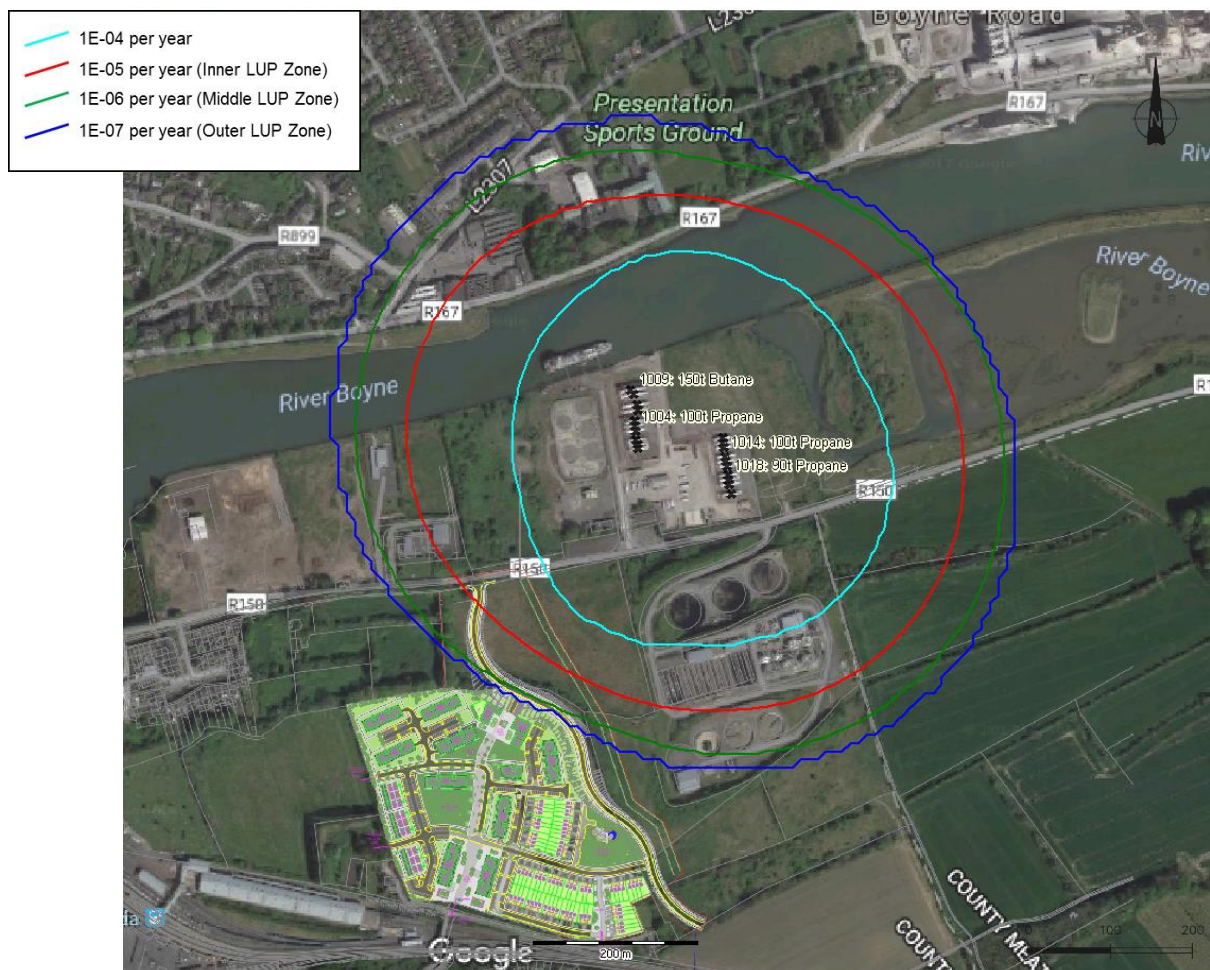


Figure 4.11 Individual Risk Land Use Planning Contours

It is concluded that the proposal comprises development with a mix of Level 1 (people at work – commercial units and parking), Level 2 (normal activities – residential units) and Level 3 (vulnerable persons – crèche unit) sensitivities. The proposed development lies outside of the outer risk based land use planning zone. The HSA's land use planning policy does not impose constraints on locating Level 1, 2 or 3 development outside of the outer land use planning zone. Therefore it is concluded that on the basis of individual risk it is an acceptable development proposal.

Societal risk was assessed using the Scaled Risk Integral (SRI) approach which is recommended by the HSA in the Policy and Approach to COMAH Risk-based Land-use Planning document (HSA, 2010). See Appendix 4A. The total SRI value was calculated as 9711. The HSA does not cite acceptability criteria that applies to the SRI value for new developments in the vicinity of COMAH establishments. In the UK, the Health and Safety Executive have published SRI criteria in their Criteria document for Land Use Planning cases of serious public safety concern, SPC/TECH/GEN/49 (UK HSE, 2017). The UK HSE consider serious public safety concern to arise where the SRI is between 500,000 and 750,000 and societal risk to be intolerable where the SRI exceeds 750,000. The SRI estimation for the proposed development at 9711 is significantly lower than levels corresponding to serious public safety concern in the UK. It is concluded that the level of societal risk at the proposed development is negligible.

4.84 Mitigating Measures

The proposed development site is located at sufficient distance from the Flogas LPG Terminal such that no fatalities are expected to arise in the event of failure of an LPG vessel accompanied by a BLEVE and fireball.

The Health and Safety Authority has been consulted as part of the pre-application consultation phase (Case Ref. ABP-302215). The HSA had no objection and does not recommend any mitigating measures.

Therefore no mitigation measures recommended in terms of site layout or restrictions on population density at the proposed development.

4.8.5 Residual Impacts/Monitoring

None predicted

4.8.6 Difficulties Encountered Compiling Information

No difficulties were encountered.

4.9 References

- Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (EPA,2015)
- Central Statistics Office Website www.cso.ie
- Childcare Act 1991 (Early Years Services) Regulations, 2016
- Department of Education and Sciences website www.education.ie
- Draft Advice Notes
- Draft Advice Notes for preparing Environmental Impact Statements (September, 2015).
- Drogheda Borough Council Development Plan 2011-2017 (as varied and extended)
- Employment Density Guide (2015) Homes and Communities Agency, UK.
- Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU)' (EU, 2017) Central Statistics Office (CSO)
- Guidelines on the Information to be contained in Environmental Impact Assessment Reports (Draft, EPA,2017)
- Louth County Development Plan 2015-2021
- National Planning Framework Ireland 2040 – Our Plan (Government of Ireland 2018)
- Pobal website www.pobal.ie
- Regional Spatial and Economic Strategy for the Eastern and Midland Regional Assembly (Government of Ireland 2019)

Appendix 4.1