PURSER

RECEIVED: 02/11/2024

Volume 2:

07

Population and Human Health

RECEIVED: 02/11/2024

7.0 Population and Human Health

7.1 Introduction

This chapter of the EIAR presents an assessment of likely significant effects on population and human health during its construction, operation and decommissioning phases.

Article 3 of the amended Directive states the following:

> "*The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors:*
>
> *(a) population and human health; …"*

In accordance with the amended Directive, this Chapter evaluates the likely direct and indirect significant effects of the proposed project (as defined in **Volume 2: Chapter 6** of this EIAR) on population and human health during both the construction and operational phases.

Where any associated and inter-related potential likely and significant effects are identified with respect to other environmental factors, these are referred to and the reader is directed to the relevant environmental factor chapter of this EIAR document for a more detailed assessment.

Population and Human Health comprises an important aspect of the Environmental Impact Assessment to be undertaken by the competent authority. Any significant effect on the status of human health, which may be potentially caused by a development proposal, must therefore be comprehensively addressed.

This chapter of the Environmental Impact Assessment Report (EIAR) focuses primarily on the potential likely and significant effects on Population, which includes Human Beings, and Human Health in relation to health effects/issues and environmental hazards arising from the other environmental factors. The potential effects and mitigation measures are considered in the following broad areas of investigation:

- Population
- Employment
- Community
- Human Health

RECEIVED: 02/11/2024

7.2 Methodology

This section presents the study area and appraisal method for the assessment of effects on population and human health. The methodology has been informed by relevant guidance on health impact assessment (HIA) including:

- Health Impact Assessment Guidance: A Manual. Institute of Public Health (IPH), 2021;
- Institute of Environmental Management and Assessment (IEMA) Guide to Effective Scoping of Human Health in Environmental Impact Assessment, November 2021; and
- Institute of Environmental Management and Assessment (IEMA) Guide to Determining Significance for Human Health in Environmental Impact Assessment, November 2022.

The consideration of effects in this chapter follows the methodology and terminology contained in the EPA's 2022 Guidelines, as set out in **Chapter 2** of this EIAR.

The Central Statistics Office (CSO) has now released all relevant information required to inform this chapter. This section refers to the Census 2022 data to help inform the baseline/receiving environment with respect to population and human health.

7.2.1 Study Area

With regard to the selection of a study area for assessing human health impact, the IEMA (2022) guide on scoping for human health assessment states the following:

> "*Using a single geographically defined neighbouring community (site-specific population) to cover a range of effects across different wider determinants of health can provide appropriate flexibility and is proportionate. If there are clearly distinct localities from which a project's activities occur (e.g. communities along a linear development) it would it be appropriate to present multiple separate site-specific geographic populations.*

The study area for the population and human health assessment comprises the electoral division of Moyne and the small area (ref: 217133001) identified within the 2022 Census. These areas are considered most likely to be potentially affected by the proposed development through its impacts on health determinants and community resources.

The EPA's 2022 Guidelines identify the following topics for consideration with respect to 'Population and Human Health':

- Employment
- Settlement patterns
- Land use patterns

RECEIVED: 02/11/2024

- Baseline population
- Demographic trends
- Human health (considered with reference to other headings, such as water and air)
- Amenity (e.g. effects on amenity uses of a site or of other areas in the vicinity may be
- addressed under the factor of Landscape)

There are numerous inter-related environmental factors addressed throughout this EIAR which are of relevance to Population and Human Health including potential significant effects on Landscape and Visual Impact, Archaeology and Cultural heritage, Air Quality, Climate, Noise and Vibration, Water, Land and Soils, and Traffic and Transport impacts.

7.2.2 Relevant Guidance

This assessment has been undertaken with due regard to the following guidance documents:

- Environmental Protection Agency (EPA) (2022) Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EPA Guidelines)
- European Commission (2017) Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (EC Guidance)
- Institute of Public Health (IPH) (2021) Health Impact Assessment Guidance: A Manual (IPH HIA
- Guidance)
- Institute of Environmental Management and Assessment (IEMA) (2022) Guide to Determining
- Significance for Human Health in Environmental Impact Assessment (IEMA Guide to Health in EIA)

Guidance is provided on the interpretation of 'Population and Human Health' as referred to in EIA Directive 2014/52/EU.

The EC Guidance states:

> "*Human health is a very broad factor that would be highly Project dependent. The notion of human health should be considered in the context of 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*".[1]

The IPH HIA Guidance recommends an approach to health assessment based on the World Health Organization (WHO) definition of health as 'a state of complete physical, mental and social wellbeing and not merely the

[1] Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report, European Commission, 2017 Environmental Impact Assessment - European Commission

RECEIVED: 02/11/2024

absence of disease or infirmity' and on the principle that 'community health is determined by behavioural choices, by social, environmental and economic conditions and by access to quality healthcare services'. These factors are termed 'health determinants.' The IPH HIA Guidance supports a qualitative approach to health assessment based on the magnitude of impacts to health determinants and the sensitivity of receptor communities, drawing on evidence and quantitative information, including that from other EIA topics.

The IEMA Guide to Health in EIA presents a framework that supports a proportionate approach to assessing the significance of health effects, which can apply to all scales of EIA. The IEMA Guide to Health in EIA describes the principles of health assessment, includes assessing effects on health at population level (as opposed to individual level) and consideration of effects on health inequalities and vulnerable groups. It sets out a qualitative approach to assessing significant health effects arising from impacts on health determinants, including criteria for assessing the magnitude of impacts and the sensitivity of receptor populations.

7.2.3 Data Collection and Collation

A comprehensive desk study was undertaken to assess the potential effects of the proposed development on Population and Human Health. This study involved the collation and assessment of data from the following sources:

- Central Statistics Office (CSO) Census Data 2022
- Tipperary County Council Website
- Tipperary County Development Plan 2022 – 2028
- Regional Spatial and Economic Strategy for the Southern Region
- Environmental Protection Agency (EPA)
- Pobal HP Deprivation Index
- OSI Mapping and Aerial Photography to classify land use
- Composting & Anaerobic Digestion Association of Ireland (CRÉ)
- Code of Practice for Chemical Agents, HSA 2016
- Chemical Agents and Carcinogens Code of Practice 2021, HAS
- Section 20 of the Safety, Health and Welfare at Work Act 2005.

RECEIVED: 02/11/2024

7.2.4 Field Study

A site walk-over was conducted by Purser and consultants on the 25th June 2024 to gain an understanding of the site and the surrounding environment.

7.2.5 Scope of Assessment

7.2.5.1 Population Assessment Scope

Population Receptors The types of resources that are considered as 'sensitive receptors' for the population assessment include the following:

- Homes (including care homes and other residential facilities)
- Community assets, including (but not limited to):
    - Hospitals, medical centres and GP practices
    - Schools and educational facilities
    - Community centres and village halls
    - Sports and leisure facilities
    - Local neighbourhood centres providing shops, banks, post offices etc; and – Restaurants, cafes and other hospitality facilities.
- Community land, including (but not limited to): –
    - Parks and playgrounds
    - Public open spaces
    - Beaches and publicly accessible coastline; and
    - Allotments
- Local businesses; and
- Public rights of way and permissive routes

Population Effects

The population assessment considers the likely significant impacts of the proposed development on the following factors:

- **Accessibility and journey patterns**: Accessibility refers to people's access to their homes, or to community facilities from their home or place of work, particularly as it affects facilities used by older people, children, or other vulnerable groups such as those with limited mobility and/or disabilities. For a development of this nature, effects on journey patterns may arise due to additional traffic movements, traffic restrictions, road closures and diversions. Affected receptors will include drivers, public transport users, cyclists, and pedestrians using the affected routes to access their homes or community facilities.

RECEIVED: 02/12/2024

- **Amenity**: Amenity effects arise from the proximity to construction works or disturbance during operation or decommissioning as it affects the pleasantness and perceived safety of the environment for walking and cycling, leisure and day-to-day activities. Amenity effects arise due to a combination of environmental effects such as noise or visual intrusion and increased traffic. Mitigation measures proposed by the relevant topic assessments are taken into account and therefore the residual effects of these topics are considered in the assessment of amenity.

This assessment of population effects is based on the residual effects identified in the traffic and transport, noise, air quality and visual assessments, taking into account of committed mitigation measures identified for these topics.

7.2.5.2 Human Health Assessment Scope

Human Health Receptors

In accordance with the IEMA Guide to Health in EIA, the assessment considers effects on population health, as opposed to individual health. Population health refers to the health outcomes of a group of individuals, including the distribution of such outcomes within the group. The IEMA Guide notes that:

> "*EIA analysis [of health effects] at the level of individuals would likely mean that all determinants of health conclusions, positive or negative, would be significant on all projects because of the effects to some particularly sensitive individuals. This would be contrary to supporting decision-makers in identifying the material issues*".

The assessment will also consider sub-groups within the population, who may be particularly vulnerable to changes in biophysical and socio-economic factors (adversely or beneficially) whereby they could experience differential or disproportionate effects when compared to the general population.

The receptor populations considered in the human health assessment include:

- The population in the surrounding townlands of Killoran and Moyne
- Residents along the R502
- Residents along the L5612
- Residents along the L3201

The vulnerable population sub-groups considered in the human health assessment include:

- Age-related groups: children and older people
- Income-related groups: people who are on low incomes, unemployed or economically inactive
- Health and disability-related groups: people with physical or learning difficulties, people with long-term health problems; and

RECEIVED: 02/11/2024

- Geographical groups: people living in isolated areas, areas with poor access to services and facilities, or areas of high deprivation

Human Health Determinants

The scope of the human health assessment is based on the premise that health and wellbeing are influenced by a range of social, environmental and economic factors, termed the 'wider determinants of health' (or 'health determinants'). Where significant changes in these factors are identified and potential pathways exist for exposure of the population to these changes, there is a potential for a health effect to occur.

In line with common practice, impacts on health determinants have been assessed based on the residual effects identified by other topics assessed in the EIAR, taking into account committed mitigation measures identified for those topics. The potential health effects resulting from these impacts are identified in Section 32.5 and are 'pre-mitigation' in terms of health-specific mitigation measures.

The human health assessment considers health effects arising from the likely significant impacts of the proposed development on the following health determinants:

- Accessibility
- Amenity
- Economic

Effects on environmental determinants of health have been considered in other chapters of the EIAR such as

- Noise
- Air Quality
- Landscape and Visual
- Water
- Major Accidents and Disasters

7.2.6 Assessment Methodology

The assessment of population and human health effects follows the approach set out in the EPA Guidelines to identify likely significant effects. The broad approach to assessment is set out in **Chapter 2: EIA Process and Methodology**. Topic-specific methodologies and criteria for the population and human health assessments are set out in the sections below.

RECEIVED: 02/11/2024

7.2.7 Impact Assessment Methodology

Once the identification of the baseline environs was conducted, the available data was then utilised to identify and assess the potential effects posed by the development on the population and human health receptors within the area.

7.2.7.1 Population Sensitivity

The assessment of significance of an impact is a professional appraisal based on the sensitivity of the receptor and the magnitude of effect. Within any area, the sensitivity of individuals in a population will vary.

The Health Impact Assessment Guidance provided by the Institute of Public Health (IPH, 2021) provides a conceptual model of the different components of sensitivity in the public health context. The conceptual model utilises criteria (segments) and indicative classifications (levels) to underpin a finding on the sensitivity of a receptor.

The resulting outcome may be summarised as high, medium, low, or negligible sensitivity to change resulting from a proposed development.

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 (as available) from the Central Statistics Office (CSO) and Pobal to gain a profile of the baseline population information and the sensitivity to change within the study area.

Topographical maps and Google maps, along with the information contained within the Planning Report and other application documents have also been used to inform the baseline description of the area in terms of existing economic activity, employment, community infrastructure, emergency services, tourism, and recreation amenities.

RECEIVED: 02/11/2024

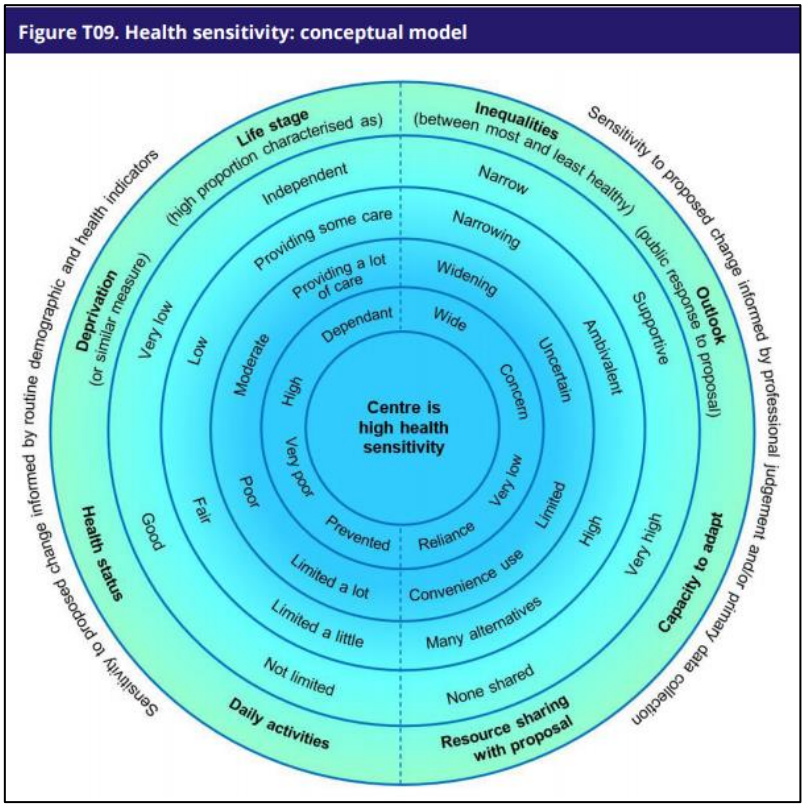

Figure 7.1: Figure T09. Health sensitivity: conceptual model. (Source: IPH, 2021)

7.2.7.2 Impact Magnitude

Magnitude considers the characteristics of the change which would affect the receptor as a result of the proposal.

The IPH 2021 Health Impact Assessment Guidance provides a conceptual model of the different components of sensitivity (Figure 7.2). In a similar framework to the conceptual model for sensitivity, this model provides different components of magnitude. It uses criteria (segments) and indicative classifications (levels) to underpin a finding on impact magnitude. The conclusion from this model can be summarised as a high, medium, low, or negligible magnitude of change.

RECEIVED: 02/11/2024

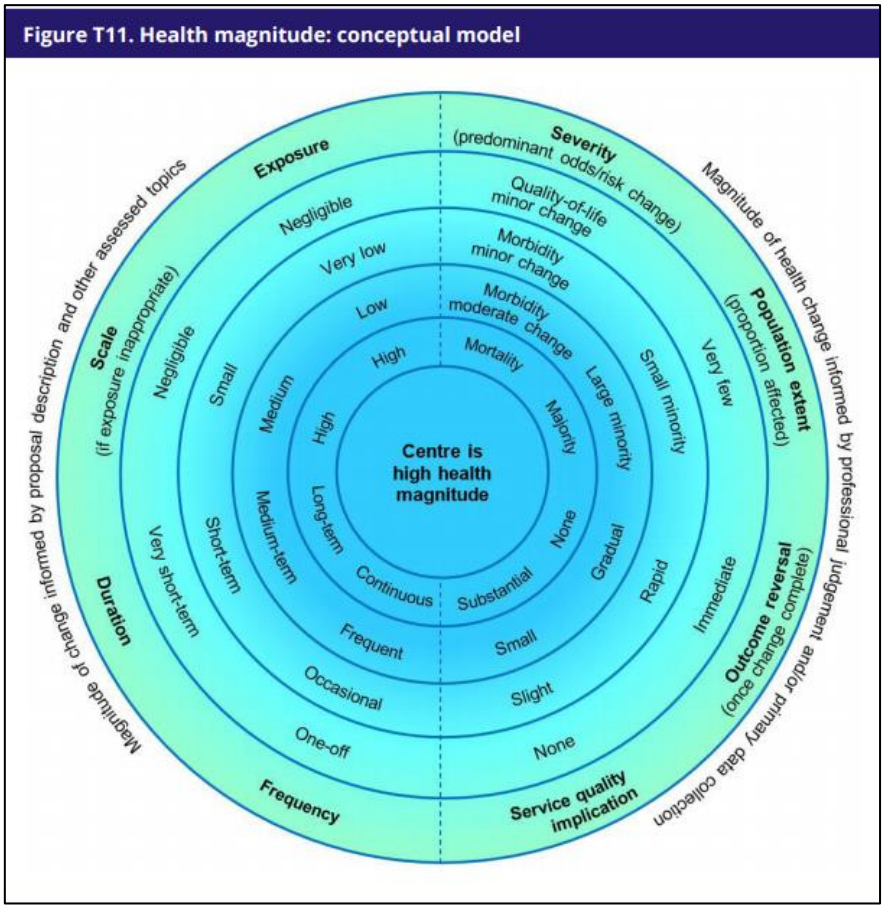

Figure 7.2: Figure T11 – Health Magnitude Conceptual Model (Source, IPH 2021)

7.2.7.3 Significance

The IPH Guidance states that "*Significance relies on informed, expert judgement about what is important, desirable or acceptable with regards to changes triggered by the proposal in question*."

The assessment of the significance of effects in this assessment is a professional appraisal and has been based on the relationship between the magnitude of the effects and the sensitivity of the receptor.

The Health Impact Assessment Guidance (IPH, 2021) sets out a conceptual model of the different components of significance (Figure 7.3 below). It uses criteria (segments) and indicative classifications (levels) to explore, and explain, a finding that a health effect is significant or not significant.

The Health Impact Assessment Guidance (IPH, 2021) model brings together different types of evidence, e.g. scientific literature, public health priorities, regulatory standards, and health policy. The model not only takes into

RECEIVED: 02/11/2024

account a range of evidence sources, but also a diversity of professional perspectives, e.g. academics, public health practitioners, regulators, and policy makers.

The model below, includes the factors of magnitude of impact and the sensitivity of receptors as determined by the conceptual models discussed above. This 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. The determination of significance also has regard to health priorities, the relevant scientific literature, health policy context, and responses to consultation.

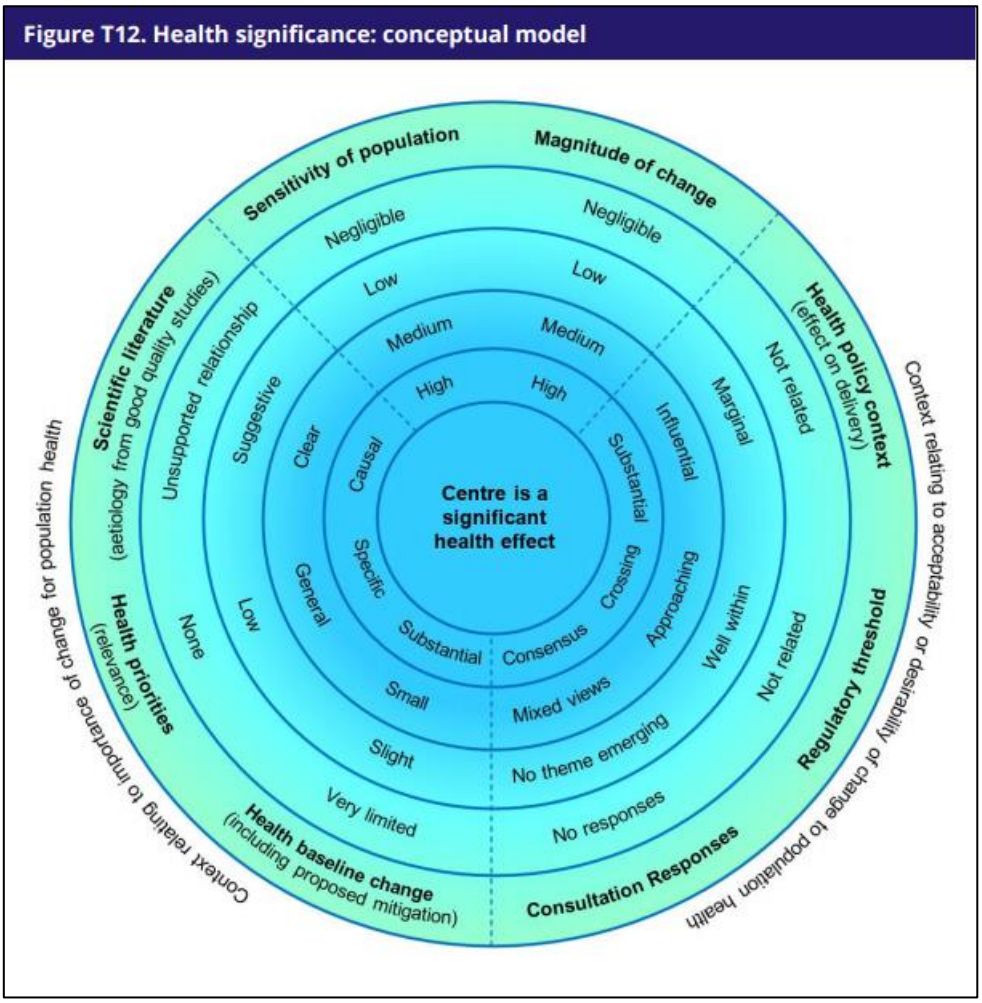

Figure 7.3: Figure T12 – Health Significance Conceptual Model. (Source, IPH 2022)

This chapter also has regard to the guidance on determining impact significance for human health in Environmental Impact Assessment, as provided within the 2022 IEMA Guide. The guidance highlights the importance of aggregating accurate and representative baseline data to help determine the sensitivity of a population, with Table 7.1 of the Guide providing a methodology for rating health sensitivity, Table 7.2 providing a

RECEIVED: 04/11/2024

methodology for health magnitude rating, and Table 7.4 providing a categorisation of significance depending on indicative criteria.

The generic indicative EIA Significance Matrix provided within the 2022 EPA Guidelines was also taken account of in the prediction of significance and the categorisation of effects carried out within this EIAR Chapter.

This chapter of the EIAR document focuses primarily on the potential likely and significant effect on Population, which includes Human Beings, and Human Health in relation to health effects/issues and environmental hazards arising from the other environmental factors. Where there are identified associated and inter-related potential likely and significant effects which are more comprehensively addressed elsewhere in this EIAR document, these are referred to. The reader is directed to the relevant environmental chapter of this EIAR document for a more detailed assessment.

7.2.7.4 Human Health Risk Assessment (On-site)

The assessment of significance of an impact is a professional appraisal based on the sensitivity of the receptor and the magnitude of effect. Within any area, the sensitivity of individuals in a population will vary.

Once the identification of the baseline environs was conducted, the available data was then utilised to identify and assess the potential effects posed by the development on the population and human health receptors withing the area.

Impacts Appraisal

- Direct Impact: where the existing baseline in the immediate vicinity of the proposed development is altered by activities associated with the construction or operational phases of said development.
- Indirect Impact: where the baseline beyond the proposed development is altered by activities associated with the construction or operational phases of said development.
- No Significant Impact: The proposed development has neither a positive or negative impact upon the local population or human health.

Human Health

The methodology used in the assessment of Human Heath in this Chapter was guided by the US Environmental Protection Agency (US EPA) in their Human Health Risk Assessment process. This assessment methodology follows a 4-step process:

- Hazard Identification
- Dose-Response Assessment
- Exposure Assessment
- Risk Characterisation

RECEIVED: 02/11/2024

Hazard Identification

Examines whether a stressor (effect) has the potential to cause harm to humans and/or ecological systems and if so, under what circumstances.

Dose-Response Assessment

Examines the numerical relationship between exposure and effects.

Exposure Assessment

Examines what is known about the frequency, timing, and levels of contact with a stressor.

Risk Characterisation

Examines how well the data support conclusions about the nature and extent of the risk from exposure to environmental stressors.

7.3 Description of Baseline Environment

7.3.1 Background

An assessment of the receiving environment is necessary to predict the likely significance of the effects of the proposed development. Demographic data published by the Central Statistics Office (CSO) in Ireland helps to demonstrate the nature of the population near the proposed development and who could be affected during either the construction and operational phase.

Specific environmental chapters in this EIAR provide a baseline scenario relevant to the environmental topic being discussed. Therefore, the baseline scenario for separate environmental topics is not duplicated in this section, however, in line with guidance provided by the European Commission, the EPA and the DHPLG, the assessment of effects on population and human health refers to those environmental topics under which human health effects might occur, e.g. noise, water, air quality etc.

The receiving environment is described below under the following headings:

- Population and Settlement Patterns
- Employment
- Community
- Human Health (Off-Site Receptors)
- Human Health (On-Site Receptors)

RECEIVED: 02/11/2024

7.3.2 Population and Settlement Patterns

This section of the chapter provides the baseline information in relation to population and human health that exists in the vicinity of the proposed development. The proposed development occupies a total area of approximately 5.5015 ha (13.59 acres) and is situated in the townland of Killoran, Moyne Co Tipperary. The proposed development is situated approximately 12km north east of Thurles and 15km south east of Templemore. The application site is surrounded by agricultural pastureland to the south and west, bogland and windfarm to the north, and the Irish Bioeconomy campus directly to the east.

The proposed development is located in a sparsely populated rural area known as Killoran in the Civil Parish of Moyne. Killoran is served by the L5612 and R502 providing access to the wider road network. It is in the Electoral Division (ED hereafter) of Moyne (ref: 217133), with the closest town being Templemore approximately 15km north west of the site as indicated in **Figure 7.4**. Surrounding land use and settlement patterns are summarised in **Table 7.1**.

The area is considered to be a low population density rural area, with much of the settlement laid out in a linear fashion along main and tertiary roads. There is a small concentration of dwellings situated 4km to the west known as Moyne. This consists of a single street containing a pub and a church alongside residential dwellings.

Location in relation to site	Land Use
North	Lisheen windfarm, bogland, forestry
South	Agricultural pastureland and dispersed one-off housing.
East	Irish bioeconomy foundation and wider former Lisheen mine site.
West	Agricultural pastureland and dispersed one-off housing.

Table 7.1: Land Use and Settlement Pattern. (Source: Purser.)

RECEIVED: 02/11/2024

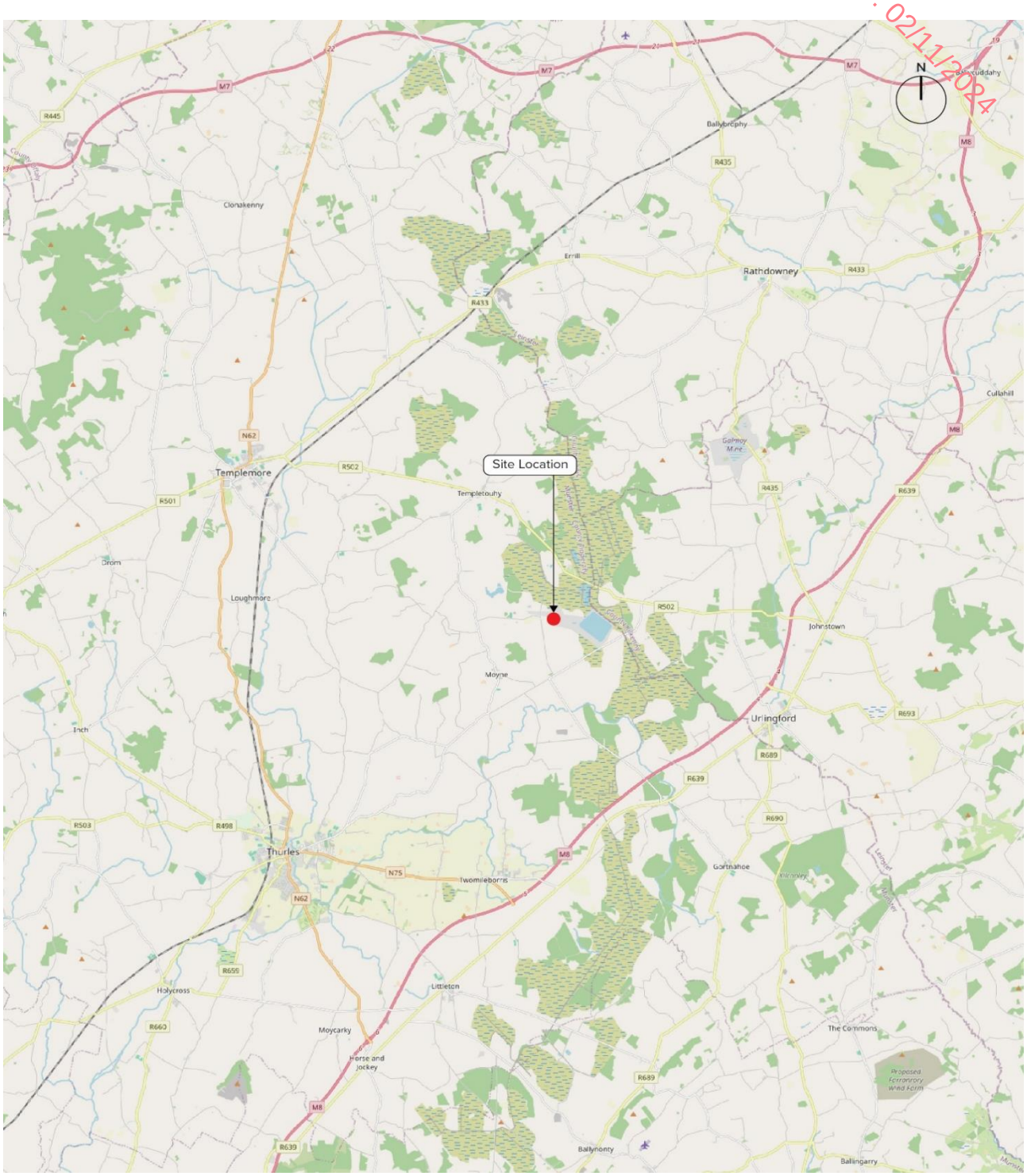

Figure 7.4: Proposed Development Location in the context of the surrounding area. (Source: Google, annotated by Purser.)

RECEIVED: 02/11/2024

7.3.2.1 Population Trends

The proposed development is situated in the north east section of the Moyne ED which sits within the administrative boundary of Tipperary County Council. The site is located approximately 15km south west of Templemore, in an area characterised by single dwellings and small clusters of houses.

Area	2011	2016	2022	% Change 2011 – 2016	% Change 2016 – 2022
Ireland	4,588,252	4,761,865	5,149,139	+3.8	+8.1
Tipperary	158,754	159,553	167,895	+0.5	+5.2
Moyne (ED)	532	552	534	+3.7	-3.3
Small area: 217133001	318	328	309	+3.1	-5.8

Table 7.2 Population Trends for the Subject Site's Surrounding Areas 2011-2022 (Source: CSO)

Table 7.2 summarises census data for electoral divisions in the vicinity of the proposed development. In the five years between the 2016 and 2022 census, the population of Ireland has increased by 387,274 people (8.1%).

Relative to national growth rates, the population of Tipperary county has increased between 2016 and 2022 (5.2%), however this is below the national trend over this period of high population growth rates (8.13%). The electoral district of Moyne and the small area have both experienced a fall in population over the 5 year period.

This is likely attributed to it being a sparsely populated area, heavily reliant on the farming sector with limited in-migration. The population decrease in the ED of Moyne is not the local trend as the adjoining EDs (Templetoughy; Loughmore; Longfordpass; and Rahelty) have all experience a slight increase in their populations over the 2016-2022 period.

The largest age ranges in Moyne ED in 2016 are the 0-4 group and the 35-39 group. This trend can be seen in the 2022 census with 5-9, 10-14 and 40-44 groups all showing the highest numbers. This demonstrates a high level of family households within the locality.

Overall, while County Tipperary is experiencing population growth, the immediate area surrounding the proposed development is experiencing a population loss.

7.3.2.2 Age Profile

The age profile of the population in the area is an important parameter as it provides a good insight into the potential labour force, the demand for schools, amenities, other facilities, and the future housing demand.

Table 7.3 shows the age profiles at county level, electoral district and small area for 2022.

RECEIVED: 02/11/2024

Area	0-14	15-24	25-44	45-64	65+	Total Persons
Tipperary	33,286 (19.82%)	19,872 (11.83%)	40,787 (24.29%)	44,594 (26.56%)	29,356 (17.48%)	167,895
Moyne ED	123 (23.03%)	55 (10.29%)	125 (23.40%)	135 (25.28%)	96 (17.97%)	534
Small area: 217133001	64 (20.71%)	33 (10.67%)	74 (23.94%)	86 (27.83%)	52 (16.82%)	309

Table 7.3 Age Profile from National to Local Level 2022 (Source: CSO)

This table shows that in the study area the dominant age grouping is 45-64 within the ED, small area and at county level. However, the table displays a range of age group percentages, depending on the size of the area examined. The small area and ED are consistent with the county levels with regards to the percentage of age group. The dependency ratio within the study area is dealt with in further detail below.

7.3.2.3 Life Stage (Age Dependency)

The Health Impact Assessment Guidance[2] (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, due to being dependents. Dependents are defined for statistical purposes as people outside the normal working age of 15-64. Dependency ratios are used to give a useful indication of the age structure of a population with young (0-14) and old (65+) shown as a percentage of the population of working age (15-64).

A low dependency ratio indicates that there is a larger proportion of working population age (15-64) years as compared to young (0-14) and old (65+). Conversely, a high dependency ratio indicates that there is a larger proportion of young (0-14) and old (65+) as compared to working population age. 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 ratios are available through the Pobal Online Geo-Profiling tools[3] which are based on the national Census.

The age dependency ratio for the study area is shown in **Table 7.4** below. From these dependency ratios we can tell that the study area is less dependent when compared to the State as a whole. This indicates that there is a relatively 'independent' population within the study area as compared to the State which can be defined as per the conceptual model as 'providing some care' to 'providing a lot of care'. However, since the 2016 Census, the dependency rate within the small area that the proposed development is situated in has increased.

[2] IPH (2021) Health Impact Assessment Guidance: https://www.publichealth.ie/hia-guidance
[3] Gov of Ireland / EU, Pobal Maps: https://data.pobal.ie/portal/apps/sites/#/pobal-maps

RECEIVED: 02/11/2024

Area	2016	2022
State	52.70	53.20
Tipperary	36.39	37.31
Moyne ED	39.77	41.01
Small area: 217133001	40.24	37.54

Table 7.4 Age Dependency Ratio within the Study Area. (Source: Pobal Geo-Profiling, 2022 Census)

7.3.3 Socioeconomics

7.3.3.1 Education

Census data presenting the highest level of education completed by people living in the study area community is presented in **Table 7.5**. The data shows that the 'Secondary Education' and 'Honours Bachelor's Degree, Professional Qualification or both' is relatively consistent with county levels within the electoral district and the small area. 'Technical or vocational qualification' and 'Postgraduate Diploma or Degree' are the next highest levels of people who have completed their education to this level. The number of persons who have completed 'Secondary Education' within the local area (small area and ED) is consistent with the county level.

Level of Education Completed	Tipperary	Moyne ED	Small Area: 217133001
No Formal Education	2,932	7	5
Primary Education	9,237	39	23
Secondary Education	42,032	123	67
Technical or vocational qualification	9,096	25	12
Advanced certificate completed apprenticeship	7,575	19	11
Higher Certificate	6,455	27	18
Ordinary Bachelor Degree or National Diploma	8,076	29	21
Honours Bachelor's Degree, Professional Qualifications or both	12,128	50	33
Postgraduate Diploma or Degree	8,267	29	19
Doctorate (Ph.D) or higher	726	3	1
Not Stated	6,011	0	0
Total No. of Persons	112,535	351	210

Table 7.4 Highest Level of Education Completed within Study Area. (Source: 2022 Census)

RECEIVED: 02/11/2024

7.3.3.2 Deprivation

The Health Impact Assessment Guidance referred to previously in this chapter (IPH, 2021) outlines that impact assessments should consider if the population is already stressed by limited resources or unusually significant 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 and resulting effects.

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.

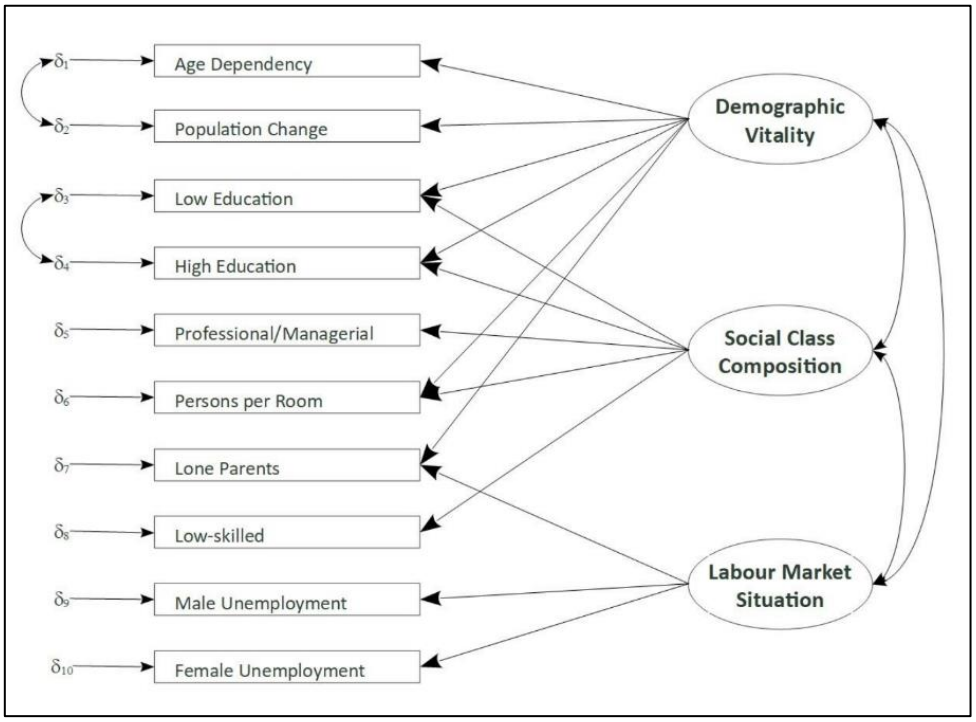

Figure 7.5: Summary Model of the Pobal HP Deprivation Index. (Source: Pobal Index)

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 7.5** below.

In order to make a uniform assessment using the conceptual model as set out in **Figure 7.5** above a relative Population Sensitivity the Deprivation Score of 'Very disadvantaged', or 'Extremely disadvantaged' would represent a high sensitivity. Conversely, an 'Extremely affluent' or 'Very affluent' would represent a very low sensitivity.

RECEIVED: 02/11/2024

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 7.5 Pobal HP Index Relevant Index Score Labels (Source: Pobal HP Deprivation Index)

The data in **Table 7.6** shows the Pobal HP Deprivation Index Relevant Index Scores[4] for the Study Area based on the 2022 Census. These figures show for the year of 2022 that the study area is 'marginally above average' which is above the average level for the county which is shown to be marginally below average.

This indicates a moderate population sensitivity (deprivation) within the study area. Pobal have not released deprivation scores for the State for 2022, so comparison to the national average is not possible.

Area	Deprivation Score	Pobal HP Description
Tipperary	-1.92	Marginally below average
Moyne ED	2.28	Marginally above average
Small Area: 217133001	6.58	Marginally above average

Table 7.6: Deprivation Score within the Study Area. (Source: Pobal HP Deprivation Score, 2002 Census).

7.3.3.3 Vulnerable Groups in the Study Area

The following vulnerable groups have been identified in the population and human health study area:

Age-related groups

- Children and young people are present throughout the study area. The age group 0-14 is generally in line with county levels as a proportion of the population. There are no receptors within the study area that are used disproportionately by children, e.g. schools, colleges, preschools, parks, playing fields or some healthcare facilities.

- Older people (over 60) are present throughout the study area, with the age group being in line with the wider county as a proportion of the population. There are no receptors within the study area that are used disproportionately by older people.

[4] Pobal, Pobal HP Deprivation Index: https://data.pobal.ie/portal/apps/sites/#/pobal-maps

RECEIVED: 02/11/2024

Income-related groups

- People who are on low incomes, unemployed or economically inactive are present throughout the study area. People in areas of high deprivation (see above) are more likely to be on low incomes, unemployed or economically inactive.

Health and disability-related groups

- People with physical or learning difficulties and long-term health problems are present throughout the study area. Areas with a higher proportion of older people or high levels of deprivation are likely to have a higher than average proportion of long term health problems.

Geographical groups

- The wider area is considered to be rural with some sections of the study area considered to be isolated. People in these areas are more likely to have poor access to services and facilities locally, and to depend on the road network to access services.

- The study area on a whole is considered to be marginally above average on the deprivation index which is in contrast to the wider county.

7.3.4 Employment

7.3.4.1 Economic and Employment Activity

The CSO's Quarterly Labour Force Survey (which has now replaced the Quarterly Household Survey) for Q3 2023, indicated that there was an annual increase in employment within the country by 89,600 or 3.4% to 2,706,400 in the 12 months to Q4 2023. There were 117,700 unemployed people aged 15-74 years in Q4 2023 using International Labour Organisation (ILO) criteria, with an associated unemployment rate for those aged 15-74 of 4.2%, up from 4.1% in Q4 2022.

The unemployment rate among those aged 15-24 years (the youth unemployment rate) was 9.4% in Q4 2023, up from 9.1% in Q4 2022.

The estimated Labour Force (i.e. the sum of all persons aged 15-89 years who were either employed or unemployed) stood at 2,824,100 in Q4 2023, a rise of 3.5% (94,700) from Q4 2022. The estimated workforce participation rate in Q4 2023 was 65.4%, up from 64.6% in Q4 2022.

An estimated 592,400 or 21.9% of those in employment worked part-time - and 23.6 % of those in part-time employment were classified as underemployed (i.e. they would like to work more hours for more pay).

In the year to Q4 2023 the age group with the highest employment rate was the 35–44-year-old group, which was unchanged from a year previously at 84.0%. The lowest employment rate by age was observed in the 15–19-year-

RECEIVED: 02/11/2024

old cohort at 28.1%. All other age groupings saw an increase in employment rate with the exception of 55–59-year-olds, where there was a decline of 1.8 percentage points to 72.3%.

The ESRI quarterly economic commentary for summer 2024 notes that the Irish labour market continues to perform robustly and is now operating close to capacity. In addition, inflation is expected to decline throughout 2024 with a return to growth in real incomes. This is borne out by the latest CSO data on inflation, which records a rate of inflation of 1.6% in the year to April 2024. Irish inflation peaked at almost 10% year-on-year in the middle of 2022 and has fallen steadily over the last 12 months.

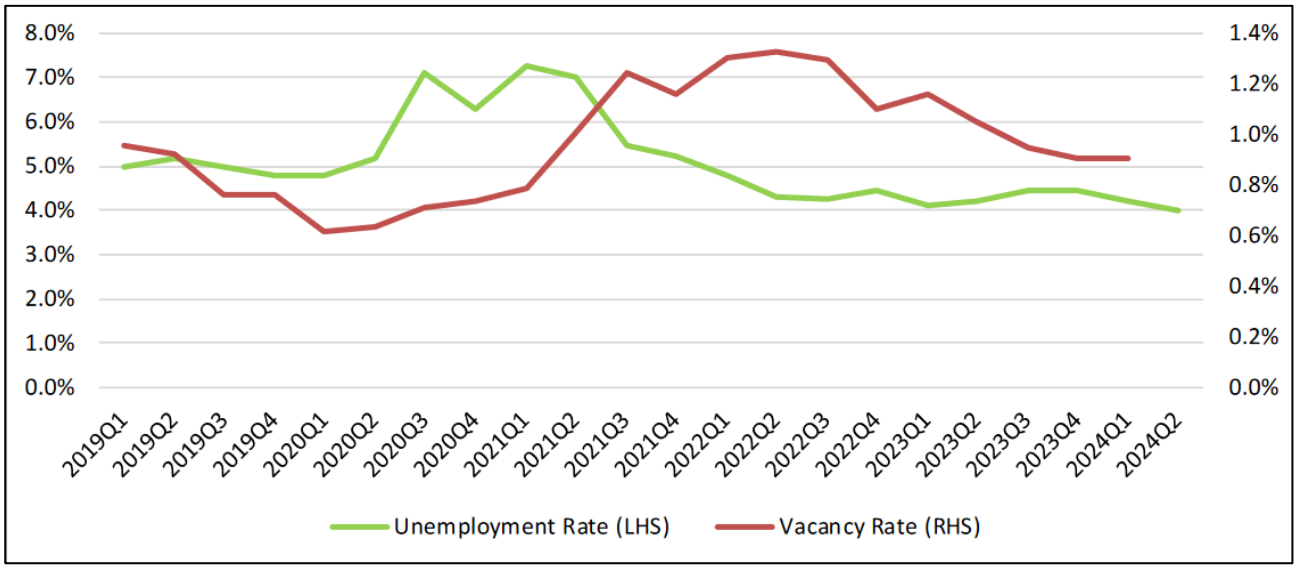

Figure 7.6: Unemployment by Quarter and Job Vacancy Rate within the State (Source: ESRI)

The above sources demonstrate that the national economy and employment levels are experiencing positive trends, which is also accompanied by reduced inflation since the peak in 2022 following the Russian invasion of Ukraine. Overall, the ESRI Quarterly Commentary concludes that developments in the labour market reflect the fact that the domestic economy is growing at a more moderate pace but is still operating close to capacity.

7.3.4.2 Tipperary County Development Plan

The County Development Plan (CDP) is a statutory document prepared by the Planning Authority in accordance with the requirements of the Planning & Development Act 2000 (as amended) and the Planning & Development Regulations 2001 (as amended).

The purpose of the County Development Plan is to provide a strategic framework, setting out key policies and objectives for a new integrated land use strategy, and the proper planning and sustainable development of the County. The CDP is designed to set out the key policy context for the development of the County and is set within a hierarchy of national and regional spatial plans and guidelines. The Tipperary County Development Plan 2022 - 2028 was adopted in July 2022.

RECEIVED: 02/11/2024

Tipperary County Council has outlined the strategic direction intended for the CDP which states the following in relation to employment in Co. Tipperary:

- Work in partnership with national and regional stakeholders, including IDA Ireland, Enterprise Ireland etc. in attracting economic investment and employment opportunities to support national competitiveness, regional development and to strengthen the county's resilience.
- Support and facilitate the 'National Recovery and Resilience Plan' and to ensure that our economy and society is more sustainable, resilient and prepared to deliver Green and Digital transition.
- Support and participate in the preparation and implementation of the Mid-West and South-East Action Plans for Jobs, and any amendment thereof.
- Promote 'Strategic Employment Locations' as already identified in towns, and to continue to support a strong spatial framework for economic development, by ensuring that appropriate lands are zoned and serviced, by developing Masterplans/Frameworks for strategic landbanks, and applying land activation measures, where appropriate, to activate these lands.
- Work in partnership with stakeholders to identify opportunities and support the development of remote working hubs in settlements in the county.
- Support the implementation of the Tipperary Food Strategy, 2020 and the development of, and promotion of a Tipperary Food Brand.
- Work with national and regional partners in delivering a co-ordinated strategy for the 'Limerick – Waterford Transport and Economic Network', including the identification and development of Limerick Junction as a Strategic Freight Terminal and Transport Hub.
- Support and collaborate with the third level educational facilities, thus enabling skills retention and creation, research capacity building and learning excellence in the county thereby supporting enterprise and jobs development in the region.
- Recognise and promote remote working throughout the county, either from home or from a designated hub/co-working space within settlements, which offer employees flexible work arrangements and contribute to a lower carbon output through the associated reduction in commuting. Encourage the reuse of existing vacant buildings within town/village centres for such purposes.
- In conjunction with Coillte and other stakeholders, to support the development of forestry resources with a number of functions including, flood retention, biodiversity, water quality/catchment management and tourism and recreation.
- Work with economic partners in the Mid-West in the development of the 'Green Digital Basin' to support job creation in digital technology associated with the renewable energy sector. The Green Digital Basin will support the development of data centres and the Council will seek to identify two suitable sites for this purpose as part of this project and in accordance with proper planning and sustainable development.
- Carry out a review of strategic employment sites in the Key Towns and District Towns to support and inform the Town Development Plans and LAPs (and any review thereof).

RECEIVED: 02/11/2024

7.3.4.3 Central Statistics Office – Census 2022

The percentage of people aged 15 and over who participate in the labour force, as opposed to having another status such as student, retired or homemaker is known as the labour force participation rate. It is measured as the number of in the labour force (at work or unemployed) expressed as a percentage of the total population aged 15 and over.

According to the 2022 Census, there was an unemployment rate of 4.97% within Moyne ED. This is a lower rate compared to a national average unemployment rate of 8% and a county unemployment rate of 7%.

'Managerial and technical' occupies the largest socio-economic ground within the Moyne ED (40.82%). 'Non-manual' occupies the second largest group (14.6%), while 'skilled manual' and 'professional workers' occupy the third largest group simultaneously (12.73%). The smallest socio-economic group identified within the ED was 'unskilled' at 3.37%.

7.3.5 Community

The two principal aspects of the community surrounding the subject proposed development can be defined as follows:

- The residential community
- The working community

7.3.5.1 Residential Community

The proposed development is located in close proximity to the R502 (approximately 2.4km) which links into the wider regional road network. The M8 (Dublin-Cork motorway) is located to the east of the site. It can be accessed at Junction 5, located at Two Mile Borris and Junction 4 at Urlingford.

The N62 located to the west of the proposed development provides wider access to Athlone in the north and Thurles in the south, via Roscrea and Templemore.

The closest residential properties are located 650m along a narrow local lane. There are also further residential units sparsely located to the south, along the L5612. The wider area is characterised by single residential units located in a linear fashion along the road network.

RECEIVED: 02/11/2024

7.3.5.2 Working Community

The working community in the vicinity of the proposed development comprise primarily of agricultural-based employment. Other employment in the wider vicinity includes the Lisheen windfarm, Bruckana windfarm (to the north and northeast of the site) and a farm machinery supplier based in the townland of Templetouhy approximately 3.8km from the site.

7.3.6 Human Health (Off-Site Receptors)

7.3.6.1 Health Status

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

Table 7.7 below shows the self-reported measure of population health within the study area compared to the State. This shows that approximately half or just above half of the population of the small area and Moyne ED reports their health as being 'very good'. This is in line with the State and wider County Tipperary trends.

Area	Not Stated	Very Bad	Bad	Fair	Good	Very Good
State	346,824 (6.7%)	16,843 (0.3%)	72,556 (1.4%)	444,895 (8.6%)	1,527,027 (29.7%)	2,740,994 (53.2%)
Tipperary	8,732 (5.2%)	652 (0.38%)	2,617 (1.55%)	16,155 (9.62%)	52,051 (31%)	87,688 (52.22%)
Moyne ED	4 (0.74%)	0	5 (0.93%)	40 (7.49%)	155 (29.02%)	330 (61.79%)
Small Area: 217133001	2 (0.64%)	0	1 (0.32%)	25 (8.09%)	97 (31.39%)	184 (59.54%)

Table 7.7: Self-Reported Measure of Population Health. (Source: CSO, 2022)

7.3.6.2 Summary of Population Health Sensitivity

The sensitivity of the surrounding area has been considered based on the details of the published data available from CSO and Pobal. The study area has seen population decline between the 2016 and 2022 census, which is not in line with national or county wide trends. The Pobal HP Deprivation Index shows the area to be marginally above average indicating a low population sensitivity (deprivation) within the study area.

There is a low age dependency ratio, therefore a large proportion of the population is within working age, thus considered as largely independent and judged to be not sensitive to change. The information presented above for the study area shows, a high proportion (59.54% in the small area and 61.79% in the ED) describes their health

RECEIVED: 02/12/2024

status as 'very good'. The data shows that the study area has a similar level of persons with a disability (29% in the small area and 24% in Moyne ED) as reported within the wider county of Tipperary and at national levels. While the small area does show a slight increase in the number of persons with a disability the results generally indicate that for people within the study area there are relatively few restrictions on daily activities.

The population within the study area is therefore not particularly sensitive to change, with an overall ranking of low sensitivity.

7.3.7 Human Health (On-Site Receptors)

An anaerobic digestion plant is considered to be a biological treatment facility, the operation of which can have the potential for a variety of exposure scenarios involving a range of factors including:

- Pest Control
- Engineering specification
- Abatement technologies
- Hydrogeology
- Topography
- Type and quantity of waste accepted.
- Biogas generation

In the absence of appropriate mitigation, the primary hazards to human health at a biogas facility is mainly associated with uncontrolled air and water discharges.

Pest Control

Rodents can be harmful since they may transfer viruses, micro-organisms, parasites etc. and may, therefore, represent an important factor for the spreading of various diseases. Control of rodents is a mandatory prerequisite for any waste management facility. Flies and birds can also pose a problem, where they are attracted to raw waste.

Due to the nature of wastes being accepted at the site, feral animals, flies and other vermin may be attracted to the site. Vermin maybe attracted to the facility in search of food sources. Pests such as rodents and flies can not only be a nuisance to users and neighbours, but they can also transfer germs and disease and affect the ecological balance of an area.

Sources of potential public health risks associated with vermin and other pest animals include:

- transmission of disease.
- threat to native flora and fauna.

RECEIVED: 02/11/2024

- threat to livestock.

There is no reason that waste being handled in the reception buildings will give rise to litter. The proposed treatment facility will process biodegradable waste in a controlled environment. Diverting biodegradable waste from landfills and through the Anaerobic Digester treatment facility will reduce the overall odour potential to the environment.

Due to the nature and rural location of the proposed plant and the probable populous of vermin already present which may be displaced by the construction works pests may cause an issue. However, in order to mitigate this a specialist pest control firm can be employed for the duration of the project to ensure regular monitoring and control of any vermin present on site or disturbed within the works area as a result of construction work.

Dose-Response Assessment

A dose-response assessment examines the relationship between exposure and effects. The greater the dose to which a receptor (individual) is exposed the greater the likelihood of an adverse response and/or the greater the severity of that response.

The threshold is the level of an agent below which one would expect no adverse response. Human health is one of the fundamental considerations during the formulation of statutory and international standards of safety in relation to dose, exposure, and risk. Such standards are covered in statutory legislation relating to air quality, noise, hydrogeology. **Table 7.8** contains a summary from the Health and Safety Authority on Gas Exposure Limits relevant to AD plant.

Gas	Properties	Hazardous Atmosphere	Workplace Exposure Limit (8hr reference period)
CO_2	Colourless and odourless gas, Heavier than air	8% v / v, danger of asphyxiation.	5000ppm
NH_3	Colourless and pungent-smelling gas. Lighter than air	Above 30-40 ppm mucous membranes, respiratory tract and eyes become irritate. Above 1000 pp, breathing difficulties, potentially inducing loss of consciousness	20ppm
CH_4	Colourless, odourless gas. Lighter than air.	4.4-16.55	1000ppm
H_2S	Highly toxic, colourless gas/ Heavier than air Smells of rotten eggs	Above a concentration of 200ppm the sense of smell becomes deadened and the gas is no longer perceived. Above 700ppm, inhaling	5ppm

RECEIVED: 02/11/2024

		hydrogen sulphide can lead to respiratory arrest.	

Table 7.8: Gas Exposure Limits (Ireland) Code of Practice for Chemical Agents. (Source: HAS, 2016).

Exposure Assessment

Examines what is known about the frequency, timing, and levels of contact with a stressor (agent). Health based standards rely on the dose response relationship and try to identify by scientific means the threshold below which no significant health effects would occur. When standards are scientifically set by reliable and recognised or statutory agencies, they are a useful method in assessing the effect of any proposed change.

Risk Characteristics

Risk assessment seeks to characterise the nature and magnitude of human health or environmental risk. In this step, data on the dose-response relationship of an agent are integrated with estimates of the degree of exposure in a population to characterise the likelihood and severity of potential impact.

7.4 Description of Development

7.4.1 Introduction

Details of the proposed development are provided in **Volume2: Chapter 6: Description of Proposed Development**. Consideration of the characteristics of the proposed development allows for a projection of the level of impact on any particular aspect of the environment that could arise. In this section the potential effect on Population and Human Health is assessed.

The development will consist of the following:

7.5 Potential Effects

7.5.1 Do-Nothing Scenario

Under the 'Do Nothing' scenario there would be no change to the current land use of the proposed development. If the proposed development does not proceed as planned there would be no additional impact on the following receptors:

- **Local Population & Employment** - The failure of the proposed development to proceed will not lead to any profound or irreversible consequences. However, the opportunity to deliver additional employment opportunities into the rural economy will be lost as will the opportunity to contribute to specific objectives in the County Development Plan, such as Tipperary's bioeconomy.

RECEIVED: 02/12/2024

- **Community** - It is likely that the perceptions of the community would remain unchanged. However, the immediate economic and social benefits that would be forthcoming and experienced if the development were to progress would be foregone.
- **Land Use** - The failure of the proposed development to proceed will most likely see the land remaining as vacant brownfield land.
- **Human Health (Off-Site)** - If the proposed development were not to proceed this existing brownfield site would remain in its existing form and there would be no impact on Human Health. However, the unique opportunity of providing renewable energy to the national grid will be missed, given the current economic climate and rising energy costs this proposed development provides a safeguard for the area and the country's energy needs.
- **Human Health (On-Site)** – Under the do-nothing scenario, it is likely that the risks associated with uncontrolled pests and vermin on the surrounding the area, livestock and ecological receptors will be significantly reduced, in the absence of the proposed development, particularly in uncontrolled conditions, however, the production of a bio-based fertiliser presents an opportunity to introduce a high-quality fertiliser with reduced pathogens.

The Do-Nothing scenario would also be considered sub-optimal in the context of the national and county targets for the adoption of renewable energy sources, and in the context of anthropogenic climate change. Furthermore, an opportunity to introduce a bio-based fertiliser, with reduced pathogen content into to local bioeconomy will be missed.

RECEIVED: 02/11/2024

7.5.1.1 Receptor Sensitivity

The sensitivity of the receptors identified are summarised in **Table 7.9.**

Receptor	Receptor Importance	Receptor Sensitivity	Rationale
Local Population & Employment	Low to moderate	High	The proposed development provides employment opportunities to the local area and surrounds, also with the potential to provide renewable energy.
Community	Low to moderate	Low	The overall economic and social benefits that the development would bring to the area would not be experienced by the community in the event of the development not occurring.
Human Health (off-site)	Low to moderate	Low	If the proposed development were not to proceed this brownfield site would remain in its existing form and the unique opportunity of providing renewable energy will be missed.
Human Health (on-site)	High	High	The development will result in a situation where human health will be put at risk due to typical hazards associated with the construction and operation of the proposed facility.

Table 7.9: Receptor Sensitivity.

7.5.2 Construction Phase

Potential construction phase effects are considered in detail below and summarised in **Table 7.10.**

7.5.2.1 Population

The construction phase is not considered to have any significant effect on the population of the surrounding area, as it is expected that the workforce will primarily travel from their existing place of residence to the construction site, rather than reside in the area during the construction phase of the development.

Activities associated with the construction phase are anticipated to have **positive, slight, temporary** effects on the local population.

RECEIVED: 02/11/2024

7.5.2.2 Employment

The proposed development will provide important construction and related employment. The construction phase will also have secondary and indirect 'spin-off' effects on ancillary support services in the area of the proposed development, such as retail services, together with wider benefits in the aggregate extraction (quarry) sector, building supply services, professional and technical professions etc. These beneficial effects on economic activity will be largely temporary but will contribute to the overall future viability of the construction sector and related services and professions over the construction period.

Activities associated with the construction phase are anticipated to have **positive, slight, temporary** effects on employment within the area

7.5.2.3 Community

It is acknowledged that the construction phase of the project may have some short-term negative effects on local residents. Such effects are likely to be associated with construction traffic and noise associated with construction requirements. These effects are dealt with separately and assessed in Chapter 11 Air Quality (including Odour), Chapter 12: Climate, Chapter 13: Noise and Vibration, Chapter 14: Traffic and Transportation and Chapter 15: Waste of the EIAR.

Given the overall scale of the proposed development, some potential effects may occur locally during the construction phase. It is expected that these short term temporary localised effects may be experienced by those residing, working, and visiting the area. Such effects would include an increase in daytime noise levels in the area as a result of the machinery being used for construction purposes and also by construction traffic accessing the proposed development.

Activities associated with the construction phase are anticipated to have **negative, slight, temporary** effects on the local community

7.5.2.4 Human Health (On and Off Site)

All new developments will consist of associated short-term effects and disturbances to the surrounding areas. The construction methods employed and the hours of work proposed will be designed to minimise potential effects. The proposed development will comply with all Health and Safety Regulations during the construction of the project. Where possible, potential risks will be omitted from the design so that the effect during the construction phase will be reduced.

The Health and Safety policy, procedures and work practices of the proposed development will conform to all relevant health and safety legislation both during the construction and operational stages of the proposed development. The proposed development will be designed and constructed to best industry standards, with an

RECEIVED: 02/11/2024

emphasis being placed on the health and safety of employees, visitors, local residents and the community at large.

Activities associated with the construction phase as summarised in **Table 7.10** are anticipated to have **negative, slight and temporary** effects on health and safety in the area.

Receptor	Sensitivity Rating	Potential Environmental Effects	Quality	Significance	Duration
Local Population	Low to Moderate	Potential minor increase in population during construction.	Positive	Imperceptible	Temporary
Community	Low to Moderate	Wear and tear on the infrastructure. Construction traffic. Risk to air/noise	Negative	Slight	Temporary
Employment	Low to moderate	Will provide jobs during the construction phase. May attract other sources of employment to the area	Positive	Slight	Temporary
Human Health (off-site)	Low to moderate	Risk to health from construction methods. Impact of disturbance, air and noise impacts during construction	Negative	Slight	Temporary

Table 7.10: Construction Phase Effects Summary

7.5.3 Operational Phase

Potential operational phase effects are considered in detail below and summarised in **Table 7.11**.

7.5.3.1 Population

The proposed development will have no likely significant effect on the existing population. No residential element is proposed as part of the development hence no effect will occur on the local population in this regard.

Given the scale of the proposed development, it will not increase the potential working population of the area. There will not be any significant increase in traffic levels to the R502 as outlined within the Traffic and Transport Assessment submitted as part of the application.

RECEIVED: 02/11/2024

There will be no notable increase in demand for community/recreational facilities arising from the completion of the proposed development as it will not introduce any resident population to the area. Any demand for additional shopping facilities and services will be met by the existing retailing facilities at Templemore. There I no increased visitor population anticipated to the area as a result of the proposed development being completed.

Overall, the proposed development is likely to have a positive effect on the population in terms of employment and economic benefit in the long term.

Activities associated with the operational phase are anticipate to have **positive, moderate, long-term** effects on the local population, via the creation of long-term, sustainable employment to support the local population.

7.5.3.2 Employment

The proposed development will offer direct employment in the Anaerobic Digestion Facility, while also supporting existing employment opportunities on surrounding farms. Further indirect employment will be created as a result of the added benefits of the development, such as surrounding businesses catering for employee subsistence and hauliers transporting feedstock materials to the proposed development. The proposed development, if undertaken, will be of considerable benefit to the area in terms of employment provision and economic gain leading to a positive, medium-term effect which is significant in the context of its rural location.

The proposed development will support 4 full time roles on site every day along with part time staff when the site is fully operational. Additional part time staff will be required around harvest time to assist with the following roles – covering the silage pits, etc. At particular times of the year additional staff will also be required for site maintenance (landscaping, fencing, painting, power washing, etc.).

Contractor appointments will be a mix of local contractors and more specialised contractors for the installation of the equipment. Where possible local businesses and contractors will be used during the construction period and for on-going maintenance of the site. The proposed development can therefore contribute to the reversing of the trend of employment losses in the agricultural sector.

Activities associated with the operational phase are anticipated to have **positive, significant, long-term** effects on employment within the area.

7.5.3.3 Community

The proposed development could have the following potential effects:

- Effects on local services and commercial facilities.

RECEIVED: 02/11/2024

The adjoining residential communities may experience the above effect in a number of ways. An alteration to the actual physical environment of the area may affect the spatial perceptions of the community living in the area. These aspects are dealt with in further detail within the Chapter 18: Landscape and Visual Impact chapter of this EIAR.

Activities associated with the operational phase are anticipated to have **neutral, slight, long- term** effects on the community within the area.

7.5.3.4 Human Health

According to the CRE 'Guidelines for Anaerobic Digestion in Ireland'

> "*Generally incidents and accidents occur during the operation of the plant and are either caused by equipment failure, improper equipment utilization, or plain human error. Death causing accidents are generally related to gas poisoning (Hydrogen Sulphide and Ammonia) in open and confined spaces. Proper confined space training and portable gas detection should be mandatory for all biogas plant operators*".

The main potential hazards associated with typical biogas facility are as follows:

- Prolonged low-level exposure to gases (asphyxiation, nausea)
- Exposure to hazardous substances (methane, waste, chemicals)
- Electrical hazards (Electrocution arising from plant equipment or CHP)
- Mechanical Hazards (falling, crushing, severing)
- Biological agents (infection, allergic/toxic reaction, exposure to endoparasites)

Pest Control

The presence of vermin or insect pests in or around any waste management facility is a health hazard. Management must have a pest and vermin control standard operating procedure in place, which effectively controls any such presence and prevents possible contamination risk.

Activities associated with the operational phase are anticipated to have **negative, moderate, long-term** effects on the local pest control.

Fugitive Emissions

The main hazards to the environment from an AD plant are fugitive emissions of biogas, and feedstocks escaping from production facilities. Such emissions generally occur from structural faults or process failures within the plant pipework, CHP unit or the primary digestate tank.

RECEIVED: 02/11/2024

Hazardous Substances

At an AD plant there is the potential presence of substances that could be toxic, corrosive, sensitising, or carcinogenic such as processing aids, oils, effluent, wastes and gases. Potential hazards include:

- Risk of asphyxiation/poisoning from fermentation gases/biogas
- Release of highly toxic gases such as hydrogen sulphide during mixing
- The use of additives and auxiliary materials with hazardous properties (e.g. carcinogenic properties)

Biological Agents

A biological agent is any micro-organism, cell culture or human endoparasite which may cause an infection, allergy, toxicity or otherwise create a hazard to human health. An AD plant utilises biological material to synthesise biomethane hence a variety of biological agents may be present in feedstock, digestates and biogas condensates. Biological agents have the potential to enter harm human via the following pathways:

- Inhalation of aerosols containing mould, bacteria or endotoxins which may be present in silage or dry poultry manure
- Inhalation of mycotoxins and other microbiological metabolic products from visibly mouldy wastes which may cause acute toxic effects
- Biological hazards from rodent birds and other animals and their excrement. (Weil's disease)

Electrical Hazards

Regardless of plant type there will be electrical infrastructure on site that has the potential to be hazardous such as CHP units, pumps, agitators, measuring devices. Electrical hazards mainly occur when any such equipment becomes faulty. Hazards include:

- Electric shock through an individual's body. (working too close to overhead powerlines/faulty electric cables on site).
- Electrical or magnetic fields (circulation of induction currents) posing a danger to people with pacemakers installed.
- Static electrical shock

Mechanical Hazards

Moving mechanical parts may pose hazards such as falling, impact, crushing, cutting. Such hazards are most prevalent in close proximity to rotating parts, around moving vehicles, or from working at height. Repair and maintenance activities in particular have the potential for accidents when inadequate protection measures are applied.

RECEIVED: 02/11/2024

Gas Hazards

Biogas is composed of different gases and this mixture can vary depending on the feedstock mixture used to produce the gas. Common gases contained in biogas include carbon dioxide, methane, ammonia, and hydrogen sulphide.

Explosion and Fire Hazards

One of the main hazards at an AD plant is the risk of explosion. Biogas is produced in the plant and is combusted to produce electricity. The mixture of gases can form an explosive atmosphere in certain areas of the plant. Such explosive atmospheres can ignite and cause extensive damage and serious or fatal injuries.

There are two types of explosions possible in an AD plant; a detonation and a deflagration.

- Detonation is a rapid combustion at the explosive limit of the flammable substance.
- Deflagration is a form of explosion in which the propagation velocity of the reaction front is below the speed of sound in the respective medium and the combustion gas plumes flow in the opposite direction of propagation, resulting in an extremely powerful explosion.

Malpractice - Operative Health and Safety

Hazards due to bad work practice from those involved in the plant or other unauthorised persons.

Activities associated with the operational phase are anticipated to have **negative, moderate to significant, long-term** effects on human health.

Major Accidents

Under the Control of Major Accident Hazards Involving Dangerous Substances (COMAH)Regulations 2015 (S. L No. 209 of 2015), P2 Flammable gases (methane) are subject to a threshold quantity of 10 tonnes meaning that any biogas facility storing less than 10 tonnes of 6-30 methane will fall outside of the COMAH Regulations.

The site is classified as a Lower Tier COMAH site. At full operation, the proposed development will store 6.6 tonnes of flammable gas and 32 tonnes of natural gas (upgraded biogas). The site is still well below the thresholds of 10 tonnes and 50 tonnes respectively.

Potential operational phase effects in the absence of mitigation are summarised in Table **7.11**

RECEIVED: 02/11/2024

Receptor	Sensitivity Rating	Potential Environmental Effects	Quality	Significance	Duration
Local Population	Low to moderate	No material effect on the existing local population. Likely to have a positive effect on the population in terms of employment and economic benefit in the long term.	Positive	Moderate	Long-term
Employment	Low to moderate	Creation of significant employment benefit for the local study area. Further indirect employment will be created as a result of the induced benefits of the development	Positive	Significant	Long-term
Community	Low to moderate	The community may experience a slight change in mobility as a result of increased traffic on the road network.	Neutral	Slight	Long-term
Human Health (off-site)	Low to moderate	Air emissions from CHP, Biomethane Boiler and Odour Treatment System. Projected ambient concentrations including background levels fall within all National and EU ambient air quality limit values and, thus, will not cause any effect on human health.	Neutral	Imperceptible	Long-term
Human Health (on-site)	High	Fugitive emissions Hazardous substances Biological Agents Electrical Hazards Mechanical Hazards Gas Hazards Explosion and Fire Hazards Malpractice – Operative Health and Safety Major Accidents	Negative	Moderate to Significant	Long-term

Table 7.11: Operation Phase Effects Summary

RECEIVED: 02/11/2024

7.6 Mitigation Measures

7.6.1 Construction Phase

Mitigation measures proposed in the Air Quality, Noise and Vibration, Traffic and Transportation, Landscape and Visual Chapters will help to avoid or minimise adverse population and human health effects during the construction phase of the proposed development. This mitigation is embedded within the residual assessments on which the population and human health assessment is based

7.6.1.1 Population

It is considered that the proposed development is unlikely to generate any significant adverse effects on the demographics of the area during the construction phase, and will have positive economic effects. The construction strategy requires all contractors to comply with legislation and good industry practice with regard to the health and safety of both workers and the public.

7.6.1.2 Employment

The proposed development will have a positive effect on employment levels in the area during the construction phase through the increase in potential for additional jobs within the areas through the appointment of various contractors, and as such no mitigation measure are required.

7.6.2.3 Community

It is considered that the proposed development is unlikely to generate any adverse effect on the community of the area during the construction phase would have positive economic effects. Therefore, no further mitigation measures are required.

7.6.2.4 Human Health

Adverse health and safety effects during the construction phase will be minimised through the implementation of the Construction Management Plan to be prepared by the main contractor. Other measures such as having a dedicated contact point that the public can contact regarding any issues arising on site and the provision of information to local householders and the wider community in a phased approach before construction begins and when required during the construction process.

RECEIVED: 02/11/2024

7.6.3 Operational Phase

7.6.3.1 Human Health

Pest Control

Actions and Procedures

Pest control will be regularly carried out and results of bait station checks recorded. The management of the facility will be responsible for the pest program including the chemicals used or actions carried out by independent pest control companies. The activity records of bait stations checks are to be clear and unambiguous and must include any follow up action including preventive measures required by the management.

Chemicals

Any pest control chemical held at the establishment shall be in a clearly designated secure cabinet or facility used only for pest control. The keys to this facility are to be controlled and limited as far as possible. Persons issued with keys are to be nominated in the standard operating procedure. Chemicals used shall be approved and used only in accordance with the instrument of approval.

Physical Barriers

Physical barriers prevent pests entering buildings or eliminate their presence. The barrier must be effective and usually a combination of deterrents is required to achieve the purpose. The effectiveness of these barriers is a key indicator of the effectiveness of the company preventative maintenance program such as self-closing doors mounted in such a way that light cannot be seen between the rubber door seal and the floor or door jam.

Cleaning, Sanitation and Housekeeping

A broad scope cleaning and sanitation program is necessary to control and prevent pests and vermin presence within the establishment.

The Cleaning and Sanitation standard operating procedure should include:

- Removal of food sources which may attract pests and vermin in production and storage areas and operatives' amenities and compete with baits
- Cleaning pools of water remaining on the floor of reception building and amenities after the cleaning operation to provide a dry environment
- Cleaning of high-traffic personnel thoroughfares during the day and at the end of the shifts
- Boot cleaning facilities associated with reception building should be provided to prevent material being carried outside
- Cleaning of the operatives' lunchroom after each main work break and again at the end of the production shift
- Routine cleaning of personnel lockers

RECEIVED: 02/11/2024

Corrective Action

Corrective action for pest and vermin control shall incorporate relevant parts of this program and needs to be specific to each establishment. Must include what is to be done if pests or vermin are detected.

Responsibilities

The On Plant Supervisor is responsible for:

- Recommending the establishment pest control standard operating procedure.
- Monitoring the effectiveness of the pest control standard operating procedure.
- Monitoring chemical usage

Fugitive Emissions

The following design specifications can help minimise the risks associated with the hazard of biogas escaping:

- Make all civil and process works as gas tight as possible
- Automatic flare system (burn biogas during CHP downtime)
- Over-pressure release device
- All digestate storage tanks gas-tight
- Appropriate, calibrated measuring devices
- CHP unit optimised for the combustion of biogas

Hazardous Substances

The OSH Framework Directive (89/391/EEC) lays down the obligation of the employers to evaluate the risks to the safety and health of workers which includes the following:

- General principles of prevention
- Elimination of risks and accidents
- Informing, consultation and balanced participation and training of site operatives
- Permit-to-work system verifying operatives aware of SOP's
- Material Safety Data Sheet recorded and maintained

Biological Agents

Rigorous cleaning and controls at each step in the biogas supply chain will avoid careless contamination and the spread of disease at all stages.

Electrical Hazards

RECEIVED: 02/11/2024

All workers coming into contact with electrical networks should have up to date electrical safety training. Training should be considered if the electrical network is being altered or upgraded. Refresher courses ensure experienced electrical operatives and professionals are on top of the latest health and safety guidelines and best practices.

Mechanical Hazards

Most of the risks related to mechanical hazards can be reduced to acceptable forces by applying a risk reduction strategy. If this is impossible, the hazards must be isolated from people by guards that maintain a safety distance between the danger zone and the people, with the main result being to reduce access to the danger zone.

Gas Hazards

The workplace exposure limit is the time weighted average concentration of a substance in air at the workplace over a specified reference period at which no acute or chronic harm to the health of employees is expected to be caused. Actions to prevent gas related illness and injuries include:

- Adequate signage demarcating potentially gaseous atmospheres, prohibiting mobile phones and naked flames
- Permit-to-work system
- Calibrated and functioning detection devices
- Adequate employee education and refresher courses
- Limited work scheduled in confined spaces

Explosion and Fire Hazards

Explosive atmospheres are mitigated by the following forms of protection:

- Primary Explosive Protection: Prevention of formation of explosive atmosphere (i.e. maintain inert atmosphere via ventilation)
- Secondary Explosive Protection: Prevention of ignition (i.e. zones of prohibited mobile phone use/ignition)
- Tertiary Explosive Protection: Reduction of explosion consequences (i.e. PPE, explosion suppression, evacuation procedure)

Malpractice – Operative Health and Safety

Prior to commissioning of the facility detailed standard operating procedures (SOPs) will be drafted which will be implemented during operation of the facility. In accordance with the 'Safety Health and Welfare at Work Act', 2005; 'the Safety, Health and Welfare at Work (Construction) Regulations, 2001' and associated Regulations, a site-specific Safety Statement will be produced which will incorporate all operating procedures at the facility.

The following measures will be implemented at the facility to minimise the potential for emergency situations:

RECEIVED: 02/11/2024

- All on-site personnel will be adequately trained in relevant areas of employment
- The facility design will be regularly reviewed for potential safety hazards
- The facility will be designed to incorporate standby/backup plant in emergency situations
- Adequate fire detection and fire-fighting infrastructure will be incorporated into the site design
- All staff will be supplied with appropriate personal protective equipment (PPE).

7.7 Cumulative Effects

The potential cumulative effects of the proposed development on Population and Human Health have been considered in conjunction with the ongoing changes in the surrounding area. Visits to the proposed development and surrounding area and desk-based review of online planning files have been undertaken to identify the existing pattern of development, nearby uses, and any permitted / ongoing developments of relevance to the current proposals in the context of Population and Human Health.

The cumulative effects of the proposed construction and operation of a biogas facility at Lisheen with other developments in the area are reviewed in this section with specific regard to the local population.

7.7.1 Methodology

The CEA has considered likely significant cumulative effects arising from other existing and/or approved projects that may arise during construction and operation of the proposed development.

The cumulative construction assessment considers the total effects of the proposed development and other identified projects being constructed concurrently. It is assumed that the construction of the proposed development starts in 2025/2026. Projects where construction has been completed prior to 2025/2026 are therefore not included in the cumulative construction assessment. The cumulative operational assessment considers the total effects of the proposed development and other identified projects operating concurrently.

Stage 1: Establishing the long list of 'other existing and/or approved projects'
The first stage in determining cumulative effects was to identify a long list of "other existing and/or approved projects" deemed potentially relevant to be included in the CEA. This stage took into account any existing environmental issues relating to areas of particular importance likely to be affected or the use of natural resources.

Stage 2: Screening of the Long List of 'Other Projects'
Stage 2 of the CEA involved a screening exercise of the "Long List" whereby each of the EIA Specialists (considered whether each of other projects have the potential to give rise to likely significant cumulative effects with the proposed development during the construction and operation phases. Many of the projects were screened out by the EIA Specialists for a number of reasons including the location, scale and nature of the project, level of confidence in the publicly available data provided, predicted construction timelines etc. The outcome of this

RECEIVED: 02/11/2024

'screening' exercise for the wider scheme EIAR topics and the reasons why certain projects were screened out are provided in Section 7.7. 4 below.

Stage 3: CEA

Following Stage 2, those projects which were "screened in" by the EIA Specialists were carried forward for assessment. The results of the Stage 3 CEA are presented in the main body of chapters within the EIAR.

Mitigation measures to minimise likely significant cumulative effects are detailed in **Section 7.6**.

7.7.2 Screening (including the Reasons for Screening out Projects)

This section covers an assessment of cumulative impacts from the proposed development on population and human health during its construction and operation. A screening exercise of the "long list" was carried out in order to determine whether any of the 'On-site Projects and Projects within 10km radius' have the potential to give rise to likely direct or indirect significant cumulative effects with the proposed development from a population and human health perspective.

On-site projects and Projects within 2.5km radius

It was concluded that the 'on-site' projects were most likely to contribute to any cumulative effects with the proposed development. However some projects within Tier 2 'up to 2.5km' radius have been screened in due to the nature of the developments.

Tier 3 and Tier 4 Projects (within 2.5-7.5km radius and Projects 7.5km and beyond)

Given the distance and location of the projects the development area, they are unlikely to create direct or indirect significant negative cumulative effects between these projects and the proposed development on population and human health. Therefore, all projects within 2.5-7.5km and beyond projects with the exception of the former Galmoy Zinc and Lead Mine) have all been screened out from further assessment.

Project No.	Project Name	Planning Ref.
1	Acorn Recycling Workshop and Truck Washout	Tipperary Co. Co. Reg. Ref. 2360281
2	Irish Bioeconomy Foundation Research and Development Unit	Tipperary Co. Co. Reg. Ref. 211171
3	Glanbia Biorefinery (1)	Tipperary Co. Co. Reg. Ref. 18601296
4	Glanbia Biorefinery (2) (Modifications to Biorefinery permitted under Application Reg. Ref. 18601296)	Tipperary Co. Co. Reg. Ref. 20129

RECEIVED: 02/11/2024

6	Revive Environmental	Tipperary Co. Co. Reg. Ref. 21709
12	NaringTech	Tipperary Co. Co. Reg. Ref. 2260395
13	Hogan's Drain & Pipe Cleaning	Tipperary Co. Co. Reg. Ref. 2361035
14	Derryville Environmental Solutions	Tipperary Co. Co. Reg. Ref. 20820
15	Derryville Environmental Solutions	Tipperary Co. Co. Reg. Ref. 20816
16	LISHEEN III WIND FARM LIMITED	Kilkenny Co. Co. Reg. Ref. 19787
17	LISHEEN III WIND FARM LIMITED	Kilkenny Co. Co. Reg. Ref. 20459
18	BRUCKANA WINDFARM LIMITED	Kilkenny Co. Co. Reg. Ref. 22679
23	Borrisbeg Wind Farm	PA92.318704
21	Shannon Resources (former Galmoy Zinc and Lead Mine)	Kilkenny Co. Co. Reg. Ref. 21599

Table 7.12: Screened in projects. (Source Purser)

7.7.3 CEA

Section 7.7.2 above explains which projects were screened in/out for CEA for which environmental topics.

Table 7.13 below presents the results of the CEA in respect of the topics that are considered to impact population and human health. The project numbers mentioned in the table below correspond to the projects listed in Table 7.1 of Appendix 7.1 which is the Long list of other existing and or approved projects.

Table 7.13 below presents a summary of the overall CEA of the "screened-in" projects in combination with the proposed development for the EIA topics.

Environmental Factor	Screened-in Projects	Significance of Effects
Air Quality	Acorn Recycling Workshop and Truck Washout Glanbia Biorefinery (1)	Potential for the creation of additional dust/particles in the air during the construction of the biorefinery or the day to day works or the Acorn Recycling Workshop and Truck Washout.

RECEIVED: 02/11/2024

	Shannon Resources (former Galmoy Zinc and Lead Mine)	The Shannon resources site is an extractive site therefore impacts to air quality.
Traffic and Transportation	Acorn Recycling Workshop and Truck Washout Irish Bioeconomy Foundation Research and Development Unit Glanbia Biorefinery (1) Glanbia Biorefinery (2) Revive Environmental	Potential for an increase in traffic during the construction phase of the proposed development of the biorefinery. Other developments will generate traffic along the HGV route for the proposed development.
Hydrology & Hydrogeology	Acorn Recycling Workshop and Truck Washout Glanbia Biorefinery (1) Hogan's Drain & Pipe Cleaning	Potential for run-off into nearby watercourses during construction phase of the biorefinery or the day to day works or the Acorn Recycling Workshop and Truck Washout and Hogan's Drain & Pipe Cleaning.
Noise and Vibration	Glanbia Biorefinery (1) LISHEEN III WIND FARM LIMITED Borrisbeg Wind Farm Acorn Recycling Workshop and Truck Washout Hogan's Drain & Pipe Cleaning	Potential for an increase in noise and vibration during the construction of the biorefinery. Potential for noise during the operation of the surrounding windfarms biorefinery and other industrial uses in the area.
Waste	Acorn Recycling Workshop and Truck Washout Irish Bioeconomy Foundation Research and Development Unit Glanbia Biorefinery (1) Glanbia Biorefinery (2) Revive Environmental	Potential for additional waste trucks to be required to collect waste produced at the various sites.

RECEIVED: 02/11/2024

	LISHEEN III WIND FARM LIMITED Borrisbeg Wind Farm Hogan's Drain & Pipe Cleaning NaringTech Derryville Environmental Solutions Shannon Resources (former Galmoy Zinc and Lead Mine)	
Utilities	Acorn Recycling Workshop and Truck Washout Irish Bioeconomy Foundation Research and Development Unit Glanbia Biorefinery (1) Glanbia Biorefinery (2) Revive Environmental LISHEEN III WIND FARM LIMITED Borrisbeg Wind Farm Hogan's Drain & Pipe Cleaning NaringTech Derryville Environmental Solutions Shannon Resources (former Galmoy Zinc and Lead Mine)	Potential impacts on the electrical and water supply in the surrounding area

Table 7.13: CEA Screened-in Projects. (Source Purser)

RECEIVED: 02/11/2024

7.7.1 Construction Phase

The mitigation measures outlined in the CMP and above should be applied throughout the construction phase of the proposed development. This will ensure any significant cumulative effects on the local population and the greater environment are prevented. Management of the wheel washing / dust damping will ensure that water run-off is minimised and will not impact on nearby water sources.

The increase in traffic caused by the construction traffic will be a slightly negative impact for the duration of the construction. It is also noted that the biorefinery is currently under construction which will lead to further construction vehicles on the road network. When scheduling deliveries and preparing HGV routes the contractor will be mindful of nearby development and try and minimise clashing with deliveries arriving at other sites. This is set out within the CTMP submitted as part of the wider application.

The mitigation measures set out in the Air Quality (including Odour) chapter (**Chapter 11**) and the Construction Management Plan will ensure that the creation of dust will be minimised during the construction phase. This will ensure that there is no cumulative effects on the local population.

The site specific mitigation measures set out in the Noise and Vibration chapter (**Chapter 13**) will ensure that it minimises and/or removes any noise impacts on adjacent noise sensitive receptors. The mitigation measures will ensure that any construction noise will be limited to the short term with only a slight/limited effect. The Noise and Vibration chapter confirms that all surrounding developments have reported acceptable noise limits during the construction phase.

Chapter 10 (Hydrology and Hydrogeology) advises that during the construction phase of the Proposed Development, in a worst-case scenario there is potential for negative cumulative impacts to hydraulicly connected waterbodies. These include impacts to water quality of surface and groundwater bodies due to accumulation of excess sedimentation and mobilisation of contaminants from multiple source projects. The measures outlined in the scheme Construction Management Plan and section 10.7 of this report will ensure that there will be no significant cumulative effect on the receiving groundwater and surface water environment and associated receptors (e.g., Natura 2000 sites). The implementation of these measures will ensure that cumulative effects associated with the Proposed Development will not have any impact on compliance with the EU Water Framework Directive, European Communities (Environmental Objectives) Surface Water Regulations (S.I. 272 of 2009 and as amended) and the European Communities Environmental Objectives (Groundwater) Regulations (S.I. No. 9 of 2010 and as amended).

7.7.2 Operational Phase

Transport

Chapter 14 (Traffic and Transport) acknowledge that projects 1-6 will generate traffic along the HGV route for the site. The chapter goes on to confirm that the capacity of the roads and the number of trips created by these other

RECEIVED: 02/11/2024

developments will not have a long term or cumulative impact on the surrounding road network. At the operational phase the proposed development will generate 44 trips a day (workers arriving and leaving site, and deliveries/pickups). This will not create a significant impact on the number of vehicles using the surrounding roads.

Air

There are considered to be no impacts on air quality during the operation of the proposed development

Noise and Vibration

During the operation of the site there are considered to be no vibration impacts. The mitigations set out in **Chapter 13** (Noise and Vibration) and site specific advice such as ensuring quiet machinery/plant is installed where possible will ensure that there is no cumulative impacts on the surrounding population.

Water

The proposed development will be connecting to the Moyne Group Water Scheme. Due to the reuse of the majority of the water required on site there will be no cumulative impact resulting from the connection of the development to the group water scheme and potentially impacting local residents.

There will be no discharge of foul water from the site during the operational phase and therefore no other potential cumulative impacts associated with the proposed development.

Surface water from the proposed development will be treated and attenuated prior to discharging to the Cooleeny Stream located approximately 0.02km south of the site.

No cumulative impacts are expected from the proposed development during the operational stage.

Major Accidents and Disasters

All developments outside a 500m cumulative zone of influence were scoped out of the cumulative assessment. The Land Use Planning assessment carried out as part of **Chapter 19: Major Accidents and Disasters** concluded that the level of individual risk to persons off-site is acceptable. Therefore, the effects of the interactions between major accidents and disasters and human health not significant.

RECEIVED: 02/11/2024

7.8 Residual Effects

According to Environmental Protection Agency guidelines, Residual Impact is described as 'the degree of environmental change that will occur after the proposed mitigation measures have taken place.' The mitigation strategy above recommends actions which can be taken to reduce or offset the scale, significance, and duration of the effects on the surrounding populations.

7.8.1 Population

The proposed development will have no likely significant adverse effects, whether direct or indirect, on the population of the surrounding areas during the construction or operational phases.

Both direct and indirect employment will be created during the construction and operational phases of the development and as such the proposal will provide a significant economic benefit to the population of the surrounding area.

Following implementation of the mitigation measures proposed in **Section 7.6**, the residual effects are anticipated to be **positive, slight to moderate**, long-term effects on the local population.

7.8.2 Employment

The proposed development will give rise to new employment opportunities in terms of the direct employment during the construction phase. There would also be indirect employment opportunities arising from the construction work taking place as a result of this proposal. These opportunities would include an increase in business for local services such as builders' suppliers as well as shops and other such tertiary industries.

The proposed development will provide for a significant gain to the area in terms of employment provision. Following implementation of the mitigation measures proposed in **Section 7.6**, the residual effects are anticipated to be **positive, moderate to significant, long-term** effects on local employment.

7.8.3 Community

It is considered that the proposed development is unlikely to generate any adverse effect on the demography of the area either during the construction phase or the operational phase and would actually have positive economic effects.

Following implementation of the mitigation measures proposed in Section 7.6, the residual effects are anticipated to be **neutral, slight, long-term** effects on the local community.

RECEIVED: 02/11/2024

7.8.4 Human Health

Provided the actions and procedures outlined in **Section 7.6** are rigidly adhered to, the proposed development will have no likely significant adverse effect in relation to pest control, whether direct or indirect on the surrounding areas during the construction or operational phases.

Following implementation of the mitigation measures proposed in **section 7.6**, the residual effects are anticipated to be negative, slight and long-term effects on the Pest Control.

The various human health parameters discussed in this chapter also interact with many other aspects of the environment. The residual effects in relation to these aspects are detailed in the individual chapters as follows:

- Chapter 10 – Hydrology and Hydrogeology
- Chapter 11 – Air Quality (including Odour)
- Chapter 12 – Climate
- Chapter 13 –Noise and Vibration
- Chapter 14 – Traffic and Transportation

Following implementation of the mitigation measures proposed in **Section 7.6,** the residual effects are anticipated to be, **neutral, slight, long-term** effects on the Human Health.

7.9 Interactions

Population and human health is an EIA topic which tends to interact with numerous other environmental topics addressed elsewhere in the EIAR. Where the potential for impacts on population and human health has been identified as a result of such interactions, these have been addressed comprehensively above. The noteworthy interactions with population and human health and other topics are summarised below. All of these interactions have been addressed above and, where feasible, appropriate mitigation measures have been prescribed in the corresponding specialist chapter.

Hydrology and Hydrogeology (Chapter 10)

Interactions between 'Population and Human Health' and 'Hydrology and Hydrogeology' have been considered in this EIAR as the proposed project has the potential to create impacts on surface water run-off during construction stage as a result of increased levels of silt or other pollutants in addition to potential pollution from spillages, wheel washing and water from trucks on site.

Air Quality (Chapter 11) and Climate (Chapter 12)

RECEIVED: 04/11/2024

The assessment of the effects on Air Quality (including Odour) (**Chapter 11**) and Climate (**Chapter 12**) has established that the emissions to atmosphere during the construction and operational stages will not affect human health.

Air dispersion modelling was completed to evaluate the potential effects of the planned development regarding EU ambient air quality standards which were established on the protecting human health. As shown by the model results, projected ambient concentrations including background levels fall within all National and EU ambient air quality limit values and, thus, will have no effect on human health.

The predicted levels show that additional mitigation, other than the proposed Odour Treatment System, is not required.

Noise and Vibration (Chapter 13)

The interaction between population and human health and noise and vibration during construction phase is due to potential nuisance and disturbance due to noisy construction activities, plant and equipment and construction traffic noise. Appropriate mitigation measures will be implemented in this regard. The predicted impact will be negative, significant and short-term at the closest noise sensitive locations and will reduce to negative, not significant and short-term at receptors greater than 30m. During the operational phase there is no potential for significant nuisance and potential disturbance due to additional operational phase traffic. With appropriate mitigation measures in place, no significant impacts are predicted in relation to this interactions.

Traffic & Transportation (Chapter 14)

There is potential for impacts on population and human health during the construction phase due to negative impacts on journey characteristics due to additional (construction) traffic on road network and the potential for nuisance and disturbance due to construction traffic noise. With appropriate mitigation measures in place such as warning signage and designated haul route for HGVs the predicted impact will be negative, not significant, over the short term.

During the operational phase there is potential for negative impacts on population and human health due to the potential for delays on the road, the higher potential for accidents and additional traffic on road network during the operational phase.

Landscape & Visual (Chapter 18)

During the construction phase there is potential for interaction between population and human health and landscape and visual due to negative impacts due to presence of construction site and effects of construction activities (e.g. dust, dirt, stockpiling of soils, removal of vegetation, etc.). The predicted impact will be slight to moderate, negative and short-term.

RECEIVED: 02/11/2024

The operational phase will result in positive contribution to the emerging residential community of the wider area, as well as enhancing green infrastructure and green space connectivity. The predicted impact will be neutral to beneficial, low to significant as the landscape (including replacement tree planting) matures and the views become more residential.

Material Assets- Waste (Chapter 15)

During the construction and operational phase there is potential for impacts on human beings in relation to the generation of waste and if wastes are not managed correctly and in accordance with the RWMP or the OWMP could result in fly-tipping, littering and reduced recycling, and re-use opportunities which could cause a nuisance to the public and attract vermin. The implementation of the RWMP and the OWMP, will ensure appropriate the impact of waste arisings are impacts on the local population and human health are neutral, imperceptible and long-term.

Material Assets- Utilities (Chapter 16)

In worst-case scenarios (e.g. where works are not carried out safely or in accordance with the applicable codes and standards), accidents during works (e.g. contact with live powerline or gas explosions) or water quality impacts resulting from works to utilities infrastructure, have the potential to result in human health impacts. Service outages resulting from works can temporarily affect the residential amenity of local residents and / or the operation of local businesses. The mitigation measures that will be put in place at the proposed development will ensure that the impact of the proposed development complies with all the specifications and guidelines of the relevant service providers. Therefore, the predicted impact no likely significant impact is envisaged with respect to population and human health during construction or operational phase.

Major Accidents and Disasters (Chapter 19)

The mitigation measures that will be put in place by the proposed development during the construction phase means the interaction between major accidents and disasters and human health are not significant. There are no expected impacts from these projects from a major accidents and disasters perspective, as such, there are no significant cumulative effects with the proposed development from a major accidents and disasters perspective.

7.10 Summary of Significant Effects

The aspects for this assessment are considered to be the Population, Employment, Community, and Human Health. Whilst the development proposals have the potential to cause detriment to the sensitive receptors identified, the recommended mitigation measures will ensure that the risk of potential effects are reduced to negligible.

RECEIVED: 02/11/2024

7.11 Statement of Significance

The significance of effect upon the Population, Employment, Community, and Human Health have been assessed for during both the construction and operational phases.

Where a potential effect has been identified, the significance of impact upon these receptors ranges from minor to moderate.

Where a potential effect has been identified, mitigation measures have been provided which if implemented reduces the impact of significance to '**negligible**'. The mitigation steps are presented in **Section 7.6**.

7.12 Difficulties Encountered

There were no difficulties encountered in producing this chapter.

7.13 References

- Environmental Protection Agency (EPA). (2022). Guidelines on the Information to be Contained in Environmental Impact Assessment Report. Dublin: Environmental Protection Agency.
-
- Institute of Environmental Management and Assessment (IEMA). (2022). Guide to Determining Significance for Human Health in Environmental Impact Assessment. Lincoln: IEMA.
- Institute of Environmental Management and Assessment (IEMA). (2022). Guide to Effective Scoping of Human Health in Environmental Impact Assessment. Lincoln: IEMA.
- Institute of Public Health (IPH). (2021). Health Impact Assessment Guidance: A Manual. Dublin: Institute of Public Health.
- European Commission. (2017). Environmental Impact Assessment of Projects: Guidance on the Preparation of the Environmental Impact Assessment Report.
- Central Statistics Office (CSO). (2022). Census Data 2022. Dublin: Central Statistics Office.
- Tipperary County Council. (2022). Tipperary County Development Plan 2022 – 2028. Tipperary: Tipperary County Council.
- Pobal. (2022). Pobal HP Deprivation Index. Dublin: Pobal.
- Office of the Safety, Health and Welfare at Work. (2016). Code of Practice for Chemical Agents. Dublin: Health and Safety Authority.
- Health and Safety Authority. (2021). Chemical Agents and Carcinogens Code of Practice. Dublin: Health and Safety Authority.
- Composting & Anaerobic Digestion Association of Ireland (CRÉ). Guidelines for Anaerobic Digestion in Ireland. Ireland: CRÉ.
- US Environmental Protection Agency (EPA). Human Health Risk Assessment Process.