5 POPULATION AND HUMAN HEALTH

5.1 INTRODUCTION

5.1.1 Background and Objectives

This Chapter of the EIAR assesses the impacts of the Proposed Development on population and human health. The Proposed Development refers to all elements of the application for the construction of Derreenacrinnig West Wind Farm (**Chapter 2: Project Description**). Where negative effects are predicted, the chapter identifies appropriate mitigation strategies therein. The assessment considers the likely significant direct and indirect effects during the following phases of the Proposed Development:

- Construction of the Proposed Development
- Operation of the Proposed Development
- Decommissioning of the Proposed Development

This Chapter of the EIAR is supported by Figures in **Volume II** and the following Appendix document provided in **Volume III**:

- **Appendix 1.4: Common Acronyms**

5.1.2 Statement of Authority

This section has been prepared by Environmental Scientists and Planners of Jennings O'Donovan & Partners Ltd; Mr. Evan Concar (Masters' Degree in Climate Change, Agriculture, and Food Security obtained from the University of Galway) and reviewed by Ms. Breena Coyle (Head of Planning Department) and Mr. David Kiely, Director of Jennings O'Donovan & Partners Ltd. Further details and biographies/CVs of the authors and reviewer of this chapter have been included in **Appendix 1.1: Author Qualifications**.

5.1.3 Assessment Structure

In line with the EIA Directive as amended and current (draft) EPA guidelines the structure of this chapter is as follows:

- Assessment Methodology and Significance Criteria – a description of the methods used in desktop surveys and in the assessment of the significance of effects.
- Baseline Description – a description of the socio-economic profile of the local area of the Proposed Development, i.e., of local electoral areas and of County Cork and based on a desk-based study using Central Statistics Office (CSO) data.
- Assessment of Potential Effects – including the "Do Nothing" scenario (accounts for likely changes in the Baseline due to natural changes and nearby projects) and identifying the ways in which the population and human health of the area could be affected by the

Proposed Development during the construction, operational and Decommissioning stages.

- Mitigation Measures and Residual Effects – a description of measures recommended to avoid, prevent, reduce or, if necessary, offset any potential significant adverse effects and a summary of the significance of any residual effects of the Proposed Development after mitigation measures have been implemented.
- Cumulative Effects – identifying the potential for effects of the Proposed Development to combine with those from other existing, permitted and/or proposed projects as listed in **Chapter 2: Project Description** of this EIAR**,** to affect the population and human health.
- Summary of Significant Effects.
- Statement of Significance.

With respect to the EIA Directive as amended, Section 1.2.2 (outlined in Section 4.1.3), amalgamates the findings of other assessments undertaken as part of the EIA process. Limited interactions with Human Health are possible and consideration has been given to the findings of the following assessments:

- Land and Soils: Chapter 7
- Hydrology and Hydrogeology: Chapter 8
- Air and Climate: Chapter 9
- Noise: Chapter 10
- Traffic and Transportation: Chapter 11
- Landscape and Visual Amenity: Chapter 12
- Major Accidents and Natural Disasters: Chapter 16

Where appropriate, mitigation measures have been proposed to avoid, prevent, reduce or, if necessary, offset any identified significant adverse effects.

5.1.4 Scope of the Assessment

The effect of a development on population and human health includes the following broad areas of investigation:

- Population and Settlement Patterns
- Economic Activity and Tourism
- Employment
- Topography and Land Use
- Health Impacts of Wind Farms
- Property Value / Residential Amenity and

- Natural Disaster and Major Accidents

Where a significant negative impact can be foreseen, it is prevented, reduced, avoided or, if necessary, offset by way of practical mitigation measures.

This assessment considers the following criteria:

- Sensitive receptors in the area
- Existing land use in the area
- General amenities in the area
- Potential effects from water, noise, shadow flicker, air quality and traffic

This chapter is an EIA of the Proposed Development on the outlined Population and Human Health factors. A full description of the Proposed Development is outlined in **Chapter 2: Project Description, Section 2.4** and includes one Turbine Delivery Route (the Proposed TDR) and one Grid Connection Route (the proposed GCR).

5.2 ASSESSMENT METHODOLOGY

Baseline conditions: A desk study was undertaken to describe the Baseline conditions of the receiving environment across a range of Population and Human Health factors and are presented in **Section 5.3** of this chapter. Where Central Statistics Office (CSO) data is available, these data are assessed by Study Area; within the locality of the Wind Farm Site and compared with the both the County and National CSO data. These Study Areas are described in **Section 5.2.1** of this chapter. This assessment has been carried out using latest available CSO data, information and maps from the current Cork County Development Plan 2022-2028, and other relevant studies.

Do Nothing Impact Assessment: **Chapter 3: Alternatives Considered** outlines the impact if the Proposed Development were not to go ahead and the likely evolution thereof without the Proposed Development as far as natural changes from the Baseline scenario.

Assessment of Potential Effects: The potential impacts of the Proposed Development, are assessed as documented in **Section 5.4**. Typically, for each impact assessed the quality of the impact, for example, positive or negative, the significance of the impact, for example, slight or moderate and the duration of the impact, for example, short-term or long-term are assigned. If potentially significant adverse effects are identified, the proposed practical mitigation measures assessed to prevent, reduce, avoid or, if necessary, offset such effects are documented in **Section 5.5**.

Mitigation measures: The mitigation hierarchy approach, as outlined in Chapter 1 of Avoidance, Reduction/ Elimination and Remedy aims to avoid significant impact through embedded mitigation (avoidance), and where avoidance is not possible, through mitigation measures. Remedy, the lowest rung of the mitigation hierarchy is only considered where mitigation measures are not feasible or possible.

Cumulative Assessment: Other large developments (operational and in the planning process) within a 20 km of the Proposed Development (shown in Appendix 2.2), in conjunction with the Proposed Development, are assessed to determine the potential cumulative effects on Population and Human Health. This Study Area is derived from the Wind Energy Development Guidelines (2006)[1] and Draft Wind Energy Guidelines (2019)[2].

Information regarding human beings and general socio-economic data were sourced from the following websites:

- Central Statistics Office (https://www.cso.ie/en/index.html)
- Cork County Development Plan 2022-2028
- The Southern Regional Assembly (SRA)
- Regional Spatial & Economic Strategy (RSES) 2019-2031 (southernassembly.ie)
- Fáilte Ireland (failteireland.ie)
- National Parks and Wildlife Services (npws.ie)
- Sustainable Energy Authority of Ireland (seai.ie)
- Cork County Council (corkcoco.ie)
- County Cork Local Economic and Community Plan 2024-2029
- The National Planning Framework Ireland 2040 (www.npf.ie)

In line with the EIA Directive as amended and current EPA guidelines, this chapter includes the following elements:

- Details of methodologies utilised in the context of legal and planning frameworks
- Baseline Descriptions
- Assessment of Potential Effects (do-nothing, construction, operational and Decommissioning phases)
- Detailed Mitigation Measures
- Assessment of Cumulative Impacts; and
- Summary of Significant Effects and Statement of Significance

[1] Wind Energy Development Guidelines (2006) https://www.gov.ie/en/publication/f449e-wind-energy-development-guidelines-2006/ [Accessed 8th October 2024]
[2] Draft Wind Energy Development Guidelines (2019) https://www.gov.ie/en/publication/9d0f66-draft-revised-wind-energy-development-guidelines-december-2019/ [Accessed 8th October 2024]

The Wind Farm Site is located within the townland of Derreenacrinnig West, with the Grid Connection traversing the townlands of Derreenacrinnig West, Barnagowlane West, Glanareagh, Gortnacowly, Ards Beg, Ardrah, Laharanshermeen, Maulraha, Maulikeeve, Derryarkane, Cappanaboul, Skahanagh, Gortroe, Shandrum Beg, Shandrum More, Dromloughlin, Crossoge, and Ballylicky.

These townlands are within both the '*Transitional Rural Area'* and the '*Tourism and Rural Diversification Area'* Rural Housing Policy Area Types.

5.2.1 Relevant Legislation and Guidance

The Population and Human Health section of this EIAR is carried out in accordance with legislation and guidance contained in **Chapter 1: Introduction** and **Chapter 4: Planning Policy** (schedule 6 of the Planning and Development Regulation, 2001 (as amended)).

The distance of receptors from the proposed turbines complies with Department of the Environment, Heritage and Local Government Wind Energy Development Guidelines (WEDG) (2006) and DoHPLG, Draft Revised Wind Energy Development Guidelines (2019).

The design, construction, operation and Decommissioning of the Proposed Development including the installation of associated equipment such as switchgear and substations is governed by the Safety, Health and Welfare at Work Act 2005 (as amended), The Safety, Health and Welfare at Work (General Application) Regulations 2007 to 2023.

The EPA 2015[3] report produced entitled the *'Investigation into the Assessment of Health Impacts within National Environmental Regulation Processes*' that outlines how human health impacts are dealt with, throughout the European Union (EU) by environmental regulators with an emphasis on the role at the planning / environment interface was complied with.

"European Commission guidance relating to the implementation of the 2014 Directive, in reference to "human health" states "human health" 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 the other factors in Article 3(1) of the EIA Directive and thus environmentally related health issues (such as health effects caused by the release of toxic substances to the environment, health risks arising from major hazards associated with the

[3] Golder Associates (2015) *Investigation into the Assessment of Health Impacts within National Environmental Regulation Processes*. Available online at: https://www.epa.ie/publications/research/environment--health/assessment-of-health-impacts-report.php [Accessed: 28th November 2024]

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. In addition, these would concern the commissioning, operation, and Decommissioning of a Project in relation to workers on the Project and surrounding population.[4]"

5.2.2 Definition of Study Areas

Four geographical Study Areas have been outlined for this assessment. While the greater geographical Study Area (4) provides a baseline of statistical data for this chapter, it is not considered for local impacts of this assessment. Note: Study Area 1 lies within Study Area 2 and information outlined for Study Area 2 incorporates data for Study Area 1. The four Study Areas are outlined below:

Study Area 1: The Site and Environs – District Electoral Divisions (DEDs) Dromdaleague North, Mealagh and Bantry Rural (90.4 km^2). In order to make inferences about the population and other statistics in the vicinity of the Site, DEDs were analysed. The entire Site comes under one Municipal Division (MD), West Cork and electoral divisions (ED), Dromdaleugue North, Mealagh and Bantry Rural that can be separated into distinct townlands, Derreenacrinnig West, Derreenacrinnig East, Mullaghmesha, Glanaclogha, and Castledonovan.

Parts of the TDR and the GCR also fall within Study Area 1. **Chapter 12: Landscape and Visual Amenity** assesses the effects of the Proposed Development on the landscape and visual amenity of the receiving environment.

Study Area 2: **Cork County** (7,316 km^2).
County Cork was chosen as a study area to conclude the extent of effects (if any) on the population and human health within the county as a result of the Project.

Study Area 3: **The Southwest Region[5]** (12,120 km^2)
Study Area 2 falls within Study Area 3: The Southwest Region. The Southwest Region consists of Cork City, Cork County and Kerry County. The Southwest Region is a Strategic Planning Area of the Southern Regional Assembly.

[4] Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report, European Commission, 2017 http://ec.europa.eu/environment/eia/eia-support.htm
[5] https://www.southernassembly.ie/the-assembly [Accessed: 28 November 2024]

Study Area 4: **Ireland** (70,273 km^2).

Study area 4, Ireland, provides a national baseline of statistical data for this chapter.

Descriptive terminology for impact assessment follows the systematic method of description of the EPA Guidelines (2017), as outlined in **Chapter 1: Introduction**, **Table 1.4**.

Consultation with relevant organisations was initiated during the initial stage of the EIA process to identify any effects (on human health) that could potentially result from the Project. A summary of the consultation responses is presented in **Section 1.12**. of **Chapter 1: Introduction.**

5.3 BASELINE DESCRIPTION

5.3.1 Population and Settlement Patterns

Study Area 1: The Site and Environs (DEDs Dromdaleague North, Mealagh and Bantry Rural) (90.4 km^2)

In order to make inferences about the population and other statistics in the vicinity, District Electoral Divisions (DEDs) were analysed. The entire project falls under the Municipal District (MD), west Cork and Electoral Divisions (ED) Drimdoleague North, Mealagh and Bantry Rural.

The townlands within these EDs are shown in **Table 5.1.**

Table 5.1: Townlands within the Electoral Divisions (EDs) of Study Area 1

Dromdaleague North	Mealagh	Bantry Rural
Barnagowlane East	Ardrah	Ardnageehy Beg
Barnagowlane West	Ards Beg	Ardyhoolihane
Castledonovan	Ards More (East)	Ballylicky
Ceancullig	Ards More (West)	Boolteenagh
Cummeen	Cloonygorman	Caher
Derreenacrinnig East	Coomanore North	Cahernacrin
Derreenacrinnig West	Coomanore South	Cappanaboul
Garranes North	Coomleagh East	Cappanaloha West
Leitry Lower	Coomleagh West	Cappanavar
Leitry Upper	Derreenkealig	Carrigboy
Mullaghmesa	Derryarkane	Crossoge
Seehanes	Dromclogh East	Curraghavaddra
	Dromclough West	Derryginagh East

Dromdaleague North	Mealagh	Bantry Rural
	Dromsullivan North	Derryginagh Middle
	Dromsullivan South	Derryginagh West
	Glanareagh	Dromacappul
	Glanbannoo Lower	Dromaclarig
	Glanbannoo Upper	Dromacoosane
	Gortnacowly	Drombrow
	Laharanshermeen	Dromclogh
	Maularaha	Dromdaniel
	Maulikeeve	Dromdoneen
	Tooreen South	Dromdoneen East
		Dromdoneen West
		Dromloughlin
		Dromnafinshin
		Dromreague
		Dunbittern East
		Dunbittern West
		Dunnamark
		Gortagarry
		Gortroe
		Gouree Beg
		Gouree More
		Gurteen
		Gurteenroe
		Inchiclogh
		Kealcoum
		Laharan East
		Laharan West
		Lissareemig
		Loughdeeveen
		Mullagh
		Raheen
		Raheen Beg
		Raheen More
		Reenydonegan
		Rooska East

Dromdaleague North	Mealagh	Bantry Rural
		Rooska West
		Shanaknock
		Shandrum Beg
		Shandrum More
		Shanvallybeg
		Skahanagh
		Skahanagh Beg
		Skahanagh Lower
		Skahanagh More
		Tedagh

There are no defined community settlements with a population greater than 2,500 within the 10 km radius of the Proposed Development. Skibbereen, which has a population of 2,319 persons is approximately 18.13 km distant south of the Proposed Development, Bantry, which has a population of 2,929, is 5.19 km to the south of the Grid Connection. The nearest centres of population to the Site are Killarney, Co. Kerry, 39 km distant to the north-west which has a population of 13,134 residents and Cork City, 59 km distant west which has a population of 222,526 persons. The surrounding area is largely rural, with a mixture of agricultural grassland, commercial forestry plantations, private roads and public roads. Isolated residences and farmsteads are also scattered throughout the area. Nearby settlements include the villages of Drimoleague 5 km south, Kealkill 7 km north-west, and Dumanway 11 km west.

Over the last five years, Cork County Council have granted planning permissions in the Dromdaleague North, Mealagh and Whiddy/Bantry Rural electoral division areas which include one off housing, alterations to existing dwelling houses, development of new housing, agricultural buildings, a school extension and commercial developments including a factory[6]. The 2022 Census statistics note 685 occupied residences and a total population of 1,864 in these three electrical division areas.

All inhabited dwellings are located at a distance of over 750 m from the proposed turbines. There are 63 properties within 2 km of the turbines. The total population in the Drimodaleague North ED was 297, of which Males numbered 165 and Females numbered 132, the population in Mealagh was 401, of which Males numbered 202 and Females

[6] Cork County Council. *Planning Map Search* Available online at: https://www.corkcoco.ie/en/planning/planning-enquiry-online-submissions. [Accessed 28th November 2024]

numbered 199, and in Whiddy/Bantry Rural the population was 1,166, of which Males numbered 577 and Females numbered 589. The population density of Study Area 1 is 20.6 persons per square kilometre. The total number of households was recorded as 685 across the three EDs. The Site and its wider environs are classified as a 'Transitional Rural Area' in the Cork County Development Plan 2022-2028[7]. Although population concentrations are lower in these areas, there is a more stable population base and less evidence of population decline than other parts of the County. These ED areas also exhibit characteristics of a weaker economic structure and have higher levels of environmental sensitivity.

Study Area 2: Cork County

The total population in the 2022 CSO for County Cork was 584,156, of which Males numbered 288,845 and Females numbered 295,311. There has been an 8% increase in the population since 2016. The population density is 80 persons per km^2. The total number of households was 240,942 in 2022, a 5% increase since 2016. Average size of households (in persons) has generally remained the same at approximately 2.7-2.9 persons per household over the past three census reports.

Cork is the largest county in Ireland with a land mass of 7,500 km^2 including Cork City. The economic performance of Cork is strong and plays a critical role in both our regional and national economies. Cork contributes 19% to the national GDP.

There are a number of medium sized towns and villages geographically spread throughout County Cork. These settlements number 102 and provide essential services for the local communities and the rural hinterlands. The different settlement tiers perform differing roles with the result that no area in the county is significantly peripheral or isolated.

Cork saw the largest increase in rural population in Ireland over a 5-year period from 2011 to 2016, with an increase of 6,946. The towns of Carrigaline (18,239), Cobh (14,148), Midleton (13,906) and Mallow (13,456) are the most populated within the County.

Carrigaline, the largest town in County Cork, is significant for health, social and cultural activities. It is located approximately 8 km from Cork City.

[7] Cork County Development Plan 2022-2028 Available online: https://www.corkcoco.ie/en/cork-county-development-plan-2022-2028 [Accessed 28th November 2024]

Study Area 3: The Southwest Region[8] (12,120 km^2)

The Regional Spatial and Economic Strategy (RSES) for the Southern Regional Assembly 2040[9] outlines the assembly's aim of reversing of town/village and rural population decline, by encouraging new roles and functions for buildings, streets and sites. The National Planning Framework (NPF)[10] projects a population growth for the southern region of between 340,000 to 380,000, during this period, with an additional 225,000 people in employment.

RSES notes that the population living in '*aggregate rural area'* (i.e. persons living in the open countryside or in settlements of less than 1,500) are home to almost 49.15% of this region's population, and as such represent a sizeable cohort of the population. Population growth needs to be matched by the delivery of critical enabling infrastructure and services, thus enabling these places to grow as successful significant employment centres and service locations not only for the urban areas themselves but, importantly, for their extensive hinterlands that include smaller towns, villages and rural areas. The RSES outlines the importance for the energy sector being a regional driver of the rural economy (White Paper-Irelands transition to a Low Carbon Energy Future 2015-2030[11]). The RSES outlines a key objective relating to supporting enterprise and employment in rural areas, as set out in the Department of Heritage, Regional, Rural and Gaeltacht Affairs Action plan for Rural Development[12], which includes the support of sectoral growth through roll out of initiatives to develop the renewable energy sector in rural Ireland.

Study Area 4: Ireland

Ireland has experienced rapid population growth in recent years with an improved standard of living and infrastructure growth resulting in a net inflow of population. The country has seen a population increased by 8% since 2016 from 4,761,865 to 5,149,139 as per the 2022 census[13]. The Irish population is at its highest figure since 1841, and it is the first time the

[8] https://www.southernassembly.ie/the-assembly [Accessed: 28 November 2024]
[9] Southern Regional Assembly, *'Regional Spatial & Economic strategy 2020-2040 (RSES)'*. Available at: https://www.southernassembly.ie/regional-planning/rses- [Accessed 28 November 2024]
[10] The Department of Housing Planning and Local Government, on behalf of the Government, 'Project Ireland 2040 - The National Planning Framework' published February 2018. Available at: https://npf.ie/project-ireland-2040-national-planning-framework/ [Accessed 28 November 2024]
[11] The Department of Communications, Energy & Natural Resources, 'Ireland's Transition to a Low Carbon Energy Future, 2015-2030' published June 2020. Available at: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.gov.ie/pdf/?file=https://assets.gov.ie/77389/e5aa9f25-da81-43eb-804d-57309615681e.pdf [Accessed 14/01/2025]
[12] The Department of Rural and Community Development 'Action Plan for Rural Development' Available at: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://assets.gov.ie/10916/951861650a4142b3a5bd0b4339f19509.pdf [Accessed 14/01/2025]
[13] Central Statistics Office (CSO), 'Census 2022 Reports'. Available at: https://www.cso.ie/en/statistics/population/censusofpopulation2022/censusofpopulation2022-summaryresults/ - [Accessed 28 November 2024]

population has been recorded over 5 million since 1851[14]. The National Planning Framework (NPF) (2018) has set out its intention to facilitate a significant growth in Ireland's population by 2040. Full achievement of the targets set out in the 'Project Ireland 2040 National Planning Framework would accommodate around 1.1 million additional people residing in Ireland by 2040.

5.3.2 Economic Activity

5.3.2.1 Primary Sectors

Study Area 1: The Site and Environs (DEDs Drimdoleague North, Mealagh and Whiddy/Bantry Rural)

The main sectors in this Study Area are agriculture, commercial forestry, and building and construction. These ED areas also exhibit characteristics of a weaker economic structure and have higher levels of environmental sensitivity. Mealagh has the highest proportion of the working population in the professional services, with 26%. With Whiddy/Bantry Rural having 25%, and Dromdaleague North having 23%. This is then followed by commerce, which employs 18% of the working population in Whiddy/Bantry Rural, 17% in Mealagh. However, in Dromdaleague North, the second highest proportion of the working population are in agriculture, forestry and fishing[15], with 16%.

Study Area 2: Cork County

The economy of County Cork is broadly based and diverse with strengths in the areas of agriculture/agri-tech, marine, food production, tourism, services, energy and in technology-based manufacturing in sectors such as electronics and life sciences. The Manufacturing sector accounted for the largest number of workers in the county at almost 42,700. The Wholesale and Retail Trade sector was the next largest, with nearly 32,000 workers followed by Human Health and Social Work Activities with almost 29,400 workers.

Cork also has a very significant agriculture and food sector. It has the most people employed in agriculture in the state. In 2010, the recorded numbers on farms in Cork was 14,222. This was 5.5% higher than the next highest at 13,445 in Galway[16], with a number of indigenous enterprises having a significant international presence including Dairygold and Midleton

[14] The Department of Housing Planning and Local Government, on behalf of the Government, 'Project Ireland 2040 - The National Planning Framework' published February 2018. Available at: https://npf.ie/project-ireland-2040-national-planning-framework/ - [Accessed 28 November 2024]
[15] CSO (2022) 'Census Interactive Map' https://visual.cso.ie/?body=entity/ima/cop/2022&boundary=C04167V04938&guid=2ae19629-21bb-13a3-e055-000000000001 [Accessed online: 28 November 2024]
[16] Life in 1916 Ireland: Stories from statistics https://www.cso.ie/en/releasesandpublications/ep/p-1916/1916irl/economy/ag/ [Accessed online 28 November 2024]

Distillery. Danone and Kerry Foods are also present in Cork and together produce approximately 8% of the world infant milk formula[17].

Study Area 3: The Southwest Region[18]

There is a total number of 331,968 persons included in the industry data for the Southwest region. The main sectors in Study Area 3 include Professional services at 24% (80,825), Commerce and trade at 22% (71,758) and Manufacturing industries at 16% (53,603).[19]

Study Area 4: **Ireland**

There is a total number of 2,320,297 persons included in the Industry data for the State. The main sectors in Study Area 4 include Professional services at 24% (568,105) and Commerce and trade at 24% (552,642). 'Other' accounts for 16% (365,716) and Manufacturing industries account for 12% (273,102). Agriculture only accounts for 4% of Ireland (82,228).[20]

5.3.3 Employment

5.3.3.1 Study Area 1: The Site and Environs (DEDs Dromdaleague North, Whiddy/Bantry Rural and Mealagh)

Dromdaleague North: The number of employed people (over the age of 15) in Dromdaleague North in 2022 is 138; an increase of 21.1% from 2016 (114). There are 39 people retired, an increase of 22% from 2016 (32).

Whiddy/Bantry Rural: The number of employed people (over the age of 15) in Whiddy/Bantry Rural in 2022 is 511; an increase of 16% from 2016 (440). There are 210 people retired, an increase of 10.5% from 2016 (188).

Mealagh: The number of employed people (over the age of 15) in Mealagh in 2022 is 166; an increase of 24.8% from 2016 (133). There are 65 people retired, an increase of 10.2% from 2016 (59).

It is assumed that the majority of those residing within Study Area 1 travel outside of it for employment.

[17] County Development Plan Review, Economy and Employment, Background Document No.6, Planning Policy Unit, Cork County Council (2019), https://www.corkcoco.ie/sites/default/files/2022-04/economy-and-employment-pdf.pdf, [Accessed online 28 November 2024]
[18] https://www.southernassembly.ie/the-assembly [Accessed: 28 November 2024]
[19] CSO (2022) 'Census Interactive Map' https://visual.cso.ie/?body=entity/ima/cop/2022&boundary=C03880V04631&guid=604546A1-A856-4B9B-AD46-E88B27C27155&theme=13 Accessed online: 28 November 2024

5.3.3.2 Study Area 2: Cork County

According to the CSO 2022 there were 264,400 persons over 15 years of age in employment in Cork County, an increase of 15% since 2016.

The leading employment sectors are manufacturing, health, wholesale and social work sectors which employ approximately 104,100 persons. Of the 113,556 persons aged 15 years and over who were outside the labour force, 27.3% were students, 18.3% were looking after the home/family and 40% were retired. **Table 5.2** sets out labour force status in Cork County in 2022.

Table 5.2: Cork County Labour Force Status (2022)

Principal Economic Status	No. Persons
At work	161,174
Looking for first regular job	1,682
Long term unemployed	5,233
Short term unemployed	3,537
Student	31,048
Looking after home/family	20,833
Retired	45,484
Unable to work due to permanent sickness or disability	12,562
Other	1,947
Total	**283,500**

5.3.3.3 Study Area 3: The Southwest Region

There are 598,191 persons over the age of 15 years recorded in the 2022 Census for Principal Economic Status in the Southwest Region. Of this, 55% (331,968 persons) are 'at work'. There is a record of 16% (98,516 persons) retired and 11% (66,852 persons) in education. A further 7% (41,263 persons) are looking after the home/family and 5% (29,364) are unable to work due to permanent sickness or disability. There is a population of 26,141 persons (4%) which are short-term unemployed, long-term unemployed or looking for their first regular job.

5.3.3.4 Study Area 4: Ireland

Employment Rate in Ireland increased to 74.40 percent in the second quarter of 2024 from 73.80% in the first quarter of 2024. Employment Rate in Ireland averaged 67.23% from 1998 until 2024, reaching an all-time high of 74.40% in the second quarter of 2024 and a record low of 59.30% in the first quarter of 2012.[20]

Ireland's seasonally adjusted unemployment rate fell to 4.3% in August 2024, down from a 28-month high of 4.7% in the previous month as the number of unemployed fell by 9,800 to 124,600.[21]

5.3.4 Land Use

5.3.4.1 Study Area 1: The Site and Environs (DEDs Dromdaleague North, Whiddy/Bantry Rural and Mealagh)

The lands within the immediate vicinity of the Site consists rugged uplands and mountainous terrain with rocky outcrops, characteristic of the Shehy Mountain Range. **Section 12.3.3** of **Chapter 12: Landscape and Visual Amenity** outlines: "*the Proposed Development is sited in an upland area characterised by extensive mountain moorland and large conifer plantations. Nonetheless, the primary land cover within the study area is that of pastoral farmlands bound by networks of hedgerow vegetation and mature treelines.*" The Corine 2018[22] denotes most of the Study Area as 'Forest and Semi-natural areas'.

The Site, as defined in **Chapter 1: Introduction**, is located on relatively high ground, at elevations ranging from 200 m Above Ordnance Datum (AOD) to 405 m AOD at the summit of Nowen Hill. Further information on the composition of the lands in which the Proposed Development resides is found in **Chapter 7: Land and Soils**.

Chapter 12: Landscape and Visual Amenity has included a full assessment of the Project. A Landscape Character Assessment was carried out as part of the Draft Cork Landscape Strategy (2007) and is included in Appendix F of the current County Development Plan (CDP). The assessment categorises the county into 16 distinct Landscape Character Types (LCTs). The Proposed Development is split between two LCTs, namely within LCT 9 – Broad Marginal Middleground and Lowland Basin, which is classified with a 'Low' landscape value, 'Medium' landscape sensitivity and a 'Local' landscape importance and within LCT

[20] Central Statistics Office (CSO) Available: https://www.cso.ie/en/index.html [Accessed 28 November 2024)
[21] Trading Economics. Available: https://tradingeconomics.com/ireland/unemployment-rate#:~:text=Irish%20Unemployment%20Rate%20Falls%20From,and%20females%20decreased%20to%204.3%25. [Accessed 28 November 2024]
[22] Environmental Protection Agency Maps https://gis.epa.ie/EPAMaps/ [Accessed Online 10/05/2024]

15a – Ridged and Peaked Upland which is classified with a 'High' landscape value, 'High' landscape sensitivity and a 'County' landscape importance.

These Landscape types (according to Cork County Development Plan) are described as;

LCT9 - "*a broad shallow basin serving the River Ilen and its tributaries enclosed by rugged ridges and rocky outcrops characterises this landscape in respect of landform. Contained by Mullaghmesha, Nowen Hill and Millane Hill to the north, Mount Kid to the west and Carrigfadda to the east, it falls gently southwards, gradually expanding its width in an east-west direction and southwards towards Skibbereen and ultimately beyond to the coastal fringe and the sea…"*

LCT15a - "*the ridged, peaked and forested upland landscape type flanks much of the mid-western boundary of County Cork, from the vicinity of Bantry in the south to Millstreet in the north. This landscape type has been glaciated and comprises a fairly rugged and rolling mountainous topography at a relatively high elevation. The area around the Cousane Gap provides a good example of this landscape type which is inclined towards the rugged whereas the southern slopes of the Boggeragh Mountains further to the north in type 15B are a somewhat smoother example, thus adding to the openness of the moorland… The landscape, with its rapid and steep rising and falling, seems to tumble down along the valleys. The rugged and diverse landcover, involving moorland, heath and scrub, lends a strong sense of the naturalistic..."*

There are three scenic views and/or routes designated in the Cork County Development Plan (2022-2028) within the Zone of theoretical Visibility (ZTV). Scenic views and routes are discussed further in **Chapter 12: Landscape and Visual Amenity.**

Further information on landscape is found in **Chapter 12: Landscape and Visual Amenity**.

5.3.4.2 Study Area 2: Cork County

The county of Cork has long east-west ridges forming uplands and hills. Less than one-third of its area is rough pasture, and farmlands climb as high as 245 m. In east and central County Cork are broad valleys and lowlands, which give way in the west to narrower valleys with coastal lowlands backed by high mountains.[23]

[23] Britannica, 2024. Accessed 28 November 2024. [Available: https://www.britannica.com/place/Cork-county-Ireland]

5.3.4.3 Study Area 3: South West Region

Study Area 3 is made up of Cork City, County Cork and County Kerry.

Kerry is bound by the Atlantic Ocean or its inlets to the south, west, and north. Composed of sandstone, the principal highlands of Kerry are among the highest mountains in Ireland. Three, and part of a fourth, of the six Atlantic peninsulas of southwestern Ireland are in Kerry.

These consist of mountainous ridges, in places intersected by deep valleys and generally surrounded by lowlands. The four peninsulas are the Kerry Head peninsula, the Dingle Peninsula, the Iveragh Peninsula, which continues the line of hills (Macgillycuddy's Reeks) from western County Cork to Valencia Island; and the Beara Peninsula, the most southerly one, which Kerry shares with Cork.

The highest elevations on the peninsulas include Baurtregaum (853 m) and Brandon Mountain (953 m) on the Dingle Peninsula and Mangerton (840 m) and Carrantuohill (1,041 m) on the Iveragh Peninsula. The latter peak is the highest point in the country.[24]

5.3.4.4 Study Area 4: Ireland

Ireland has a diverse landcover, including forestry, peat bogs, grassland, sand dunes, mud flats, salt marsh, bracken, hedgerows and more, as well as man-made structures and cultivated fields.[25]

Carrauntoohil is the highest point in Ireland. The peak lies in County Kerry and is 1,041 m high. Carrauntoohil is the central peak of Mackgillycuddy's Reeks range. The lowest point in Ireland is the North Slob in County Wexford. This is an area of mudflats. The area was reclaimed in the 19th century when a sea wall was built and has an area of 1,000 hectares.[26]

5.3.5 Tourism

5.3.5.1 Tourist Attractions

Study Area 1: The Site and Environs – Electoral Divisions Dromdaleague North, Whiddy/Bantry Rural and Mealagh

Gougane Barra located 13.6 km north-west of the Site is a popular tourist village famous for its small 11th century St Finbarrr's Oratory built on a peninsula. The area around Gougane Barra is part of the Múscraí Gaeltacht. The village is set in a spectacular

[24] https://www.britannica.com/place/Kerry
[25] https://www.tailte.ie/en/blog/a-new-national-landcover-map-for-ireland.html#:~:text=The%20landcover%20of%20the%20Republic,made%20structures%20and%20cultivated%20fields.
[26] https://www.worldatlas.com/articles/the-most-extreme-points-of-ireland.html

landscape known for its tranquillity, the beauty of the Gougane Lake and its numerous walking trails. Coillte Forest Park at Gougane Barra offers numerous walks for all ability levels, among the Sitka Spruce, beside the winding River Lee or past waterfalls tucked into the mountainside[27].

The Beara to Breifne Way is in close vicinity to the Proposed Development at Ballylickey Substation. The Way runs almost the length of the country and takes the walker and cyclist to some of its most beautiful and least explored areas; along the coast of the Beara Peninsula, across six mountain ranges, along the banks of the River Shannon and through the lake regions of Roscommon and Leitrim. The Shehy Mountains are also located to the north of the Site, which are popular for adventure related tourist activities, with trails for walking and cycling.

Sections of the Cork City-Beara-Gougane Barra Cycling Route traverse part of the Grid Connection. It is a 318 kilometre-long route which commences in Cork City and finishes at the Beara Peninsula (Inchigeelagh) via Gougane Barra. It is a moderate 8-day (318 km) cycling route which can be broken up into ideal smaller half day (40 km) stages. This route is joined by the Pass of Keimaneigh to the west of the Site and the Beara to Breifne Way to the north.

The Proposed Development is approximately 10 km from the Múscraí Gaeltacht, the area has a rich history of traditional Irish music, poetry and dance. Known for its unspoiled landscape, there are many nature walking trails within this area, offering picturesque views of the numerous lakes and mountainous areas within the landscape. The area is of significant cultural heritage value and is frequently visited by tourists.

Taking into account the availability of existing tracks and their proximity to the Site, it is considered that the main tourism and recreation in Study Area 1 is trail walking, hiking and cycling.

Study Area 2: Cork County

Tourism in County Cork is an important industry based on its rich natural and built heritage. Many areas that are important to the tourist industry of County Cork owe their attraction to the exceptional quality of the landscape or particular features of the built environment[28].

[27] Failte Ireland, West Cork Digital Brochure (2021), Accessed 28 November 2024.
[28] County Development Plan 2022, Section 10, https://www.corkcoco.ie/sites/default/files/2022-06/volume-1-main-policy-material.pdf, [Accessed Online_28 November 2024]

There are a number of policies in the Cork County Development Plan 2022 which seek to promote tourism in the county. Policy TO 1-2: Promotion of Sustainable Tourism in County Cork is '(a) *Promote a sustainable approach to the development of the tourism sector within Cork County* ….." and Policy TO 7-1: Walking/Cycling and Greenways is "*Promote the development of walking and cycling routes throughout the County as an activity for both international visitors and local tourists…*"

County Cork is home to a number of nationally recognized visitor attractions including; Blarney Castle, Fota Wildlife Park, Jameson Distillery Midleton, Charles Fort and The Titanic Experience, all of which were included in Ireland's top 50 fee charging visitor attractions according to Failte Ireland figures[29]

Study Area 3: The Southwest Region

The coastline of the Southwest offers opportunity for cliff-top walks and rambles. Inland, the landscape is scarcely less rugged: throughout the region, farmland is interspersed with rocky outcrops and bogs which break up the green vistas. The Southwest Region is also home to two of Ireland's top tourist towns, Killarney and Cork which are firm favourites for first-time visitors to Ireland.[30]

Study Area 4: Ireland

Overseas tourism to the island of Ireland continued to rebound in 2023 – the first full year of trading for tourism since the pandemic – and was worth around €6 billion. All of this helped to sustain 300,000 vital jobs in communities across the island, helping to make tourism one of the island's largest indigenous industries. [31]

5.3.5.2 Tourism: Numbers and Revenue

Study Area 1: The Site and Environs

Tourism visitor numbers and revenue is unavailable for Study Area 1. However, Study Area 1 is within Study 2: Cork County. The revenue of Study Area 1 has contributed slightly to the revenue of Cork County tourism.

Study Area 2: Cork County

Cork is a top tourist location in Ireland with a broad tourism offering. The tourism industry is an important source of employment and economic growth in Cork.

[29]County Development Plan 2022, Chapter 10, https://www.corkcoco.ie/sites/default/files/2022-06/volume-1-main-policy-material.pdf
[30] https://www.myirelandtour.com/travelguide/south-west-ireland/index.php
[31] https://www.tourismireland.com/about-us

In 2021 a Failte Ireland report found that there was a total of €167 million spent by visitors to Cork, down 26% from 2019.

The same report found that Cork was one of the most popular destinations for domestic tourists as

- 75% of guests staying in Cork were Irish residents.
- 3% originated from Northern Ireland.
- 22% originated from Overseas.[32]

Cork is also included in 'Wild Atlantic Way" which is one of the longest defined coastal routes in the world. It was devised as a new 'experience' and 'destination' by Fáilte Ireland to present the West Coast of Ireland as a compelling international tourism product. It is an over-arching brand which individual destinations and businesses can trade collectively with much greater potential visibility and clarity of message in the international marketplace[33].

Study Area 3: The Southwest Region

The South-West Region which includes the Counties of Cork and Kerry has consistently been the most popular region in Ireland outside Dublin for overseas tourist and domestic visitors. Regional Tourism performance figures for 2018 for the South-West Region show overseas tourist numbers for the South-West Region totalled 2,335,000 in 2019 and tourist revenue accounted for €970,000,000 from overseas tourists. Domestic visitors from Ireland and Northern Ireland accounted for 2,354,000 visits to the region in 2019, with €536,000,000 in revenue generated from domestic and Northern Ireland visitors[34].

County Cork is home to a number of nationally renowned visitor attractions including Blarney Castle and Blarney Stone, Ballycotton Cliff Walk, Cobh, Doneraile Park and Spike Island. Doneraile Park was one of the top free of charge attractions visited in 2019 with 490,000 visitors. Blarney Castle and Stone was one of the top fee charging attractions with 460,000 visitors.

Cork is also included in 'Wild Atlantic Way" which is one of the longest defined coastal routes in the world (the closest extent of this route is located 33 km south-west of the Project). It was devised as a new 'experience' and 'destination' by Fáilte Ireland to present

[32] Cork City Councils Local Economic and Community Plan 2023-2029 Socio-Economic Statement, Cork City Council, 2023. Available online: https://publications.corkcity.ie/view/925196156/ Accessed 28th November 2024.
[33] Wild Atlantic Way1 Operational Programme 2015-2019, Failte Ireland, August 2015, https://www.failteireland.ie/FailteIreland/media/WebsiteStructure/Documents/2_Develop_Your_Business/Key%20Projects/Wild-Atlantic-Way-Operational-Programme_1.pdf, accessed 28 November 2024
[34] Key Tourism Facts 2019, Failte Ireland, March 2021, http://docstore.kerrycoco.ie/KCCWebsite/Tourism/TourismStrategy.pdf, accessed 28 November 2024 https://www.failteireland.ie/FailteIreland/media/WebsiteStructure/Documents/3_Research_Insights/Key-Tourism-Facts-2018.pdf?ext=.pdf, accessed 28 November 2024

the West Coast of Ireland as a compelling international tourism product. It is an over-arching brand which individual destinations and businesses can trade collectively with much greater potential visibility and clarity of message in the international marketplace[35].

Study Area 4: Ireland

In 2023, the total contribution of travel and tourism to Ireland's Gross Domestic Product (GDP) was roughly 17.7% higher than in 2019, the year before the onset of the COVID-19 pandemic. Overall, the total contribution of these industries to the country's GDP amounted to 19.3 billion euros in 2023. This figure is expected to reach an estimated 20.4 billion euros in 2024.[36]

5.3.5.3 Tourist Attitudes to Wind Farms

Sustainable Energy Ireland Survey 2003

The first Wind Farm in Ireland was completed in 1992 at Bellacorrick, Co. Mayo and since then wind farms have elicited a range of reactions from Irish people (Failte Ireland, 2012). In 2002, Sustainable Energy Ireland (SEI) now the Sustainable Energy Authority of Ireland (SEAI) commissioned a survey aimed at identifying public attitudes to renewable energy, including wind energy in Ireland[37]. A windfarm catchment area survey was also carried out by SEAI (formerly SEI) in order to focus specifically on people living with a wind farm in their locality or in areas where wind farms are planned.

The survey found that the overall attitude of Irish people to wind farms is very positive, with 84% of respondents rating it positively or very positively. One percent (1%) rates it negatively and 14% had no opinion either way. Additionally, approximately two thirds of respondents (67%) were found to be positively disposed to having a Wind Farm in their locality. Where negative attitudes were voiced towards Wind Farms, the visual impact of the turbines on the landscape was the strongest influence, therefore special care should be taken to ensure that wind farms respond to contextual landscape characteristics. The report also notes however that the findings obtained within wind farm catchment areas showed that impact on the landscape is not a major concern for those living near an existing wind farm.

Similar to the national survey, the surveys of those living within the vicinity of a Wind Farm found that the findings are generally positive towards wind farms. Perceptions of the impact

[35] Wild Atlantic Way1 Operational Programme 2015-2019, Failte Ireland, August 2015, https://www.failteireland.ie/FailteIreland/media/WebsiteStructure/Documents/2_Develop_Your_Business/Key%20Projects/Wild-Atlantic-Way-Operational-Programme_1.pdf, accessed 28 November 2024
[36] https://www.statista.com/statistics/941487/travel-and-tourism-s-total-contribution-to-gdp-in-ireland/
[37] Sustainable Energy Ireland (2003), Attitudes towards the Development of Wind Farms in Ireland, Dublin

of the development on the locality were generally positive, with some three-quarters of interviewees believing it had impacted positively. In areas where a wind farm development had been granted planning permission but was not yet under construction, three quarters of the interviewees expressed themselves in favour of the wind farm being built in their area. Four per cent were against the development. The reasons cited by those who expressed themselves in favour of the wind farm included the fact that wind energy is clean (78%), it would provide local jobs (44%), it would help develop the area (32%) and that it would add to the landscape (13%).

Survey Update 2017

Additionally, a survey carried out by Interactions in October 2017, published by the SEAI, show 47% of Irish adults polled said they were strongly in favour of wind power in Ireland while a further 38% favour it.

The SEAI survey found that the overall attitude to Wind Farm is very positive, with 84% of respondents in favour of the use of wind energy in Ireland. Approximately two thirds of respondents (70%) would prefer to power their home with renewable energy over fossil fuels, and 45% would be in favour of a wind farm development in their area.

The final section of the 2017 report states:

"The overwhelming indication from this study is that wind energy enjoys great support and, more specifically, that the development of wind farms is supported and welcomed. The single most powerful indicator of this is to be found among those living in proximity to an existing Wind Farm: *over 60% would be in favour of a second wind farm or an extension of the existing one. This represents a strong vote in favour of wind farm developments — especially important since it is voiced by those who know from direct experience about the impact of such developments on their communities."*

IWEA Interactions Opinion Poll on Wind Energy

Interactions Research have conducted omnibus research commissioned by Wind Energy Ireland (WEI), formerly the Irish Wind Energy Association (IWEA), in October 2017, November 2018, November 2019 and again in November 2020 with the objective to *"measure & track perceptions and attitudes around wind energy amongst Irish adults."*

The most recent survey, conducted online in November 2020 and published in January 2021[38] sampled a representative sample of 1,004 Irish adults nationwide, together with a

[38] https://windenergyireland.com/images/files/2032-wei-version-2020-for-media.pdf [Accessed: 01/12/2024]

supplementary booster sample of 203 rural dwellers. The key findings from the survey included:

- 82 per cent in favour of wind energy with 50 per cent strongly in favour
- Opposition to wind energy at 4 per cent
- Majority in rural Ireland – 52 per cent – would support a wind farm in their area while opposition is at 15 per cent.
- The top five reasons for supporting wind energy were identified as:
  - Good energy source
  - Good for the environment
  - Creates jobs.
  - No reason to be against wind energy.
  - Cheaper energy.

As a result of the ongoing research, trends in the attitudes of windfarms over the past four years can be assessed. The survey showed that the trend in attitude amongst the nationally representative sample is increasingly positive. Despite very consistent overall satisfaction, some movement can be seen over time within the rural sample from being 'strongly in Favour' towards 'tending to favour' wind power.

Public acceptance of new renewable electricity survey 2021[39]

Ireland's 2030 targets for renewables (primarily wind, solar) in electricity generation are ambitious, essentially doubling, growing from 36.5% in 2019 to 80% by 2030. The electricity demand is anticipated to be between 28% and 55% higher in 2030 compared to 2018. To meet the anticipated growth in electricity demand in Ireland, as well as achieve the renewable electricity policy targets, a substantial investment in electricity infrastructure is required. However, often these large new scale power system infrastructure developments, face strong public opposition.

The result of this survey indicates that 77% of people are positively disposed to wind turbines. However, just 36% are willing to accept the development of wind farms within 5 km of their homes.

The current research shows that the impact of public acceptance levels for new energy infrastructure is significant. The cost of building and operating the power system could dramatically escalate if there is a sharp deterioration in the public's acceptance of new

[39] Public acceptance of renewable electricity generation and transmission network developments: Insights from Ireland, Manuel Tong, Koecklin,GenaroLongoria, Desta Z.FitiwiabJoseph, F.DeCarolisc, JohnCurtis , Energy Policy, Volume 151, April 2021, 112185

energy infrastructure. The implication for policy and the wider electricity sector is that community and stakeholder engagement should remain a top priority.

5.3.6 Human Health

Common concerns around wind farms in terms of human health are generally associated with air quality, shadow flicker and noise. These topics are considered in this EIAR (**Chapter 9: Air and Climate**, **Chapter 15: Shadow Flicker, and Chapter 10: Noise**) as in addition to water contamination (**Chapter 8: Hydrology and Hydrogeology**), and traffic (**Chapter 11: Traffic and Transport**).

5.3.6.1 General Health of Population

The overall health of the population in each Study Area is summarised in **Table 5.3**.

Table 5.3: Population by General Health (2022)

General Health	Study Area 1: The Project and Environs – Electoral Divisions (EDs) Dromdaleague North, Mealagh, Whiddy/Bantry Rural	Study Area 2: Cork County	Study Area 3: The Southwest Region	Study Area 4: Ireland
	Percentage (%)			
Very good	53	55	54	53
Good	30	29	30	30
Fair	9	8	8	9
Bad	<1	1	1	1
Very bad	<1	<1	<1	<1
Not stated	7	6	6	7

Study Area 1: The Project and Environs – Electoral Divisions (EDs) Dromdaleague North, Mealagh, and Whiddy/Bantry Rural

The health status of Study Area 1 (**Table 5.3**) for the majority of the population (53%) is 'Very good' or 'Good' (30%). Overall, 92% of the population have stated that their health is

'Fair' or better ('Good' or 'Very good'). Less than 1% of the population have stated that their health is 'Bad' or 'Very bad'.

Study Area 2: Cork County

The "Very Good" health status for County Cork at 55% is just above the national average (53%) and is the highest of all the Study Areas. The second highest rating for health is 'Good' at 29% of the population of County Cork. Overall, 92% of the population of Study Area 2 have stated that their health is 'Fair' or better. Less than 2 % of the population have stated that they have 'Bad' or 'Very bad' health. This is illustrated in **Table 5.3.**

Study Area 3: The Southwest Region

Study Area 3 shows health statuses similar to that of Study Area 1 and Study Area 2 (**Table 5.3**). The majority of the population for Study Area 3 consider their health to be 'Good' (30%) or 'Very good' (54%). Overall, the population consider their health to be 'Fair' or better (92%). Again, less than 2% of the population consider their health to be 'Bad' or 'Very bad'.

Study Area 4: Ireland

Human health of communities can vary greatly owing to a number of factors including susceptibility to disease, location, income inequality, access to health care etc. In 2019, the Department of Health published "Health in Ireland – Key Trends 2019" which shows population health at the national level presents a picture of decreasing mortality rates and high self-perceived health over the past ten years. Ireland has the highest self-perceived health status in the EU, with 82.9% of people rating their health as good or very good.

The 2022 census data for the general health of the population as shown in **Table 5.3** indicates the health status across three of the study areas is "Very Good" to "Good". Overall, in Ireland, the percentage of people reporting their health status as either very good or good has fallen from 87% in 2016 to 83% in 2022.

5.3.6.2 Electromagnetic Interference

Electromagnetic fields ("EMF") are invisible lines of force that surround electrical equipment, power cords, wires that carry electricity and outdoor power lines. Electric and magnetic fields can occur together or separately and are a function of voltage and current. When an electrical appliance is plugged into the wall, an electric field is present (there is voltage but no current); when that appliance is turned on, electric and magnetic fields are present (there is both voltage and current). Both electric and magnetic fields decrease with distance.

Electric fields are also dissipated by objects such as building materials. On a daily basis, people are exposed to extremely low frequency ("ELF") EMF as a result of using electricity.

National and international health and scientific agencies have reviewed more than 35 years of research including thousands of studies. None of these agencies has concluded that exposure to ELF-EMF from power lines or other electrical sources is a cause of any long-term adverse effects on human, plant, or animal health. The International Commission on Non-Ionising Radiation Protection (ICNIRP) Guidelines give a limit of 100μT for sources of AC magnetic fields. This compares to 0.13μT that arises from a 110kV underground cable when directly above it; 1.29μT that arises from a 220kV underground cable when directly above it and 11.4μT that arises from a 400kV AC underground cable that is one metre deep and measured directly above it. This is detailed in information booklet published by ESB in 2017 called "EMF & You" which provides information about Electric & Magnetic Fields and the electricity network in Ireland[40].

In 2014 a study was undertaken in Canada[41], measuring electromagnetic fields around wind farms and the impact on human health. The study found that:

"there is nothing unique to wind farms with respect to EMF exposure; in fact, magnetic field levels in the vicinity of wind turbines were lower than those produced by many common household electrical devices and were well below any existing regulatory guidelines with respect to human health".

From the limit of 100μT for sources of AC magnetic fields given by the ICNIRP, a comparison of between 0.02μT and 0.41μT arises when turbines operate under "high wind" scenarios.

5.3.6.3 Shadow Flicker

Shadow Flicker is the effect from the sun shining behind the rotating blades of a turbine relative to a nearby sensitive receptor which causes a momentary shadow on a window of the sensitive receptor. The Department of Energy and Climate Change for England stated in its report Update of UK Shadow Flicker Evidence Base (2011) that it is considered that the frequency of the flickering caused by wind turbine rotation is such that it should not cause a significant risk to health.

[40] EMF & You, ESB, 2017 - https://www.pleanala.ie/publicaccess/EIAR-NIS/309770/EIAR%20Volume%203a%20Appendix%202-1%20to%206-4/Appendix%205-3%20EMF%20Booklet%20-%20ESB%202017.pdf accessed 28 November 2024
[41] Lindsay C McCallum, *et al*. (2014) *Measuring electromagnetic fields (EMF) around wind turbines in Canada: is there a human health concern?*

Chapter 15 provides the full assessment of shadow flicker for this EIAR.

5.3.6.4 Noise

A study by the EPA in South Australia on low frequency noise near wind farms and in other environments found that *'Overall, the study demonstrates that low frequency noise levels near the wind farms in the study are no greater than levels in urban areas at comparable rural residences away from wind farms'.*

The turbine rotor blades will be fitted with a serrated extension of the trailing edge which will mitigate noise emission by design by effectively breaking up turbulence. Baseline noise measurements were carried out from 6th August to 3rd September 2020. A number of predictions were prepared for layout of the 14 turbine Proposed Development. Based on layout, potential noise-sensitive receptors including occupied and un-occupied were identified from maps. Receptor locations were verified through visits to the area. **Chapter 10: Noise** provides an assessment of noise in relation to the Proposed Development.

5.3.6.5 Air Quality

Environmental risk factors, such as air pollution and climate change, pose growing threats to public health in the EU. In 2021, fine particulate matter ($PM_{2.5}$) exposure alone caused over 253 000 deaths, with the highest mortality in Central and Eastern Europe.[42] It is estimated that there are approximately 1,300 premature deaths annually in Ireland due to poor air quality from fine particulate matter ($PM_{2.5}$). [43]

These emissions, along with others including nitrogen oxides (NO_x) and sulphur oxides (SO_x) are produced during the burning of fossil fuels for energy generation, transport or home heating. There are no such emissions associated with the operation of wind turbines.

Traffic disruption to the public during the construction and Decommissioning phases of the Proposed Development is likely. Transport accounts for a significant portion of pollutants in the atmosphere.

Chapter 9: Air and Climate provides an assessment of air quality in relation to the Proposed Development.

[42] OECD/European Commission (2024), Health at a Glance: Europe 2024: State of Health in the EU Cycle, OECD Publishing, Paris, https://doi.org/10.1787/b3704e14-en
[43] Air Quality in Ireland Report 2022; EPA, 2023.

5.3.6.6 Water Contamination

Contaminants such as sediments arising from the Proposed Development have the potential to contaminate water bodies designated for drinking water purposes and may cause ecological damage as well. Mitigations as set out in **Chapter 8: Hydrology and Hydrogeology** will prevent and reduce risk of contamination of waterbodies. The drainage design and surface water network are considered in terms of assimilative capacity, that is to dilute contaminants in receiving waterbodies as a 'last line of defence'.

Consultation with GSI well database indicates there are no mapped wells within the Site boundary. Governing industry guidelines stipulate a buffer zone of 250 m is required of from boreholes used for drinking water abstraction. The closest mapped wells are more than 500 m from the boundary of the Site. All houses are over 750 m from the Site, therefore can be considered outside the 250 m buffer.

Chapter 8: Hydrology and Hydrogeology provides an assessment of the hydrological impacts in relation to the Proposed Development, including the potential for water contamination. Any contaminants will be treated when water is abstracted for drinking water purposes.

5.3.6.7 Traffic

It is proposed that the turbine nacelles, tower hubs and rotor blades will be landed at Ringaskiddy Port, County Cork. From there, they will be transported then onto N28 and N25. Past Cork City as far as the roundabout in Bishopstown on the outskirts of Cork City that joins the N25 and N71. At the roundabout, turn left onto the N71 and travel through Inishshannon as far as Bandon. In Bandon, the traffic will turn right onto the R586 over the bridge and turn left, continuing along the R586. The traffic will then travel along R586 Regional road, through the town of Dunmanway, across the north of the square to Castle Street and on to the Regional road network. The traffic will follow Castle Street onto the L4609 for approximately 0.5 km and turn left onto the Castledonovan Road (L4614-0). The traffic will follow this road for approximately 12 km and turn right onto the local road to the Site just before it reaches Castledonovan Bridge. The traffic will then follow this local road for approximately 1.6 km before it reaches the Site entrance.

Temporary works will be required to accommodate the delivery of the turbine components. These temporary works are included as part of this application and are located in the townlands of Castledonovan, Derreenacrinnig East, and Derreenacrinnig West.

Receptors considered as having a 'high' sensitivity during the construction and Decommissioning of the Proposed Development are primarily premises which are directly on the L-8767, L-4711, L-8765, L4721, L-47202, L-4720 and L-4717 which have significant potential to generate traffic.

During the operational stage of the Proposed Development a 'high' sensitivity due to increased traffic volumes will be expected on the L-8767, L-4711, L-8765 and L-4614.

The sensitive receptors are assessed in **Chapter 15: Traffic and Transportation**.

5.3.6.8 Health Impact Studies

While there are anecdotal reports of negative health effects on people who live near operational wind farms there is no peer reviewed scientific research in support of these views. Several peer reviewed scientific research publications are outlined below.

Frontiers in Public Health published a study[44] in 2014 on wind turbines and human health. This review summarised and analysed the science in relation to this issue specifically in terms of noise (including audible noise, low-frequency noise, and infrasound), EMF, and shadow flicker. The study noted that:
"*Based on the findings and scientific merit of the research conducted to date, it is our opinion that the weight of evidence suggests that when sited properly, wind turbines are not related to adverse health effects. This claim is supported (and made) by findings from a number of government health and medical agencies and legal decisions*".

The National Health and Medical Research Council, Australia's leading medical research body, concluded that there is no reliable or consistent evidence that wind farms directly cause human health problems as part of their Systematic Review of the Human Health Effects of Wind Farms published in December 2013. The review was commissioned to determine whether there is a direct association between exposure to wind farms and negative effects on human health or whether the association is casual, by chance or bias.

Objectors to wind farms often refer to wind turbine syndrome as a condition that can be caused by living in close proximity to wind farms. The symptoms allegedly include sleep deprivation, anxiety, nausea, and vertigo. It has been rejected by the wind industry as there is no scientific backing to these claims. This review began in late 2012 and included a literature and background review of all available evidence on the exposure to the physical

[44] L. D. Knopper, *et al*. (2014) *Wind turbines and human health*.

emissions produced by wind turbines. These emissions were noise, shadow flicker and electromagnetic radiation produced by wind turbines. The review concludes that the evidence considered does not support any direct association between wind farms and human health problems and that confounding bias could be possible explanations for any reported association.

In general, there are no specific health considerations in relation to the operation of a wind turbine. The area surrounding the turbine base will still be available for use. Noise and Shadow Flicker are operational Health and Safety issues, which have been addressed in **Chapter 10: Noise** and **Chapter 15: Shadow Flicker**.

5.3.6.9 Turbine Safety

Turbines pose no threat to the health and safety of the general public. The Department of the Environment, Heritage and Local Government (DoEHLG)'s '*Wind Energy Development Guidelines for Planning Authorities 2006'* state that there are no specific safety considerations in relation to the operation of wind turbines. Fencing or other restrictions are not necessary for safety considerations. People or animals can safely walk up to the base of the turbines. The DoEHLG Guidelines state that there is a very remote possibility of injury to people from flying fragments of ice or material from a damaged blade. However, most blades are composite structures with no bolts or separate components and the danger is therefore minimised. The build-up of ice on turbines is unlikely to present problems. The wind turbines will be fitted with anti-vibration sensors, which will detect any imbalance caused by icing of the blades. The sensors will prevent the turbine from operating until the blades have been de-iced.

Turbine blades are made of fibre-reinforced polymer or unsaturated polyester, a non-conducting material which will prevent lightning strikes. Lightning protection conduits will be integral to the construction of the turbines. Lightning conduction cables, encased in protection conduits, will follow the electrical cable, from the nacelle to the base of the turbine. The conduction cables will be earthed adjacent to the turbine base. In extremely high wind speed conditions, (usually at Beaufort Storm Force 10 or greater) the turbines will shut down to prevent excessive wear and tear, and to avoid any potential damage to the turbine components.

5.3.7 Property Value

In 2023, the Centre of Economic Research on Inclusivity and Sustainability[45] published a working paper entitled 'Wind Turbines and House Prices Along the West of Ireland: A Hedonic Pricing Approach'. At the time of writing this is the only independent academic research paper that assesses the effect of wind farms on property prices in Ireland. It is important to note that this is a working paper. Working papers are versions of research papers that have not yet been peer-reviewed or published in a journal. The study claims that properties located within 1 km of turbines experience a 14.7% potential reduction in value. However, beyond 1 km no significant reduction in house prices was observed, except for turbines connected 0-5 years before the property listing. The study also found that the effect diminishes over time, becoming insignificant after 10 years. Additionally, the research suggest that the price effect is not persistent and can be minimised through siting decisions.

It is important to note the sample size is remarkably small with only 225 houses assessed and is limited to the west of Ireland. It is also important to note that the house prices were assessed based on their listed values on the Daft.ie website, rather than their actual sale agreed prices. However, a number of other studies have been undertaken outside of Ireland with the findings set out below and in **Table 5.4**.

The largest study of the effects of wind farms on property prices was conducted in the USA by Hoen *et al*[46] for the US Department of Energy. This study in the USA used data from 7,500 of homes located within 10 miles (c.16 km) of 24 existing wind farms in nine States over a 10-year study period. The findings are drawn from eight different pricing models, together with both repeat sales and sales volume models. None of the models found conclusive evidence of the existence of widespread effects on property values of properties surrounding wind farms. The study also found that neither the view of the turbines or the distance of the property to the turbines had any consistent, measurable and statistically significant effect on property prices in that area. The article does state that the analysis cannot dismiss the possibility that individual properties, or small numbers of properties could potentially be negatively affected, although if there are such properties, they are either too small or too infrequent to result any widespread, statistically observable effect.

The study outlined above was updated in 2013[47] where data was collected from 50,000 house sales in 27 counties in nine states across the USA. The properties were within 10 miles (16 km) of 67 wind farms. Of these, 1,198 sales were of properties within one mile

[45] Centre for Economic Research on Inclusivity and Sustainability (CERIS) Working Paper Series, 2023/01 https://www.universityofgalway.ie/media/researchsites/ceris/files/WP-2023-01.pdf [Accessed 10/10/2024]
[46] https://www.researchgate.net/publication/242582095_The_Impact_of_Wind_Power_Projects_on_Residential_Property_Values_in_the_United_States_A_Multi-Site_Hedonic_Analysis [accessed 20/06/24]
[47] https://eta-publications.lbl.gov/sites/default/files/lbnl-6362e.pdf [accessed 20/06/24]

(1.6 km) of a wind turbine. The data covers the period from before wind farms were consented in the areas to after their construction and into the operation phase. The authors used Ordinary Least Squares (OLS) and spatial process difference-in-difference hedonic models to make an estimation of the effects on house prices from wind farms. Regardless of the model used, the study found no statistical evidence that property prices near turbines were affected in the pre-planning/pre-construction or post construction periods. The research suggests that the effects of wind turbines on property prices is likely to be small, if there is any effect at all.

A study undertaken in 2014 by the Centre of Economics and Business Research for Renewable UK found that house prices were driven by the property market and not the presence or absence of wind farms[48]. The study analysed house prices at 7 sites across England and Wales at either planning, construction or post construction. The report concluded that:

"We can conclude that local house price growth at these sites is best explained by variations in the county level property market. When homebuyers came to purchasing a property in areas within 5 km of wind farm sites, it appears that other factors that determined demand for property, such as the supply of new housing and the condition of the local economy, were more influential than the fact that a wind farm was located nearby. This resulted in properties on average retaining their value."

Another study was undertaken in 2014 by the London School of Economics and it did find the presence of wind farms negatively impacted property values within 2 km of very large wind farms[49]. In 2016, following on from the contrasting results of the 2014 studies ClimateXChange carried out their own research in Scotland. The ClimateXChange study found no significant effect on the change in price of properties within 2 km or 3 km of studied wind farms and found the property values trended in a positive direction in most cases[50]. The ClimateXChange study also found that some wind farms can provide economic and amenity benefits to an area.

In the absence of any peer reviewed/published evidence to the contrary, the above studies provide some context from the international perspective and indicate that wind farms do not affect property/house value. It is reasonable to conclude that the provision of a wind farm in

[48] https://cdn.ymaws.com/www.renewableuk.com/resource/resmgr/publications/reports/ruk-cebr-study.pdf [Accessed 20/06/2024]
[49] http://eprints.lse.ac.uk/58422/1/__lse.ac.uk_storage_LIBRARY_Secondary_libfile_shared_repository_Content_SERC%20discussion%20papers_2014_sercdp0159.pdf [Accessed 20/06/2024]
[50] Heblich, D. S., Olner, D. D., Pryce, P. G. & Timmins, P. C., 2016. *Impact of wind turbines on house prices in Scotland,* Scotland: ClimateXChange - https://www.climatexchange.org.uk/media/1359/cxc_wind_farms_impact_on_house_prices_final_17_oct_2016.pdf [Accessed 20/06/24]

the proposed location is unlikely to have a long-term effect on property values in the area throughout the operational phase of a wind farm once integrated into the local environment.

Table 5.4: Summary of research finding between wind farms and property values

Year	Country	Research Group	Finding
2009 and 2013	USA	LBNL	Analysed nearly 7,500 home sales near wind farms and found no consistent negative impact on property prices. They found no statistical evidence of wind farms affecting home prices before or after construction.
2014	UK	Centre of Economic Research	In summary the analysis found that country-wide property market drives local house prices, not the presence or absence of wind farms; and The econometric analysis established that construction of wind farms at the sites examined across England and Wales has not had a detectable negative impact on house price growth within a 5 km radius of the sites.
2014	UK	London School of Economics	There was an average reduction in the value of houses (based on 125,000 house sales between 2000 and 2012) of between 5% and 6% within 2 km of very large wind farms.
2016	UK (Scotland)	ClimateXChange	Following a wide range of analyses, including results that replicate and improve on the approach used in the 2014 study by London School of Economics, the study did not find a consistent negative effect of wind turbines or wind farms when averaging across the entire sample of Scottish wind turbines and their surrounding houses. Most results either show no significant effect on the change in price of properties within 2 km or 3 km or find the effect to be positive.

Year	Country	Research Group	Finding
			Some wind farms provide economic or leisure benefits (e.g., community funds or increasing access to rural landscapes through providing tracks for cycling, walking
2023	Ireland	Centre for Economic Research on Inclusivity and Sustainability	14.7% reduction in the value of properties located within 1 km of wind turbines and impact on property prices is correlated with taller turbines. It finds no evidence of a significant impact on properties outside 1 km and it also finds that the impact on the house price within 1 km diminishes over time becoming insignificant after 10 years.

5.3.8 Natural Disasters and Major Accidents

Natural disasters or major accidents are hazards which have the potential to affect the Project and consequently have potential effects on the environment. These include accidents during construction and operation caused by operational failure and/or natural hazards. The assessment of the risk of major accidents and/or disaster considers all factors defined in the EIA Directive that have been considered in this EIAR i.e., population and human health, biodiversity, land, soil, water, air and climate and material assets, cultural heritage and the landscape.

A wind farm is not a recognised source of chemical pollution. Should a major accident or natural disaster occur, the potential sources of pollution onsite during both the construction and operational phases are limited. Sources of chemical pollution with the potential to cause significant environmental pollution and associated negative effects on health include bulk storage of hydrocarbons or chemicals and storage of wastes. Spills and leaks can occur if they are not mitigated against which may cause negative effects to human health if contamination of food or water occurs. The occurrence of such spills and leaks is unlikely as bunding and safe storage practices will be complied with. **Chapter 16: Major Accidents and Natural Disasters** and **Appendix 2.1: Construction Environmental Management Plan** discusses this in more detail. The Site is not regulated under the Control of Major Accident Hazards Involving Dangerous Substances Regulations i.e. SEVESO sites and so there is no potential effect from this source. The nearest SEVESO site is the Zenith Energy Fuel Storage Terminal which is located 16.26 km west of the Proposed Development. All

other SEVESO sites are located approximately 40 km or more from the Proposed Development.

There is limited potential for significant natural disasters to occur at the Site. Ireland is a geologically stable country with a mild temperate climate. The potential natural disasters that may occur are therefore limited to peat-slide, flooding and fire.

With reference to **Chapter 7: Land and Soils, Section 7.2.** The proposed infrastructure will be located on undulating mountainous terrain which forms part of upland ridges extending from Dunmanway to Sheep's Head. The terrain is controlled by the underlying bedrock geology, which has been folded to form southwest-northeast orientated ridges. Bedrock outcrop is frequent across the Site, generally with a thin veneer of peat developed; thicker peat deposits are developed locally in small basins, confined by bedrock ridges. The Project site is dominated by bedrock outcrop or subcrop. Blanket peat is mapped in the forestry to the northeast of the wind farm on the north-facing slopes. Till derived from Devonian sandstones cover the lower elevations at the southern side of the Site and along the valley of the streams draining to the Ilen River. Extensive bedrock outcrops occur across the wind farm site – both natural outcrops and cuts associated with the construction of the wind farm roads and hardstands. Peat probing carried out across the Site indicates peat depth of up to 3.1 m.

The area is underlain by Devonian and Carboniferous-aged rocks belonging to the Old Red Sandstone Formation, the Cork Group and Namurian sediments. The rocks were deposited in the South Munster Basin and consist predominantly of clastic rocks with minor limestone deposits representing various marine and non-marine sedimentary environments.

Geological features and destructive fault lines associated with the above-mentioned Formations give rise to the character of the topography at the Site. This has resulted in areas with steep slopes and/or complex topography densely populated with bedrock outcrops. Bedrock proximal to these fault lines will likely be fractured and/or weathered.

As the site is largely developed and no works are required in areas with peat, a peat landslide risk assessment is therefore not required. One was completed by Minerex Environmental Limited for the original EIA. It concluded that there was low risk of peat instability during the construction phase and so, adopting the precautionary principle, site-specific mitigation measures were proposed. Mitigation by design (i.e., the avoidance of areas with steep gradient and deeper peat) was used to minimise risk of peat landslide. The

construction of the wind farm roads and hardstands was largely completed in 2017 / 2018 with no incidents of peat / soil / rock landslide.

There are no recorded localised flood events within the immediate area of the Site. A Surface Water Management Plan has been put in place and can be found in **Appendix 2.1**. The risk of flooding is addressed in **Chapter 8 Hydrology and Hydrogeology, Section 8.2.5: Flood Risk Assessment.**

A 2020 article in Wind Power Engineering Magazine estimated that 1 in 2,000 wind turbines catch fire each year[51]. Overall, the data shows that wind turbine fires are relatively rare[52]. It is therefore considered that the risk of significant fire occurring, affecting the wind farm, and causing the wind farm to have significant environmental effects is limited.

As described earlier, there are no significant sources of pollution in the wind farm with the potential to cause environmental or health effects. Also, the spacing of the turbines and distance of turbines from any properties limits the potential for impacts on human health. The issue of turbine safety is addressed in **Section 5.3.6.9.**

In the highly unlikely event that the stability of peat is compromised, an Emergency Response Plan has been prepared and can be found in **Appendix 2.1: Construction Environmental Management Plan, Management Plan 1**. Accidents and disasters are fully assessed in **Chapter 16: Major Accidents and Natural Disasters**.

5.4 ASSESSMENT OF POTENTIAL IMPACTS

5.4.1 Population and Settlement Patterns

The Proposed Development does not contain a housing or services element and is not considered to have any direct, long term, positive or negative impact on the local or regional population levels. However, construction workers who are not based locally may temporarily relocate to the region, this is more likely for the initial construction and Decommissioning phase than for the operational phase. The overall impact is considered to be imperceptible in terms of population.

The predicted effect on the immediate settlement patterns and social patterns is also slight to non-existent. There is, however, the benefit which will accrue to the region in terms of the ability to provide electricity to industry and business via a high-quality supply. This will lead

[51] https://www.windpowerengineering.com/is-rope-based-descent-emergency-evacuation-at-the-end-of-its-tether/ [Accessed 28 November 2024]
[52] https://www.firetrace.com/fire-protection-blog/wind-turbine-fire-statistics [Accessed 28 November 2024]

to the region becoming more attractive to business with the subsequent benefit of increased employment opportunities in the region. A renewable, green energy supply could potentially be attractive for companies looking to develop in County Cork.

During the construction phase there is the potential for limited impacts on the residential amenity of the local population. These will be short-term impacts relating primarily to an increase in construction traffic causing noise, dust, and an increase in traffic volume. The impacts of each on nearby properties have been found to be slight negative in the construction and Decommissioning phases and imperceptible in the operational phase.

While the Proposed Development is not likely to result in a marked increase in settlement in the area, or a change in social patterns in the area, it will provide a renewable energy source which will prove attractive to certain types of industry depending on national and global economic conditions.

The overall impact of the construction phase on population and settlement patterns is predicted to be slight positive and short-term in nature should construction workers relocate to the area for the duration of these phases. The overall impact is predicted to be slight positive at the local level in terms of settlement patterns where increased business is attracted to the region during the operational phase.

5.4.2 Economic Activity

During the construction phase, there will be economic effects resulting from the expenditure on items such as Site preparation, Site Access Roads, purchase and delivery of materials, plant, equipment, and components. Information provided by the Developer on experience at other wind farms indicates that there is expected to be a peak onsite workforce of maximum 35-workers. Some of these workers will be sourced from the local labour market where possible in Study Area 2 and Study Area 3, but professional and skilled personnel may be required to be sourced from areas inclusive of Ireland or even further afield.

During the initial Decommissioning and construction phase, jobs are likely to be created. Local employment will be provided, as well as employment on local, national, and international levels both directly and indirectly. Throughout the Project lifetime, employment will be both created and maintained on local, regional, national, and international levels.

It is envisaged that labour and materials will be sourced from the local area during construction where possible. Ready-mix concrete will also be sourced from a local supplier, again subject to authorisation, and to quality and quantity being available.

Employees involved in the construction of the Proposed Development will most likely use local shops, restaurants, and hotels/accommodation. Therefore, overall, there will be a slight, positive impact on employment in the locality. Employees also involved in the subsequent operation and Decommissioning of the Proposed Development will use local shops, restaurants, and hotels/accommodation.

BVG Associates carried out extensive assessments on the economic benefits from eight onshore wind farms in Southwest Scotland[53]. Each contract value was assigned to one or more relevant elements of a supply chain. Capital expenditure (CAPEX) was found to relate to turbine, civil works and electrical works supply chains, whereas the operational expenditure (OPEX) relates to transmission operations, maintenance and service (OMS) supply chain, the wind farm OMS and also the Decommissioning supply chain.

Cork County Council will benefit from payments under both the Development Contribution Scheme and from the annual rate payments. The Applicant is also committed to a 'Community Benefit' package. This package will be advertised annually and managed by the local community or an independent body on behalf of the local community. The purpose of the community fund is to enable the local community to share in the benefits of the Proposed Development.

The overall impact on economic activity is predicted to be a moderate, positive, short-term impact during the construction phase of the Proposed Development and moderate, positive and long-term during the operational phase. There will be similar effects to the construction phase during Decommissioning.

5.4.3 Employment

In addition to the economic benefits outlined in the previous section, there will be employment effects that are attributable to the Project. These will be direct, indirect and induced throughout the phases of the Project. The employment effects that are attributable to the Project can be outlined as direct, indirect and induced.

[53] Economic Benefits from onshore wind farms, September 2017, BVG Associates, accessed 28 November 2024

Direct: Employment and other economic outputs that are directly attributable to the delivery of the Proposed Development. These include any new jobs that are created to manage and supervise the construction phase, operational and Decommissioning phases of the Proposed Development and that are filled by employees of the Developer or the appointed Contractor (or sub-contracted employees).

Indirect: Employment and other outputs created in other companies and organisations that provide services to the Proposed Development, (i.e., procurement and other supply chain effects). Most manufactured materials like towers, blades and subcomponents are assumed to be imported (import intensity of 66%) with major infrastructure delivery through Ringaskiddy Port; fewer indirect manufacturing jobs will be generated domestically in Ireland.

Induced: Additional jobs and other economic outputs that are created in the wider economy, as a result of the spreading of employee incomes and other ripple effects that occur as a result of the direct and indirect effects of the Proposed Development.

Sustainable Energy Authority of Ireland (SEAI) researched the flow of investment and sales revenue from onshore wind and the transmission grid through the different industrial sectors in the supply chain required for input–output macro-analysis (**Table 5.5**).

Table 5.5: Capital Investment breakdown for onshore wind supply (Source SEAI, 2015 [54])

	Industrial Sectors
€192 million average annual capital investment to reach 2020 NREAP/NEEAP targets	Manufacturing (70%): turbines, blades, towers, gearbox, generator, electrical equipment, transformer etc.
	Construction (12%)
	Electricity Supply Services (10%)
	Transport (2.5%)
	Finance (2.5%)
	Professional Services (3%)

In terms of its capacity to capture capital investment domestically, Ireland has strong indigenous feasibility, planning, foundations and engineering expertise, with the skills and

[54] A Macroeconomic Analysis of Onshore Wind Deployment to 2020 An analysis using the Sustainable Energy Economy Model, SEAI, 2015. [Accessed Online 28 November 2024] Available at: https://www.seai.ie/publications/A-Macroeconomic-Analysis-of-Onshore-Wind-Deployment-to-2020.pdf

knowledge base to potentially supply niche markets in controls and instrumentation, albeit the bulk of heavy manufacturing (blades, towers) is imported. Similarly, the Irish supply chain is very well positioned in all of the preliminary design and operational aspects of the electricity grid, providing a significant boost to national employment. However, some manufactured materials such as cables, underground pipes, insulators, and conductors are sourced from abroad.

According to SEAI, there are approximately 0.34 new long-term jobs per MW, which falls in line with European Wind Energy Association (EWEA) estimates for direct employment in Europe. In the case of the Proposed Development, this translates to 3 new long-term jobs for a 6.9 MW powered installation.

According to Institute for Sustainable Futures document (2015)[55], 3.2 jobs are created per MW of wind energy development during the construction and installation phase, the report assumes a 2 year construction period. Based on this employment estimate and an approximate two-year construction phase, 23 jobs could be created during the construction phase (for an installed capacity of 6.9 MW).

According to the European Wind Energy Association's (EWEA) Report 'Wind at Work' (2009)[56], 1.2 jobs per MW are created during installation of wind energy projects based on 1 year construction period. Using this figure, a projection of 17 jobs could be created as a result of the construction of the Proposed Development (for an installed capacity of 6.9 MW and a construction period of 2 years).

The Sustainable Energy Authority of Ireland' 2015 report 'A Macroeconomic Analysis of Onshore Wind Deployment to 2020'[57] puts direct construction jobs from wind farm developments at 1.07 jobs per MW based on 1 year of construction. Using this figure, a projection of 15 jobs could be created as a result of the construction of the Proposed Development (for an installed capacity of 6.9 MW and a construction period of 2 years). Therefore, considering the minimum and maximum figures, it is estimated that between 15 and 23 direct and indirect jobs could be created during the construction phase of the

[55] Institute for Sustainable Futures, Calculating Global Energy Sector Jobs – 2015 Methodology Update, 2015. [Accessed Online_28 November 2024]
Available:https://opus.lib.uts.edu.au/bitstream/10453/43718/1/Rutovitzetal2015Calculatingglobalenergysectorjobsmethodology.pdf

[56] European Wind Energy Association (EWEA) (2009), Wind at Work, - Wind Energy and Job Creation in the EU [Accessed Online: 28 November 2024] available at: http://www.ewea.org/fileadmin/files/library/publications/reports/Wind_at_work.pdf

[57] Sustainable Energy Authority Ireland (SEAI) (2015), A Macroeconomic Analysis of Onshore Wind Deployment to 2020. [Accessed Online: 28 November 2024]. Available at: https://www.seai.ie/publications/A-Macroeconomic-Analysis-of-Onshore-Wind-Deployment-to-2020.pdf

proposed project. It is not expected that all of these jobs will be based at the wind farm Site, however, the employment of tradespeople, labourers, and specialised contractors for the construction phase will have a direct, short-term significant, positive impact on employment in the study area.

Approximately 40 persons will be employed on site during the peak of the construction phase of civil engineering of access roads, crane hardstand, Turbine Foundation, Grid Connection, and substation construction. These numbers will be somewhat less for the turbine delivery, assembly and commissioning activities. A mixture of skills will be required, including unskilled/semi-skilled/skilled manual (construction labour and machine operators), non-manual (administration roles), managerial and technical (civil, electrical, mechanical technical and engineering) and professional roles (scientific, engineering, legal, business and accounting). The manual roles will be Site-based with the other roles being predominately office-based, with Site visits as and when required. During construction, personnel will be at the Site over a number of months and during these times will likely use local accommodation and restaurants and other facilities.

Anecdotal evidence received by the Developer on other wind farm construction projects shows that local businesses such as accommodation providers welcome the enhanced level of occupancy that is achieved due to the construction contractors using their accommodation on a year-round basis, including periods of the year that are traditionally considered 'low season'. This is supported by the Edf-re.uk study which found that:
"*using local contractors, developing businesses to build wind farm technology, and supporting the workforce with food, accommodation and amenities*"[58]

The benefits of increased business, although temporary, can allow businesses to invest in improvements that would not otherwise be affordable, leading to a long-term enhancement.

Whilst overall effects on the tourism economy are considered in **Section 5.4.5** to be negligible and not significant, the benefits to individual businesses will be substantial and significant.

The Proposed Development will create approximately two full-time jobs during the operational phase. In addition to these jobs, various personnel will be required for the successful and continued operation of the wind farm. During the operation phase of the wind farm, the operation and reliability, maintenance (turbines, civil works and electrical

[58] Edf-re.uk [accessed 28 November 2024] available at: https://www.edf-re.ie/working-with-communities/

infrastructure) finance, ongoing compliance with permissions and permits, safety, security, community relations and benefits and land-owner agreements must be continually managed. These requirements are widely distributed over various employment sectors and are an integral part of the ongoing operation of the Proposed Development and will provide continuous employment for the lifetime of the wind farm. A general outline of the employment associated with the operational phase of the wind farm is outlined in **Table 5.7.**

Table 5.7: Parties involved during the operational phase[59]

Maintenance Contracts	Financial and Services Contracts	Other Stakeholders
Project Manager	Lenders	Local Community
Asset Management	PPA Provider	Local Authority (incl. rates payments)
Turbine Contractor • Transport Companies • Crane Hire • Plant and Vehicle Hire • Site Facilities	Landowner Agreements	Construction and Maintenance material suppliers: • Local shops • Food providers • Accommodation providers
	Insurance	Plant Hire companies
	Accountancy	Telecom provider
	Safety Consultants	
	Community Liaison Officer	
Electrical Works Contractor	Environmental Monitoring • Noise • Ornithology • Habitat Management	
Civil Works Contractor		
Utility		

Individuals fulfilling these roles may live and work anywhere in Ireland, visiting the Site as and when required, to operate and maintain the plant and equipment. During major service operations, personnel may be at the Site over several days and during these times may use local accommodation and restaurants.

[59] Irish Wind Energy Association (2019) *Life-cycle of an Onshore Wind Farm.* Ionic Consulting. Available online at: https://windenergyireland.com/images/files/iwea-onshore-wind-farm-report.pdf [Accessed 28 November 2024]

Additionally, the Project is expected to contribute Significantly to local finances through rates paid over its lifetime. This income can support the Local Authority and create further employment opportunities as it is reinvested into community services and infrastructure. Furthermore, the community fund expenditure may also generate local economic activity, albeit to a lesser extent, by supporting local initiatives and projects.

Overall, there will be a slight positive short-term impact on employment in the area during construction and Decommissioning.

5.4.3.1 Embedded measures

An important aspect of wind farm construction projects is that expenditure in local goods and services is widely spread and makes a difference to existing businesses. A study by KPMG on behalf of Wind Energy Ireland in 2021 confirms this[60]. The Developer is committed to employing good practice measures with regard to maximising local procurement and will adopt measures such as those set out in the Renewable UK Good Practice Guide, 2014: 'Local Supply Chain Opportunities in Onshore Wind' (Renewable UK, 2014).

The Developer will work with a variety of contractors who will be actively encouraged to develop local supply chains throughout the local area, and work with subcontractors to invest in training and skills development.

At this stage in the Proposed Development process, it is not possible however, to quantify economic benefits in respect of individual supply chain companies, as contracts would not be let until consent is granted. However, it is evident from the Developer's recent experience that local and regional suppliers of a wide range of goods and services will benefit from such a Proposed Development (in this case, Cork and Ireland as a whole).

5.4.4 Land Use

Chapter 7: Land and Soils concludes that providing the mitigation measures proposed are fully implemented and best practice, as described, is followed on site, it is not expected that there will be any significant effects associated with the Project. It is recommended that suitable monitoring programmes are proposed and implemented to see that there is adherence to the **CEMP** (**Appendix 2.1**) and to the mitigation measures outlined here during construction, operation and Decommissioning of the Wind Farm.

[60] Economic impact of onshore wind in Ireland, KPMG for Wind Energy Ireland, 2021. [Accessed Online: 28 November 2024] Available at: https://windenergyireland.com/images/files/economic-impact-of-onshore-wind-in-ireland.pdf

5.4.5 Tourism

Fáilte Ireland published guidelines in 2011 for the treatment of tourism in an EIS, which describes the effects of wind farm projects on tourism. Many of the issues covered in the report are similar to those covered in this EIAR, for example, scenery is assessed in **Chapter 12: Landscape and Visual Amenity**.

Fáilte Ireland published a study on 'Visitor Attitudes on the Environment' in 2012[61] to assess the perceived impacts of wind farms on potential future visits to an area. The study found that 12% of those surveyed, responded that wind farms would have 'a strong positive impact' on their decision to visit Ireland, with 27% responding it would have a 'slight positive impact', whilst 38% said it would have 'no impact'. 7% of respondents stated it would have a 'strong negative impact' and 15% stated it would have a 'slight negative impact'. The survey also found that wind farms were noted as more favourable than other forms of development such as housing, mobile phone masts or electricity pylons.

Attitudes to wind power were found to be 54% strongly in favour in November 2018. While favourability towards wind continued to consolidate (compared to 47% in October 2017), the total number in favour remained steady at just over 4 in 5, there was a 7% shift in Irish adults from 'tending to favour' wind power into being 'strongly in favour'. [62]

The 2017, BiGGAR Economics[63] study found that sustainable tourism appeared to perform better in areas surrounding wind farms compared to tourism at the level of the local authority area.

Due to the distance and the intervening landscape, there will be no impact from the Proposed Development to tourists visiting Gougane Barra.

The Project is located approximately 10 km from the Múscraí Gaeltacht area. While the construction phase will see the arrival of construction workers in the vicinity of the area, this will be a short-term occurrence and will not result in permanent settlement of the area by non-Irish speakers. The Project is, therefore, predicted to result in a negligible, indirect, not significant impact on the Irish language during the construction phase. Please see **Chapter 14: Cultural Heritage** for more details.

[61] Fáilte Ireland (2012) Visitors Attitudes on the Environment – Wind Farms - https://www.failteireland.ie/FailteIreland/media/WebsiteStructure/Documents/3_Research_Insights/4_Visitor_Insights/WindFarm-VAS-(FINAL)-(2).pdf?ext=.pdf [Accessed on 28 November 2024]
[62] IWEA Public Attitudes Monitor 2018, Irish Wind Energy Association. Available online: https://windenergyireland.com/images/files/iwea-report-2018.pdf [Accessed 20/06/2024]
[63] BiGGAR. (2017). Wind Farms and Tourism Trends in Scotland. https://biggareconomics.co.uk/wp-content/uploads/2020/01/Wind-farms-and-tourism-trends-in-Scotland.pdf Accessed 20/06/2024

Based on the findings of the collective assessments, it was considered that the Proposed Development will not give rise to any significant effects on tourism. Overall effects of the Proposed Development with regards to tourism are considered to be short-term, slight, negative during both construction and Decommissioning phases due to temporary closures and diversions of walking and cycling routes. There will be a long-term, slight positive impact during operation due to improved tracks, information boards and waymarking.

5.4.6 Human Health

5.4.6.1 Electromagnetic fields

Electromagnetic fields from wind farm infrastructure, including the Grid Connection and substation, are very localised and are considered to be an imperceptible, long-term impact.

5.4.6.2 Shadow flicker

Chapter 15: Shadow Flicker provides an impact assessment of the potential for shadow flicker effects from the Project.

The assessment has identified that by installing a blade shadow control system on the proposed turbines, there will be no significant direct or indirect effects. Given that only effects of significant impact or greater are considered "significant" in terms of the EIA Directive the potential effects of the Project as a result of shadow flicker, when mitigated, are considered to be not significant. The Project has been assessed as having the potential to result in negative, imperceptible, long-term effects overall with regards to shadow flicker. There are no predicted cumulative effects.

5.4.6.3 Noise

There is likely to be some noise and vibration from traffic within the vicinity of the Haul Route which may cause disturbance to residents. However, the effects are not predicted to be significant.

Operational noise, designed to meet the limits in the 2006 Wind Energy Development Guidelines will have a residual effect within the guideline limits and can be described as Not Significant.

Noise effects during Decommissioning of the Proposed Development are likely to be of a similar nature to that during construction but of shorter duration. Existing roadways and turbine bases (excluding plinths) will be left in place and naturally vegetated over. Any

legislation, guidance, or best practice relevant at the time of Decommissioning will be complied with.

A baseline assessment of the existing background noise conditions was carried out, the results of which are presented in **Chapter 10: Noise**.

5.4.6.4 Air Quality

Chapter 9: Air and Climate provides an assessment of air quality in relation to the Proposed Development. The impact assessment concludes that:

The effect of the Proposed Development on air quality will be imperceptible over the short-term period in which there will be an increase in traffic movements during construction and Decommissioning. There will be slight, long term, positive effects on air quality because of the wind farm during operation.

5.4.6.5 Water Contamination

Chapter 8: Hydrology and Hydrogeology provides an assessment of the hydrological impacts of the Proposed Development, including the potential for water contamination.

Water contamination could potentially occur during the construction and the Decommissioning phases from the release of suspended solids, accidental spillages of cement, hydrocarbons, or HDD fluid. Once mitigation measures are implemented the risk of water contamination will be significantly reduced. However, there remains a level of risk and therefore both precautionary measures and emergency response protocols have been established and specified in Management Plans 1 and 3 of the CEMP, **Appendix 2.1**.

5.4.6.6 Accidents/Disasters (incorporating Health & Safety)

The design of the Project has considered the susceptibility to natural disasters. The proposed site drainage will mitigate against any potential flooding risk due to run off with the use of Sustainable Drainage Systems (SuDS). Construction drainage will be left in-situ for the lifespan of the Project through to Decommissioning.

The Contractor's fire plans are reviewed and updated on a regular basis. A nominated competent person shall carry out checks and routine maintenance work to ensure the reliability and safe operation of firefighting equipment and installed systems such as fire alarms and emergency lighting. A record of the work carried out on such equipment and systems will be kept on site at all times.

Chapter 17: Major Accidents provides an assessment of the vulnerability of the Project to major accidents and natural disasters. Possible risks associated with the Project during the construction, operation and Decommissioning phases are outlined and assessed. These risks have the potential to directly or indirectly impact Population and Human Health. The consequence ratings assigned to each potential risk assumes that all proposed mitigation measures and safety procedures have failed to prevent the major accident and/or disaster. All scenarios when assessed were considered "low risk".

5.4.6.7 Traffic

The design of the Project has considered the susceptibility to natural disasters. The proposed site drainage will mitigate against any potential flooding risk due to run off with the use of Sustainable Drainage Systems (SuDS). Construction drainage will be left in-situ for the lifespan of the Project through to Decommissioning.

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5.4.7 Property Value

Based on the available published studies the operation of a wind farm at the Site will not significantly impact on property values in the area. The Proposed Development will have a medium-long-term imperceptible impact on property values.

5.4.8 Do Nothing Scenario

If the Project was not to proceed, the existing uses of the Site for agriculture use would continue, there will no additional electro-magnetic interference. There would be no short-

term impact to the Population and Human Health in relation to potential increases in noise, increased traffic and minor traffic disruption.

However, in such a scenario, the opportunity to increase economic activity and generate local employment would also be lost. The opportunity to capture a renewable green energy supply would be lost, as would the opportunity to contribute to Ireland's 2050 target of net-zero emissions.

5.5 MITIGATION MEASURES AND RESIDUAL EFFECTS

Although no likely adverse significant effects have been established, there are a number of measures, which may be implemented for the safety of workers and the public during the construction, operational and Decommissioning phases.

5.5.1 Embedded Mitigation

The Proposed Development, as described in **Chapter 2: Project Description**, incorporates good practice measures for limiting the adverse effects of the construction works. The principal potential effects arising from works tend to relate to construction traffic affecting the use of National roads, local primary roads and access roads by the general public and drainage. Measures are set out in **Chapter 10: Noise** and **Chapter 11: Traffic and Transportation** relating to how construction work and delivery of materials, goods and services would be managed to minimise effects. The use of Sustainable Drainage Systems can be found in **Chapter 8: Hydrology and Hydrogeology**. The proposed mitigation measures have been further developed in the **Construction and Environmental Management Plan (CEMP)** (**Appendix 2.1**).

5.5.2 Population and Settlement Patterns

Given that no negative impacts have been identified, no mitigation measures are proposed.

5.5.3 Economic Activity

Allowing for the implementation of embedded mitigation, no significant effects have been identified in respect of socio-economic receptors arising from the construction of the Proposed Development and therefore no mitigation measures are required to reduce or remedy any adverse effect.

5.5.4 Employment

Given that potential impacts of the Proposed Development at construction, operation and Decommissioning phases are predominantly positive in respect of socioeconomics, employment and economic activity, no mitigation measures are considered necessary.

5.5.5 Land Use

Mitigation measures for land use have been incorporated into the preliminary design stage. This has allowed for the prevention of unnecessary or inappropriate ground works or land use alterations to occur. The construction and operational footprint of the Proposed Development has been kept to the minimum necessary to avoid impact on existing land uses.

The construction and Decommissioning works will be planned and controlled by a Construction and Environmental Management Plan (CEMP). This provides details on day to day works and methodologies. As part of these works, the public and other stakeholders will be provided with updates on construction activities which will affect access to lands. This will be communicated to members of the public through a community liaison officer employed for the duration of the construction period.

Prior to the Grid Connection installation works within public roads, it is proposed that all access points (domestic, business, farm) are considered when finalising the temporary road closures and diversions, to maintain local access as much as possible and avoid impacts on various land uses. **Chapter 11: Traffic and Transportation** will be referred to for all proposed works and deliveries along the Turbine Delivery Route to avoid undue impact to adjacent land uses.

5.5.6 Tourism

Mitigation measures for recreation, amenity and tourism are primarily related to the preliminary design stage of the Proposed Development, which has allowed for the prevention of unnecessary or inappropriate development to occur that will significantly affect any recreational or tourist amenity. In designing the Proposed Development, careful consideration was given to the potential impact on landscape amenity.

The most significant potential for tourism and recreation activity at the Site and surrounding area was identified as trail walking and hiking. In providing for public safety, appropriate signage and safety measures will be put in place and the Site will be closed to the public during construction and Decommissioning activities.

5.5.7 Human Health and Safety

5.5.7.1 Construction and Decommissioning

To maintain safety and avoid health impacts on construction workers and the general public, best practice site safety and environmental management will be maintained. The Proposed Development will be designed, constructed, operated and decommissioned in accordance with the following:

- Safety, Health & Welfare at Work (Construction) Regulations 2013
- Safety, Health & Welfare at Work Act 2005
- Safety, Health & Welfare at Work (General Applications) Regulations 2007

All construction staff will be adequately trained in health and safety and will be informed and aware of potential hazards.

All hazards will be identified, and risks assessed. Where elimination of the risk is not feasible, appropriate mitigation and/or control measures will be followed. The contractor will be obliged under the construction contract and current health and safety legislation to adequately provide for all hazards and risks associated with the construction phase of the Project.

Safe Pass registration cards are required for all construction, delivery, and security staff. Construction operatives will hold a valid Construction Skills Certificate Scheme card where required. The Developer is required to ensure a competent contractor is appointed to carry out the construction works. The Contractor will be responsible for the implementation of procedures outlined in the Safety & Health Management Plan.

In relation to COVID-19, up to date Health Service Executive guidance will be consulted regularly in line with Health and Safety Authority recommendations and all reasonable on-site precautions will be taken to reduce the spread of COVID-19 on construction sites, should the virus be prevalent at the time of construction.

Once mitigation measures and health and safety measures are followed, the potential for impact on human health on the construction site during construction and Decommissioning is expected to be not significant and temporary to short-term.

Public safety will be addressed by restricting access to the public in the vicinity of the Site works during the construction and Decommissioning stage. The construction site and associated recreation trails will be temporarily closed in sections to the public for the 16 -

18 month construction period as well as the Decommissioning period. This measure aims to avoid potential injury to members of the public as a result of construction activities.

Appropriate warning signage will be posted at the construction site entrance, directing all visitors to the site manager. Appropriate signage will be provided on public roads approaching site entrances and along haul routes.

In relation to the Turbine Delivery Route, extra safety measures will be employed when large loads are being transported, for instance, Garda escort will be requested for turbine delivery and a comprehensive turbine delivery plan will be utilised to avoid potential impact to human safety for road users and pedestrians.

For the installation of the Grid Connection cable in the public road, a traffic management plan has been developed (**Appendix 11.1**) in discussion with locals who will be directly impacted by the works, and in agreement with the Local Authority. Public consultation will be conducted along the grid cable route to inform local residents ahead of construction and Decommissioning works.

Once mitigation measures and health and safety measures are implemented and followed, the potential for impact on human health for members of the public during construction and Decommissioning of the proposed project is expected to be not significant and temporary to short-term.

5.5.7.2 Operation

For operation and maintenance staff working at the proposed wind farm, appropriate site safety measures will be utilised during the operational phase by all permitted employees. All personnel undertaking works in or around the turbines will be fully trained and will use appropriate Personal Protective Equipment (PPE) to prevent injury.

Equipment within high voltage substations presents a potential hazard to health and safety. The proposed substation will be enclosed by palisade fencing and equipped with intruder and fire alarms in line with ESB and EirGrid standards.

All electrical elements of the Proposed Development are designed to ensure compliance with electro-magnetic fields (EMF) standards for human safety.

All on-site electrical connections are carried by underground cable and will be marked out above ground where they extend beyond the track or hardstanding surface. Details of cables installed in the public road will be available from ESBN.

Lightning conductors will be installed on each turbine as all structures standing tall in the sky require this protection. Turbines specifically require this to prevent power surges to electrical components. Turbines will be fitted with ice detection systems which will stop the turbine from rotating if ice is forming on a turbine blade. This aims to prevent ice throw.

Rigorous statutory and engineering safety checks imposed on the turbines during design, construction, commissioning and operation will ensure the risk posed to humans is negligible. 24-hour remote monitoring and fault notifications are included as standard in the Turbine Operations and Maintenance Contracts. A Supervisory Control and Data Acquisition ("SCADA") system will monitor the Proposed Development's performance. If a fault occurs, then a message is automatically sent to the operations personnel preventing emergency situations.

In addition to scheduled maintenance, the maintenance contracts will allow for call out of local engineers to resolve any issues as soon as they are picked up on the remote monitoring system.

Access to the turbines inner structure will be locked at all times and only accessed by licenced employees for maintenance.

In line with the Health Service Executive's Emergency Planning recommendations, any incident which may occur at the Site which requires emergency services, incident information will be provided in the 'ETHANE' format:

- Exact location
- Type of incident
- Hazards Access and egress
- Number of casualties (if any) and condition
- Emergency services present and required

The design of the Proposed Development has considered the susceptibility to natural disasters. The proposed site drainage will mitigate against any potential flooding risk due to run off with the use of Sustainable Drainage Systems (SuDS). Construction drainage will be left in-situ for the lifespan of the Project through to Decommissioning.

The Contractor's fire plans are reviewed and updated on a regular basis. A nominated competent person shall carry out checks and routine maintenance work to ensure the reliability and safe operation of firefighting equipment and installed systems such as fire alarms and emergency lighting. A record of the work carried out on such equipment and systems will be kept on site at all times.

Detection systems and turbine control software will be installed on all turbines to (i.e. permit remote shutdown as necessary) prevent shadow flicker on nearby receptors.

The Wind Farm system shall include a system over-ride switch that can be operated at any time, to facilitate manual shutdown in case of an emergency.

5.5.7.3 Residual Risk

Once the above mitigations are taken into account, the residual risk on population and human health is assessed to be an imperceptible, long-term effect.

5.6 CUMULATIVE EFFECTS

As per **Appendix 1.5**, the nearest operational wind farm is Milane Wind Farm which is located 5.08 km to the southeast of the Site. The nearest permitted but not yet constructed wind farm is Kealkill 10.8 km to the northwest. The Proposed Development along with Milane Wind Farm and other Irish renewables generation is considered to be a fundamental change in the climate effects of Ireland's energy supply, which is an important, positive effect that is significant under the EIA Regulations and will contribute to Ireland's legally binding reduction targets.

The Proposed Development will contribute to the offset of burning of fossil fuels which has the potential to positively impact human health. The cumulative impact of the Proposed Development can be predicted to be a small, short-term negative impact on tourism and amenity during construction. There is predicted to be a short-term, moderate positive impact in terms of employment from the Proposed Development.

5.7 SUMMARY OF SIGNIFICANT EFFECTS

The assessment has not identified any likely significant effects from the Proposed Development on population and human health.

5.8 STATEMENT OF SIGNIFICANCE

This chapter has assessed the significance of potential effects of the Proposed Development on population and human health. The Proposed Development has been assessed as having the potential to result in effects of a slight positive, long-term impact overall. Through the implementation of mitigation measures, the cumulative effects associated with the Proposed Development are predicted to be not significant.