5 POPULATION AND HUMAN HEALTH

5.1 INTRODUCTION

5.1.1 Background and Objectives

This Chapter of the EIAR assesses the impacts of the Project (**Figure 1.2**) on population and human health. The Project refers to all elements of the Carrigeen Renewable Energy Development project as a whole, including the Project and all additional works outside the Redline Boundary which are functionally and technically interdependent with the Project but will be subject to separate consent applications. Additional works include temporary street furniture removal, hedge trimming and laydown of temporary road surface. These additional works are described in full **Chapter 2: Project Description** in **Section 2.5.4.1** which refers to all elements of the application for the construction of Carrigeen Renewable Energy Development. Where significant adverse effects are predicted, the chapter identifies appropriate mitigation strategies therein. The assessment will consider the potential effects during the following phases of the Project:

- Construction of the Project
- Operation and maintenance of the Project
- Decommissioning of the Project

This Chapter of the EIAR is supported by figures provided in **Volume III**. A glossary of common acronyms can be found in **Appendix 1.4** in Volume IV of this EIAR.

5.1.2 Statement of Authority

This Population and Human Health Chapter has been prepared jointly by Ms. Sarah Moore, with assistance from Ms. Kathlyn Feeney of Jennings O'Donovan & Partners Limited (JOD). The final review was conducted by Managing Director Mr David Kiely.

Ms. Sarah Moore is an Environmental Scientist in JOD with over 18 years of environmental consultancy experience. She has obtained a MSc in Environmental Engineering from Queens University, Belfast, and a BSc in Environmental Science from University of Limerick. Since joining JOD, Sarah has been involved as a Project Environmental Scientist on a range of renewable energy, wastewater, structures and commercial projects. She has experience in the preparation of Appropriate Assessments, Ecological Impact Assessments, Environmental Impact Assessments and Geographic Information Systems.

Kathlyn Feeney is a Graduate Environmental Scientist with a First-Class Honours Degree (BSc. Hons) in Environmental Science from Atlantic Technological University, Sligo. She forms part of the Environmental team responsible for preparing the EIARs. Kathlyn's main responsibilities include supporting more senior consultants in report writing, GIS, Feasibility Studies and Shadow Flicker analysis.

Mr. David Kiely is Managing Director of JOD and holds a BE in Civil Engineering from University College Dublin and MSc in Environmental Protection from IT Sligo. He is a Fellow of Engineers Ireland, a Chartered Member of the Institution of Civil Engineers (UK). David has over four decades of experience in the preparation of EIARs and EISs for environmental projects including Wind Farms, Solar Farms, Wastewater Projects, and various commercial developments. David has also been involved in the construction of over 60 wind farms since 1997.

5.1.3 Relevant Legislation and Guidance

The Population and Human Health assessment has been 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 receptor from the proposed Wind 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 Project 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[1] 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,

[1] Golder Associates (2015). Investigation into the Assessment of Health Impacts within National Environmental Regulation Processes. Available at: https://www.epa.ie/publications/research/environment--health/investigation-into-the-assessment-of-health-impacts-within-national-environmental-regulation-processes.php [Accessed 9th March 2026].

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 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.[2]"

5.1.4 Assessment Structure

In line with the EIA Directive, as amended and current EPA Guidelines 2022 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 Project, i.e., of local electoral areas and of County Roscommon, The Northern and Western Region and Ireland, 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 Project 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 Project after mitigation measures have been implemented;
- **Cumulative Effects** – identifying the potential for effects of the Project 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**, and
- **Statement of Significance**.

[2] European Commission (2017). Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report. Available at: http://ec.europa.eu/environment/eia/eia-support.htm [Accessed: 9th March 2026].

As outlined in the section 3.7.6 of the EPA Guidelines 2022, there is need to assess the potential interactions of human health and population effects with other effects arising as a result of the Project. Potential interactions with the effects identified in the following chapters have been assessed:

- Chapter 10: Soils and Geology
- Chapter 11: Hydrology and Hydrogeology:
- Chapter 13: Noise:
- Chapter 16: Traffic and Transport:
- Chapter 17: Shadow Flicker:
- Chapter 18: Air Quality:
- Chapter 19: Climate:
- Chapter 20: Major Accidents and Natural Disasters
- Chapter 21: Interactions of the Foregoing

5.1.5 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.

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, air quality and traffic

5.2 ASSESSMENT METHODOLOGY

In line with the EIA Directive as amended and current EPA Guidelines 2022, 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

A desktop study was undertaken using the Central Statistics Office (CSO) data along with the currently adopted Roscommon County Development Plan (RCDP) 2022 - 2028. The 2015 report produced by the EPA entitled the 'Investigation into the Assessment of Health Impacts within National Environmental Regulation Processes' has been complied with and 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.

5.2.1 Definition of Study Areas

Three geographical Study Areas have been outlined for this assessment. Data from Study Area 1 (District Electoral Divisions which include the townlands in the vicinity of the Wind Farm Site) are used to assess local impacts within this chapter, as it is these areas that will be impacted the most by the Project. The local Study Area 1 lies within Study Area 2 (County Roscommon). Study Area 3 (Republic of Ireland) provide national baseline statistical data for this Chapter.

The three Study Areas are described in more detail below:

Study Area 1: **The Wind Farm Site and Environs – Electoral Divisions (EDs) Bellanagare, Frenchpark, Mantua, Lisgarve, Kilmacumsy.**

In order to make inferences about the population and other statistics in the vicinity of the Wind Farm Site, District Electoral Divisions were analysed. The Wind Farm Site falls under the Municipal District (MD) Roscommon and is situated within the Bellanagare, Frenchpark, Mantua, Kilmacumsy and Lisgarve Electoral Divisions (EDs), and the proposed Grid Connection extends through Danesfort, Aughrim West, Creeve, Lisgarve and Killummod EDs. The EDs can be further broken down into townlands. See **Table 5.1** for details.

Table 5.1: Electoral Divisions (EDs) and Townlands within the EIAR Boundary

Element of the Project	Electoral Division (ED)	Townlands
Wind Farm Site		
Carrigeen Renewable Energy Development	Bellanagare, Frenchpark, Mantua, Kilmacumsy, Lisgarve	Carrigeen, Edenan and Kinclare, Leggatinty, Carrigeenacreeha, Scor Beg, Ryefield Or Runnateggal, Ballynahowna, Culleenatreen Or Flagford, Lodge, Ballyculleen, Ballaghcullia, Tartan, Peak, Gortnacloy, Tonaknick, Cloonkerin, Cloonshanville, Runnacocka, Drummin, Loughbally, Ardagh, Carrigeenynaghtan, Brackloon, Frenchpark
Grid Connection		
	Danesfort, Aughrim West, Creeve, Lisgarve Killummod	Cartron, Lismacool, Caranlea, Killummod, Cartroncaran, Ballindrehid, Corbally East, Ballysundrivan, Caran, Ballyhollaghan, Carrowntogher, Corbally Middle, Ballyroddy, Skeanavart, Carrowreagh, Dacklin, Kinclare, Erriblagh, Lisgarve,

Element of the Project	Electoral Division (ED)	Townlands
		Moheedian, Rathardeagher.

Grid Connection

A Grid Connection between the Wind Farm Site and the 220kV Flagford Substation will be necessary to export electricity from the Project. It is intended that the Project will connect to the national grid via a 110kV Grid Connection cable to the existing Flagford 220kV Substation, County Roscommon.

The proposed Grid Connection route between the Onsite Substation and the Flagford 220kV substation will consist of a c.17.5km underground cable.

To minimise potential impacts on the local population and human health, the cable will be primarily routed along the public road corridor. This approach not only reduces the disturbance to the environment but also mitigates potential health risks associated with construction activities, ensuring that the local community is protected during the installation process.

Study Area 2: **County Roscommon (2,548km^2)**

The Wind Farm Site, Grid Connection and sections of the Turbine Delivery Route (TDR) fall within County Roscommon. A full description of the TDR and Grid Connection is detailed in **Sections 2.5.4.1** and **Section 2.5.9** of **Chapter 2: Project Description**. As all these elements of the Project have the potential to impact upon the Population and Human Health, County Roscommon 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.

Turbine Delivery Route

Details of works associated with the TDR are included in **Section 2.5.4.1** (**TDR**) of **Chapter 2: Project Description**. The proposed TDR is shown on **Figure 2.3**.

The Construction Haul Routes are detailed in **Section 16.2.13** of **Chapter 16: Traffic and Transportation**, with local quarries for material sourcing in **Figure 16.6.**

Furthermore, temporary works along the proposed TDR are assessed in **Chapter 16: Traffic and Transport** and shown on drawings within **Appendix 16.3.**

Study Area 3: **Ireland (70,273km^2)**

Study area 3, Ireland, provides a national baseline of statistical data for this Chapter.

5.2.2 Consultation

Consultation with relevant organisations was carried out during the initial stage of the EIA to identify any effects that could be initiated by the Project. A summary of the findings is detailed in **Table 5.2**.

Table 5.2: Summary of Consultation response on Population and Human Health

Consultee	Type and Date	Summary of Consultee Response	EIAR sections where comments have been addressed
Health Service Executive (HSE)	17th April 2025	**Public Consultation** It is recommended that early and meaningful public consultation with the local community is undertaken to ensure all potentially significant effects of the proposed windfarm development have been adequately addressed. **Population and Human Health** The opinion of the NEHS is that the assessment of likely significant effects on Population and Human Health should be a proportionate assessment specific to the proposed development and to the Population and Human Health likely to be significantly affected by the proposed development If assessment is made of likely significant effects on wider determinants of health or health inequalities, then this should be done in a proportionate manner with a demonstration of a likely significant effect as a direct result of the proposed development. It is therefore the opinion of the NEHS that the EIA should consider the likely significant effects on established land use and service provision and activities within communities and not individual members of communities.	Public Consultation: **Section 1.7.1** of **Chapter 1: Introduction** summarises the public consultation process. Additionally, a report has been included as **Appendix 1.2: Community Engagement Report** detailing all public consultation for the Project. Decommissioning Phase: A designated decommissioning plan has been appended to this EIAR as **Appendix 2.1: Construction Environmental Management Plan** (MP6). Details of decommissioning works are included in this plan, including the fate of the Wind Turbines and materials. Siting and Location of Turbines: Detailed maps and specifications of turbine locations, heights, and models are included in **Chapter 2: Project Description** and **Volume III: EIAR Figures** and also in the **Planning Drawings**.

Consultee	Type and Date	Summary of Consultee Response	EIAR sections where comments have been addressed
		Decommissioning Phase: Clear information on the fate of turbines and materials post-operation, including recycling or disposal methods. **Siting and Location of Turbines:** Detailed maps and specifications of turbine locations, heights, and models. **Shadow Flicker** It is recommended that turbine selection will be based on the most advanced available technology that permits shut down during times when residents are exposed to shadow flicker. As a result, no dwelling should be exposed to shadow flicker. **Noise & Vibration** The noise assessment for the proposed development should consider the likely significant effects of noise and vibration at sensitive receptors from the following aspects: • Construction noise and vibration from the wind turbine installation; and	Shadow Flicker: Identification of dwellings affected by shadow flicker and implementation of mitigation strategies are included in **Chapter 17: Shadow Flicker**, and specifically in **Section 17.2.9.** Noise: Assessment of potential noise and vibration impacts on sensitive locations, along with proposed mitigation measures have been included in **Chapter 13: Noise**, specifically in **Sections 13.4** and **13.5**. Air Quality: A designated air and climate assessment has been included as **Chapter 18: Air Quality** and **Chapter 19: Climate** of the EIAR. Dust generation has also been assessed in **Appendix 2.1: Construction Environmental Management Plan**. Surface and Groundwater Quality: A designated assessment of water and water resources has been included in **Chapter 11: Hydrology and Hydrogeology**. Identification of all drinking water sources

Consultee	Type and Date	Summary of Consultee Response	EIAR sections where comments have been addressed
		• Operational noise from the wind turbines. **Air Quality** Due to the nature of the proposed construction works generation of airborne dust has the potential to have significant impacts on sensitive receptors. A Construction Environmental Management Plan (CEMP) should be included in the EIAR which details dust control and mitigation measures. **Surface and Ground Water Quality** Any potential significant impacts to drinking water sources should be assessed. Details of bedrock, overburden, vulnerability, groundwater flows, aquifers and catchment areas should be considered when assessing potential impacts and proposed mitigation measures. Any impacts on surface water as a result of the construction of the underground cables should be identified and addressed in the EIAR.	and measures to protect them has been included in **Sections 11.4.18, 11.4.19, 11.4.20**, **11**.6 and **11.7.** <u>Geotechnical and Peat Stability Assessment:</u> Soils and Geology is fully assessed in **Chapter 10: Soils and Geology**. Evaluation of ground stability and potential impacts of construction on water quality and peat stability, including monitoring programs are included in **Sections 10.4.2.6** and **10.4.2.7.** <u>Ancillary Facilities:</u> **Chapter 2: Project Description** gives details of all proposed works associated with the Project as well as elements of the Project which are not being applied for in this Planning Application. Location and details of all support facilities required during construction are included in **Section 2.5.** <u>Cumulative Impacts:</u> Cumulative effects are assessed in all assessment chapters of this EIAR. Please see **Sections 5.5.10, 6.6, 7.12.5, 8.7, 9.8, 10.4.5, 11.13, 12.4.5, 13.5.3, 14.4.5,**

Consultee	Type and Date	Summary of Consultee Response	EIAR sections where comments have been addressed
		Geotechnical and Peat Stability Assessment *(for peat areas only)* A detailed assessment of the current ground stability of the site for the proposed windfarm development and all proposed mitigation measures should be detailed in the EIAR. **Ancillary Facilities** Location and details of all support facilities required during construction. **Cumulative Impacts** All existing or proposed wind farm developments in the vicinity should be clearly identified in the EIAR.	**14.5.5, 14.6.5, 14.7.6, 14.8.5, 14.9.5, 15.6, 16.5, 17.2.8, 18.2.8, 19.4.7, 20.11.** These aspects have been thoroughly addressed in the EIAR and the Project's potential impacts have been comprehensively evaluated.

5.3 BASELINE DESCRIPTION – RECEIVING ENVIRONMENT

5.3.1 Population and Settlement Patterns

Study Area 1: The Wind Farm Site and Environs (EDs Bellanagare, Frenchpark, Mantua, Lisgarve, Kilmacumsy)

The most recent 2022 census data was deemed most appropriate for the purpose of this study. Bellanagare, the nearest settlement to the Wind Farm Site, is located approximately 2.2km southwest of the Wind Farm Site and has a population of 162[3]. According to the 2022 census, there is one settlement with a population greater than 2,500 people located within a 10km radius of the Project, Carrick-On-Shannon, which has a total population of 4,743 persons. The nearest centre of population to the Wind Farm Site is Roscommon Town, which is located approximately 25km south.

The Wind Farm Site is largely rural, with a mixture of forestry plantations, bogland, scrub and wet grassland habitats. Isolated residences, farmsteads and private roads and public roads are also scattered throughout the local area.

Over the last five years, Roscommon County Council have granted planning permissions in the Study Area 1 electoral division areas which include forestry roads, one off housing, alterations to existing dwelling houses, development of new housing, agricultural buildings, and commercial developments[4]. The 2022 Census statistics note that the EDs found within Study Area 1 have a total of population of 3,805.

A Landscape Character Assessment[5] for County Roscommon divides the county into seven Landscape Character Types (LCTs). The Wind Farm Site is contained entirely within the 'Bogland' LCT, however 'Wet Farmland', 'Dry Farmland', and 'Drumlin Lakelands' are all present within the central study area.

The county is further subdivided into 36 Landscape Character Areas (LCAs) that broadly align with the LCT areas. The Wind Farm Site is located entirely within LCA 20 'Breedoge Bogland Basin'. LCA 20 is identified as being of 'Moderate Value', which is the 'lowest' value rating on a scale which ranges from Moderate to Exceptional.

[3] Central Statistics Office (2022) CSO Visualisation: Census 2022 Data. Available at: https://visual.cso.ie/?body=entity/ima/cop/2022&boundary=C04160V04929&guid=e83708f9-a9fd-4f3b-9e1b-2e7d409de2bb (Accessed: 9th March 2026).
[4] Roscommon County Council (2026) Planning Map Search. Available at: https://roscoco.maps.arcgis.com/apps/webappviewer/index.html?id=84b0356c3b45483c9da36ecccbd3aa93 (Accessed: 9th March 2026).
[5] Roscommon County Council (2022) Landscape Character Assessment – Roscommon County Development Plan 2022–2028. Available at: https://www.rosdevplan.ie/roscommon-county-development-plan-2022-2028/ (Accessed: 9th March 2026).

Key characteristics of LCA 20 are three distinct types of surface vegetation, and broad, shallow basin landform. The 'overall image is one of a broad bogland basin draining into Lough Gara in neighbouring County Sligo'. The landscape value of the character area is held principally in the Bogland areas and the designated scenic view from the N61.

Grid Connection

As outlined in **Section 5.2.1**, the Grid Connection falls within Study Area 1. The proposed Grid Connection extends through Danesfort, Aughrim West, Creeve, Lisgarve and Killummod EDs. The proposed Grid Connection from the proposed Onsite Substation to the existing Flagford 220kV Sub-station is c.17.5km, primarily located within the public road corridor.

Study Area 2: County Roscommon

The total population in the 2022 CSO for County Roscommon was 70,259 of which males numbered 35,170 and females were 35,089. There has been a 9% increase in the population since 2016. The population density is 27.6 persons per km^2. The total number of households was 26,021 in 2022, an 8.4% increase since 2016. Average size of households (in persons) has generally remained the same at approximately 2.6 persons per household over the past two census reports (2016 & 2022).

There are a number of medium sized towns and villages geographically spread throughout County Roscommon. These settlements number 25 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. This provides a reasonable platform upon which to build an integrated Local Economic and Community Plan and strong sustainable communities. The two largest towns in the county are Athlone with 22,869 people and Roscommon Town with 6,555 people.

It is noted in the Roscommon County Development Plan 2022-2028[6] that many towns and villages throughout County Roscommon have experienced depopulation.

TDR

The TDR falls within Study Area 2 and Study Area 3. The majority of development along the TDR comprises rural farmstead properties and one-off housing. The land-use along the TDR is comprised mainly of transport infrastructure, and surrounding land use is mainly agriculture with some areas of peat harvesting and forestry.

[6] Roscommon County Council (2022) Roscommon County Development Plan 2022–2028: Volume 1.

Study Area 3: 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[7]. The Irish population is at its highest figure since 1841, and it is the first time the population has been recorded over 5 million since 1851[8].The Project Ireland 2040 National Planning Framework (NPF) 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 NPF would accommodate around 1.1 million additional people residing in Ireland by 2040.

TDR

The TDR falls within Study Area 2 and Study Area 3. The majority of development along the TDR comprises rural farmstead properties and one-off housing. The land-use along the TDR is comprised mainly of transport infrastructure, and surrounding land use is mainly agriculture with some areas of peat harvesting and forestry.

5.3.2 Economic Activity

The primary sectors of economic activity on a County level (Study Area 2) are presented in this section.

5.3.2.1 Primary sectors - Study Area 2: County Roscommon

The economy of County Roscommon is broadly based and diverse with the most prominent sectors including Wholesale & Retail, Health & Social Work, and Manufacturing. Agriculture's share of employment in Roscommon is close to double the national average, with 3.5% nationally and 6.8% in County Roscommon. The Wholesale and Retail Trade sector accounted for the largest number of workers in the county at almost 3,800. Human Health and Social Work Activities was the next largest, with almost 3,700 workers, followed by Manufacturing with almost 3,400 workers[9].

[7] Central Statistics Office (2022) Census 2022 Reports. Available at: https://www.cso.ie/en/statistics/population/censusofpopulation2022/censusofpopulation2022-summaryresults/ (Accessed: 9th March 2026).
[8] Department of Housing, Planning and Local Government (2018) Project Ireland 2040 – The National Planning Framework. Available at: https://npf.ie/project-ireland-2040-national-planning-framework/ (Accessed: 9th March 2026).
[9]Central Statistics Office (2023) Press Statement: Census 2022 Results – Profile 7: Employment, Occupations and Commuting, Roscommon. Available at: https://www.cso.ie/en/csolatestnews/pressreleases/2023pressreleases/pressstatementcensus2022resultsprofile7-employmentoccupationsandcommutingroscommon/ (Accessed: 9th March 2026).

5.3.3 Employment

Employment statistics (Principal Economic Status) for Electoral Division Area (Study Area 1) and County (Study Area 2) are presented in this section and compared with the national employment statistics (Study Area 3).

5.3.3.1 Employment Analysis

The labour force consists of those who are able to work, i.e. those who are aged 15+, out of full-time education and not performing duties that prevent them from working. In 2022, there were 4,136,852 persons in the labour force in the Republic of Ireland. **Table 5.3** shows the percentage of the total population aged 15+ who were in the labour force during the 2022 Republic of Ireland Census. This figure is further broken down into the percentages that were at work, seeking first time employment or unemployed. It also shows the percentage of the total population aged 15+ who were not in the labour force, i.e. those who were students, retired, unable to work or performing home duties.

In general, the principal economic status of those living in Study Area 1 is similar to that recorded at national and County level, with between 0-5% average difference apparent. The proportion of individuals whose principal economic status was recorded as 'At Work' in Study Area 1 was approximately 10% lower than the national figure, at 48.27% compared to 58.58% nationally. Of those who were not in the labour force during the 2022 Census, the highest percentage of the population in the 5 No. DEDs was in the 'Retired' category, which is the same as figures recorded at national and County level that also show 'Retired' as the highest category.

Table 5.3: Labour Force Percentage Status (2022)

Principal Economic Status	Percentage (%)		
	Study Area 1	Study Area 2 Roscommon	Study Area 3 National
At work	48.27	52.73	58.58
Looking for first regular job	0.83	0.85	0.87
Short/Long Term unemployed	5.08	3.98	4.45
Student	10.10	10.09	11.60
Looking after home/family	7.92	7.23	6.88
Retired	21.34	19.02	16.61

Principal Economic Status	Percentage (%)		
	Study Area 1	Study Area 2 Roscommon	Study Area 3 National
Unable to work due to permanent sickness or disability	5.54	5.23	4.78
Other	0.93	0.87	0.68
Total	100.00	100.00	100.00

5.3.4 Land Use and Topography

Land use and Topography is assessed in this section for the Electoral Division Area (Study Area 1), as this land in this area will be most affected due to the Project. There will be minimal or no long-term impact on land use from the TDR and Grid Connection work, therefore Study Area 2 and 3 will not be assessed in this section.

5.3.4.1 Study Area 1: The Wind Farm Site and Environs (Eds Bellanagare, Frenchpark, Mantua, Lisgarve and Kilmacumsy)

The majority of existing land use in the environs of the Wind Farm Site is located in extensively modified areas of bog, interspersed with conifer forestry blocks. The landscape of the Wind Farm Site and study area is principally comprised of flat to low rolling terrain that ranges between 60-90m AOD, generally around 70m AOD.

County Roscommon is located in the Northern and Western Region and is bordered by counties Sligo, Mayo, Galway, Leitrim, Longford, Westmeath and Offaly. There are 7 Landscape Character Types (LCT) across the county. According to the Landscape Character Assessment (LCA) 2022[10] for Roscommon, the Wind Farm Site is located within the 'Bogland' LCT. The county is further subdivided into 36 Landscape Character Areas (LCAs) that broadly align with the LCT areas. The proposed Wind Farm Site is located entirely within LCA 20 'Breedoge Bogland Basin'. LCA 20 is identified as being of 'Moderate Value', which is the 'lowest' value rating on a scale which ranges from Moderate to Exceptional.

[10] Roscommon County Council (2022) Roscommon County Development Plan 2022–2028: Landscape Character Assessment. Available at: https://www.rosdevplan.ie/roscommon-county-development-plan-2022-2028/ (Accessed: 9th March 2026).

5.3.5 Tourism

Tourism is one of Ireland's most important economic sectors and is a significant source of full time and seasonal employment. County Roscommon has a wide range of tourist attractions, such as Lough Key Forest Park, in combination with heritage, natural landscapes, waterways and walking/cycling routes providing a unique tourism experience. Tourism information for Electoral Division Area (Study Area 1) and County (Study Area 2) is presented in this section, as these areas will potentially be most impacted by the Project.

5.3.5.1 Roscommon County Development Plan 2022-2028

Roscommon has a strong tourism industry with significant growth potential. There are several objectives and preferred development options outlined in the Roscommon County Development Plan (2022-2028) which seek to promote tourism in the county.[11]

Chapter 6: Economic Development, Policy Objective ED 6.22
"Promote tourism as an integral part of County Roscommon's economic profile, supporting urban and rural enterprise, and recognising the key strategic location of the county and access to tourist sites and attractions."

5.3.5.2 Tourist Attractions

Study Area 1: The Wind Farm Site and Environs (EDs Bellanagre, Frenchpark, Mantua, Lisgarve and Kilmacumsy)

Tourist attractions (receptors) were collated using the suggested information sources outlined in the Fáilte Ireland EIAR Guidance document and using an internet search engine.

- The nearest attraction, Felt Fairies, is located 1.7km north of the Wind Farm Site. Felt Fairies are traditionally handcrafted using the oldest technique of cloth creating which is wet felting. Visitors can learn this old form of felt making in the art of creating wonderful fairies, among many other choices. One- and two-day courses are available all year.
- The Dr Douglas Hyde Interpretative Centre is located 5km west of the Wind Farm Site. The exhibition and interpretative centre is dedicated to the first President of Ireland, Dr. Douglas Hyde.
- The Elphin Windmill is located 5.3km east of the Wind Farm Site. Elphin Windmill is a fully restored 18th century windmill. The Elphin Windmill is a round, three stage structure with a thatched revolving roof of organic rye. There is an agricultural museum

[11]Roscommon County Council (2022) Roscommon County Development Plan 2022–2028: Chapter 6 – Economic Development. Available at: https://www.rosdevplan.ie/roscommon-county-development-plan-2022-2028/ (Accessed: 9th March 2026).

housing a threshing machine, a winnower and other machinery associated with the harvesting of grain.

- The Lough Gara Lake and Legends Bogland trails is located 8km northwest of the Wind Farm Site. The Bogland trails consist of 4 looped walks, ranging between 2.4-11km in length.

Study Area 2: County Roscommon

County Roscommon is rich in history and heritage, and benefits from a range of popular attractions such as;

- The Rathcroghan Archaeological Complex. Rathcroghan in the medieval village of Tulsk, County Roscommon, is part of the archaeological landscape of Cruachan Aí, the oldest and largest unexcavated royal site in Ireland.
- Lough Key Forest and Activity Park. Forest Park is a large recreation area which includes forest trails, historic buildings, play areas and family camping.
- The Beara Brefine Way, the longest in Ireland, 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 including The Beara Way, across six mountain ranges, along the banks of the River Shannon and through the lake regions of the Roscommon and Leitrim.
- Roscommon Castle, which is a 13th Century Norman Castle. It was built in 1269 by Robert de Ufford, Justiciar of Ireland, on lands he had seized from the Augustinian Priory. The natural features of the park include a turlough and a wildlife conservation area which is a habitat of unique flora and fauna.
- Clonalis House, where visitors can get an insight into a long and storied past of one of Ireland oldest families and most historic homes. Visitors can experience a rich heritage and history at Clonalis with correspondence, historical documents, heirlooms, objet d'art, the harp of Turlough O'Carolan (the famous blind harpist), the inauguration stone of the O'Conor Kings and family portraits which all play an integral part in the telling of the O'Conor family's story.
- Arigna Mining Experience, where visitors can get an insight into coal mining life.
- Strokestown Park House, Gardens and National Famine Museum.

Of the above listed attractions, Lough Key Forest and Activity Park was the most visited attraction with 45,975 visitors recorded in 2023[12].

[12] Fáilte Ireland (2024) Visitor Numbers to Attractions Dashboard. Available at: https://www.failteireland.ie/Research-Insights/Activities/visitor-numbers-to-attractions-dashboard.aspx (Accessed: 9th March 2026).

Tourism: Numbers and Revenue

Study Area 2: County Roscommon

The national tourism promotion board Fáilte Ireland oversees both national and regional tourism development and monitors key tourism performance indicators in each of the Irish regions; County Roscommon is categorised as being part of the Western Region, which includes the Counties of Roscommon, Mayo, and Galway. Regional tourism performance figures for 2019 show the Western Region overseas tourist numbers totalled 1,943,000 and tourist revenue from overseas visitors accounted for €653,000,000 in the region. Domestic visitors from Ireland and Northern Ireland accounted for 1,848,000 visits to the region in 2019, with €370,000,000 in revenue generated from domestic visitors[13].

5.3.5.3 Tourist Attitudes to Windfarms

The first wind farm in Ireland was completed in 1992 at Bellacorrick, County Mayo and since then wind farms have elicited a range of reactions from Irish people (Failte Ireland, 2012). In 2012, 91% of overseas holidaymakers to Ireland rated scenery as an important part of a destination with natural/unspoilt environment also rated highly at 91%. The future sustainability of Ireland's tourism industry is therefore inextricably linked to the maintenance of the character and scenic qualities of the Irish landscape.[14] Furthermore, Fáilte Ireland carried out research on Overseas Holidaymakers Attitudes to Ireland in 2018. Responses showed that holiday makers choice is based largely on '*beautiful scenery* (93%), followed closely by *plenty to do and see* (91%) and *friendly people* and *natural attractions* (88%)'[15].

Fáilte Ireland Surveys 2007 and 2012

A study carried out by Fáilte Ireland, in association with the Northern Ireland Tourist Board (NITB), in 2007 surveyed both domestic and overseas holidaymakers to Ireland to determine their attitudes to wind farms[16]. In 2007, there were 67 wind farms connected to the national grid. The survey drew on many aspects of an earlier SEAI survey (carried out in 2002) including the photomontages of wind farms, and in particular, the landscape types

[13] Fáilte Ireland (2021) Key Tourism Facts 2019. Available at: https://www.failteireland.ie/FailteIreland/media/WebsiteStructure/Documents/3_Research_Insights/4_Visitor_Insights/KeyTourismFacts_2019.pdf?ext=.pdf (Accessed: 9th March 2026).

[14] Fáilte Ireland (2012) Visitor Attitudes on the Environment – Wind Farms. Available at: https://www.failteireland.ie/FailteIreland/media/WebsiteStructure/Documents/3_Research_Insights/4_Visitor_Insights/WindFarm-VAS-(FINAL)-(2).pdf?ext=.pdf (Accessed: 9th March 2026).

[15] Fáilte Ireland (2018) Overseas Holidaymakers' Attitudes to Ireland 2018. Available at: https://www.failteireland.ie/FailteIreland/media/WebsiteStructure/Documents/3_Research_Insights/4_Visitor_Insights/Overseas-Holidaymakers;-Attitudes-to-Ireland-2018.pdf?ext=.pdf (Accessed: 9th March 2026).

[16] Fáilte Ireland (2008) Visitor Attitudes on the Environment. Available at: https://www.failteireland.ie/FailteIreland/media/WebsiteStructure/Documents/3_Research_Insights/4_Visitor_Insights/Visitor-Attitudes-on-the-Environment.pdf?ext=.pdf (Accessed: 9th March 2026).

that were used to elicit a reaction from respondents. The purpose of the survey was to assess whether or not the development of wind farms would impact on the visitors' enjoyment of Irish scenery. In 2012, this research was updated by Millward Browne Landsdowne on behalf of Fáilte Ireland to determine if there was any change in visitor attitudes during this period[17].

The 2012 research carried out on behalf of Failte Ireland to update/ compared to the findings of the 2007 research,[18] indicated that 47% of visitors felt an increased positive impact on landscape, compared to 32% in 2007. Negative responses also increased, showing 30% in 2012 against 17% in 2007. However, 49% of visitors felt that wind farms had no impact on the landscape in 2007 in comparison to 23% in 2012. It was notable that those interviewed who did not see a wind farm during their trip held more negative perceptions and opinions on wind farms to those that did. Of the wind farms viewed, the majority (59%) contained less than ten turbines in 2012, which was quite similar to 2007 (63%). Despite the fact that there has been an increase in the number of visitors who have seen at least one wind farm on their holiday, there was also a slight increase (from 45% in 2007 to 48%) in the number of visitors who felt that this had no impact on their sight-seeing experience. Importantly, and as has been seen in the previous research, the type of landscape in which a wind farm is sited can have a significant impact on attitudes. Although 21% feel that wind farms have a fairly or very negative impact on sight-seeing, this figure increases substantially for wind farms in coastal areas (36%).

In this study, visitors were again asked to rate the beauty of five different yet typical Irish landscapes: coastal, mountain, farmland, bogland and urban industrial land, and then rate the scenic beauty of each landscape and the potential impact of siting a wind farm in each landscape. As in 2007, the results indicate that each potential wind farm and site must be assessed on its own merits, due to the scenic value placed on certain landscapes by the visitor and the preferred scale/ number of wind turbines within a wind farm. Looking across all landscapes, wind farms are seen to have an enhancing effect on the landscapes seen as less beautiful, particularly urban/ industrial and bogland.

[17] Millward Browne Lansdowne (2010) Visitor Attitudes Survey 2010: Executive Summary. Available at: https://www.failteireland.ie/FailteIreland/media/WebsiteStructure/Documents/3_Research_Insights/4_Visitor_Insights/Visitor-Attitudes-Survey-Exec-Summary.pdf?ext=.pdf (Accessed: 9th March 2026).

[18] Fáilte Ireland (2012) Visitor Attitudes on the Environment – Wind Farms. Available at: https://www.failteireland.ie/FailteIreland/media/WebsiteStructure/Documents/3_Research_Insights/4_Visitor_Insights/WindFarm-VAS-(FINAL)-(2).pdf?ext=.pdf (Accessed: 9th March 2026).

Coastal areas (91%) followed by mountain moorland (83%) and fertile farmland (81%) continue to be rated as the most scenic, and unsurprisingly resistance is greatest to wind farms in these areas. For instance, there was a greater relative negativity expressed about potential wind farms on coastal landscapes (40%), followed by fertile farmland (37%) and mountain moorland (35%). On the other hand, less than one in four were negatively disposed to the construction on bogland (24%) or urban industrial land (21%). The majority of visitors also still favour large turbines (47%) over small turbines (28%), and in smaller numbers, with the option of five turbines proving the most popular, followed by two clusters of ten and finally wind farms of 25 turbines.

Seven out of ten (or 71%) visitors claim that potentially greater numbers of wind farms in Ireland over the next few years would have either no impact or a positive impact on their likelihood to visit Ireland (**Graph 4.1**). Of those who feel that the potentially greater number of wind farms would impact positively on future visits, the key driver is support for renewable energy, followed by potential decreased carbon emissions. Given the scenario where more wind farms will be built in Ireland in the future, the most widely held view is that this will not impact their likelihood to visit the area again, with a slightly greater majority saying that this would have a positive rather than a negative impact.

Wind Farms & Tourism Trends

In 2021, BiGGAR Economics published research findings, on research carried out in Scotland on 44 wind farms and tourism trends[19]. This research also re-examined 28 wind farms constructed between 2009 and 2015 that had been analysed in a previous study by BiGGAR Economics published in 2017, finding that the localities in which they were based had outperformed Scotland and their local authority areas in the majority of cases. This research has analysed trends in tourism employment in the localities of the 44 wind farms developed in recent years, providing a substantial evidence base. The study found no relationship between tourism employment and wind farm development, at the level of the Scottish economy, across local authority areas nor in the locality of wind farm sites.

5.3.6 Public Perception of Wind Energy

SEAI National Survey 2022

Several studies to assess the public perception and visitor perception of wind farms have been carried out over the last 2 decades. The most recent of these studies, was carried out

[19] BiGGAR Economics (2021) Wind Farms & Tourism Trends in Scotland: Evidence from 44 Wind Farms. Available at: https://biggareconomics.co.uk/wp-content/uploads/2021/11/BiGGAR-Economics-Wind-Farms-and-Tourism-2021.pdf (Accessed: 9th March 2026).

in 2022, by Sustainable Energy Authority of Ireland (SEAI). In-person doorstep interviews were conducted across all of rural Ireland, encompassing 1,764 households. This included 1,116 households within 5km of a new commercial wind or solar project sites, of which 219 live within 1km of a project site[20]. The results indicated very positive views and strong support for Wind Farms in Ireland, in summary:

- 67% of respondents hold positive or very positive views towards wind energy
- 73% of respondents who live <1km of a Renewable Electricity Support Scheme 1 (RESS1) wind project hold positive or very positive attitudes towards wind energy,
- 59% of respondents feel Ireland has too few wind farms
- 65% of respondents <1km from a RESS1 wind project feel Ireland has too few wind farms
- Few respondents feel Ireland has too many wind farms, regardless of how close they live to a new wind farm

IWEA Interactions Opinion Poll on Wind Energy

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

The most recent survey, conducted online in November 2024 and published in December 2024[21] sampled a representative sample of 1,070 Irish adults nationwide, together with a supplementary booster sample of 210 rural dwellers. The key findings from the survey included:

- 80 per cent of people in the Republic of Ireland surveyed are in favour of wind energy
- Opposition to wind energy at 4 per cent
- Just over 3 in 5 said they would be in favour of a wind farm being set up in their local area.
- When asked about local wind farms, 62% of respondents expressed support for their establishment in their area, an increase from 54% in 2020
- The top five reasons for supporting wind energy were identified as:
  - Good for the environment;
  - Reduces CO2 emissions;

[20]Sustainable Energy Authority of Ireland (2023) Irish National Survey of Households Near New Commercial Wind and Solar Farms. Available at: https://www.seai.ie/publications/SEAI-RESS-National-Survey.pdf (Accessed: 9th March 2026).

[21] Wind Energy Ireland (2024) Key Slides Report. Available at: https://windenergyireland.com/images/files/wind-energy-ireland-2024-report-key-slides-website.pdf (Accessed: 9th March 2026).

- Cheaper energy;
- Supports energy independence; and
- Creates employment.

As a result of the ongoing research, trends in the attitudes of windfarms over the past seven 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

A study was carried out to survey Irish public opinion, specifically in relation to wind farms and their associated grid connections[22]. The study found that over 75% of the people surveyed are positively disposed to wind turbines but just 36% are willing to accept the development of wind farms within 5km of their homes. The findings of these results are encouraging from a tourism perspective as many tourists who visit Roscommon are from the domestic market which accounted for 373,000 visits in 2022[23]. Per the findings of the referenced study, over three quarters of participants are positively disposed to windfarms in Ireland. Interpreted on a broader level the results of the study would appear to suggest the development of windfarm infrastructure in County Roscommon is unlikely to have a significant impact from a tourism related perspective.

The study results indicate there are regional variations in preferences. The results showed, the highest share of outright opposition to wind farms is in the Midlands, at 21% of respondents, and the lowest is in the Border region at 9%. The opposition to new transmission lines is highest at 44% in the South-West and lowest in the West at 18%. In respect to the Project, the Grid Connection is to be primarily accommodated within the public road corridor as recommended per the ESBN functional specifications for the installation of 110kV underground power cables for contestable projects[24].

[22] Tong, M., Koecklin, G., Longoria, D., Fitiwi, D.Z., Joseph, B., De Carolis, F. & Curtis, J. (2021) Public acceptance of renewable electricity generation and transmission network developments: Insights from Ireland. Energy Policy, 151, 112185.
[23] Fáilte Ireland (2023) Irish Resident Travel by County 2022. Available at: https://www.failteireland.ie/FailteIreland/media/WebsiteStructure/Documents/Publications/domestic-trips-and-revenue-by-county-2022.pdf?ext=.pdf (Accessed: 9th March 2026)
[24] EirGrid (2021) 110 kV, 220 kV and 400 kV Underground Cable Functional Specification. Available at: https://cms.eirgrid.ie/sites/default/files/publications/110kV-Underground-Cable-Functional-Specification-General-Requirements.pdf (Accessed: 9th March 2026)

5.3.7 Human Health

Common concerns around wind farms in terms of human health are generally associated with electromagnetic fields, shadow flicker and noise. These topics are considered in this EIAR in addition to air quality and water contamination in **Chapters 11: Hydrology and Hydrogeology, Chapter 13: Noise** and **Chapter 17: Shadow Flicker.**

5.3.7.1 General Health of Population

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 national population (Study Area 3), and for Study Area 1 and 2 inclusive, were used as shown in **Table 5.4**. These statistics indicate a "Very Good" or "Good" health status of 80-84% across all of the study areas, the highest being 84% in County Roscommon and the lowest being 82% in Study Area 1. The "Very Good" health status for County Roscommon at 52% is below the national average of 60%.

Table 5.4: Population by General Health

General Health	Study Area 1 (CSO, 2022)	Study Area 2: County Roscommon (CSO, 2022)	Study Area 3: Ireland (CSO, 2022)
	Percentage (%)		
Very good	47	52.5	53.2
Good	33	31	29.7
Fair	12	9.7	8.6
Bad	2	1.6	1.4
Very bad	1	0.4	0.3
Not stated	5	4.8	6.7

5.3.7.2 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 100 µT for sources of AC magnetic fields. This compares to 0.13 µT that arises from a 110 kV underground cable when directly above it; 1.29 µT that arises from a 220 kV underground cable when directly above it and 11.4 µT that arises from a 400 kV 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[25].

This indicates that any baseline EMF in the receiving environment from existing cable and electrical infrastructure is minimal.

5.3.7.3 Shadow Flicker

Shadow Flicker is the effect caused by 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 that sensitive receptor. Currently there are no turbines in place at the proposed Wind Farm Site. As the nearest operational windfarm is over 10km from the Wind Farm Site, there are no potential Shadow Flicker issues in the vicinity of the Wind Farm Site.

5.3.7.4 Noise

Chapter 13: Noise provides baseline description of noise in relation to the Project. This chapter also assesses the significance of the potential effects of the Project during operation, construction and decommissioning.

[25] ESB (2017) EMF & You - Information about electric & magnetic fields and the electricity network in Ireland. Available at: https://esbnetworksprdsastd01.blob.core.windows.net/media/docs/default-source/publications/esb-networks-electrical-and-magnetic-fields-.pdf?sfvrsn=43304888_0 [Accessed 9th March 2026].

5.3.7.5 Air Quality

Environmental Protection Agency (EPA, 2016), EU and World Health Organisation (WHO, 2014) reports estimate that poor air quality accounted for premature deaths of approximately 600,000 people in Europe in 2012, with 1,200 Irish deaths attributable to fine particulate matter ($PM_{2.5}$) and 30 Irish deaths attributable to Ozone (O_3)[26] [27]. A more recent study of air pollution across Europe[28] has shown that despite ongoing overall improvements in air quality, levels of air pollutants above EU standards are seen across Europe and air pollution remains a major health concern for Europeans. Air pollution concentration in 2021 remained well above the levels recommended by the World Health Organization (WHO). A key finding (EEA 2023) indicated that reducing air pollution to the guideline levels would prevent a significant number of attributable deaths in EU Member States (EU-27); 253,000 from exposure to fine particulate matter ($PM_{2.5}$); and 52,000 from exposure to nitrogen dioxide (NO_2). Furthermore, reducing the short-term exposure to ozone (O_3) would have avoided 22,000 attributable deaths. **Chapter 18: Air Quality** provides a baseline assessment of air quality in the area.

5.3.7.6 Water Contamination

GSI online mapping identifies Group Water Schemes (GWS) that are community-run water supply schemes. The mapping outlines the Zone of Contribution (ZoC) which is the land area that contributes water to supply source.

Two GWS / ZoC are shown to be within, or in proximity to, the EIAR boundary: the Peake GWS is located at the southern extent of the western section of the Wind Farm Site; and the Polecats GWS through which the Grid Connection passes (**Figure 11.13 EIAR Volume III**).

Works associated with the Project in the vicinity of the Peake GWS are limited to minor areas of road widening. At their nearest point, the works are located approximately 450m and down-gradient from the GWS. The Grid Connection corridor intersects the Zone of

[26] World Health Organization (2014) News release: Almost 600,000 deaths due to air pollution in Europe – new WHO global report. Available at: https://www.who.int/europe/news/item/25-03-2014-almost-600-000-deaths-due-to-air-pollution-in-europe-new-who-global-report (Accessed: 9th March 2026).

[27] Environmental Protection Agency (2016) Ireland's Environment: An Assessment 2016. Available at: https://epawebapp.epa.ie/ebooks/soe2016/files/assets/basic-html/page-1.html (Accessed: 9th March 2026).

[28] European Environment Agency (2023) Harm to Human Health from Air Pollution in Europe: Burden of Disease 2023. Available at: https://www.eea.europa.eu/publications/harm-to-human-health-from-air-pollution (Accessed: 9th March 2026).

Contribution (ZoC) of the Polecats GWS, identified through GSI mapping and therefore assessed as a sensitive groundwater receptor within the WFD process.

As the works are situated outside and hydraulically down-gradient of the ZoC, they do not lie within the groundwater catchment that contributes recharge to the GWS source. Therefore, the GWS is not considered likely to be affected by the Project.

A review of GSI online data and information provided by EPA indicate a well / spring in the western extent of the Wind Farm Site which coincides with an area of cutover peat, located approximately 200m south-east of proposed infrastructure (access track).

One well / spring is shown to be within the EIAR Boundary along the Grid Connection. Uisce Éireann mains supplies are noted to be present at the location; therefore, it is unlikely any third-party is likely to be reliant on the well / spring for private water supplies.

Review of the Historical Map Viewer identified several historical wells and springs within the Wind Farm Site. None coincide with existing properties and / or registered abstractions points.

5.3.7.7 Traffic

To assess the impact of the Project on the existing road network when the Project is constructed and fully occupied, baseline traffic volumes in the area are required. JOD carried out classified traffic counts on the 12th of December 2025 to record traffic volumes and turning movements of vehicles at N5 / L56402 junction, L1217 / L5601 junction, N61 / L5650 / L6019 junction and R368 / L6001 junction. Traffic counts at the N5 / L56402 junction and the L1217 / L5601 junction were carried out between 08.00 and 13.000am to capture peak traffic flows during the morning period at public road junctions which will be used by construction traffic. Traffic counts at the N61 / L5650 / L6019 junction and the R368 / L6001 junction were carried out between 14.00 and 16.00 to determine traffic volumes on the road network used during the construction of the Grid Connection. The peak hour traffic periods on the public road network in the vicinity of the Project were obtained from the TII traffic counter located on the N5 to the east of Frenchpark. Data from the TII traffic counter shows that peak traffic typically occurs between 07.30 to 09.30 in the morning and between 16.30 to 18.00 in the evening during an average workday.

5.3.8 Property Value

There is currently only one study within the context of Ireland detailing the effect of wind farms on property values. This section provides a summary of this paper by the Centre for Economic Research on Inclusivity and Sustainable (CERIS), as well as summaries on the largest and most recent studies from the United States and Scotland.

In 2023 CERIS published a working paper entitled '*Wind Turbines and House Prices Along the West of Ireland: A Hedonic Pricing Approach'*.[29] This paper looked at wind turbine developments in Donegal, Leitrim, Sligo, Mayo, Galway, Kerry and Cork and associated property values. This working paper utilised satellite imagery to identify individual turbines and sourced its housing data from www.daft.ie. In total, this working paper studied 1,342 individual turbines and 90,469 housing listings from www.daft.ie, with an average of 74 houses per studied electrical division. While the published price on Daft is not equivalent to the final agreed sale price, it was assumed that the listing and transaction prices are correlated.

The findings demonstrate the rural nature of wind farms in Ireland as the distance from turbine bands (0-5km and 5-15km bands) shows the uneven distribution of houses, with respect to proximity of the nearest turbine, with a limited number of houses within 2-3km of an individual turbine, and even fewer numbers found within 1km of a turbine location. The analysis finds a robust and significant reduction in property value of -14.7% within 1km of a turbine. The effect increases with turbine height, count, and level of urban influence. ***However, there is evidence that the price effect decays over time, becoming insignificant after 10 years***. As well, this effect was found only on a limited subset of studied houses.

The largest study of the impact of wind farms on property values has been carried out in the United States. '*The Impact of Wind Power Projects on Residential Property Values in the United States: A multi-Site Hedonic Analysis'*, December 2009, was carried out by the Lawrence Berkley National Laboratory (LBNL) for the U.S Department of Energy. This study collected data on almost 7,500 sales of single-family homes situated within ten miles of 24 existing wind farms in nine different American states over a period of approximately ten years. The conclusions of the study are drawn from eight different pricing models including repeat sales and volume sales models. Each of the homes included in the study was visited to demonstrate the degree to which the wind facility was visible at the time of the sale, and

[29] Centre for Economic Research on Inclusivity and Sustainability (2023) Wind Turbines and House Prices Along the West of Ireland: A Hedonic Pricing Approach. University of Galway.

the conclusions of the report state that "The result is the most comprehensive and data rich analysis to date on the potential impacts of wind energy projects on nearby property values."

The main conclusion of this study is as follows:
"Based on the data and analysis presented in this report, no evidence is found that home prices surrounding wind facilities are consistently, measurably, and significantly affected by either the view of wind facilities or the distance of the home to those facilities. Although the analysis cannot dismiss the possibility that individual or small numbers of homes have been or could be negatively impacted, if these impacts do exist, they are either too small and/or too infrequent to result in any widespread and consistent statistically observable impact."

This study has been updated by LBNL who published a further paper entitled 'A Spatial Hedonic Analysis of the Effects of Wind Energy Facilities on Surrounding Property Values in the United States', in August 2013. This study analysed more than 50,000 home sales near 67 wind farms in 27 counties across nine U.S. States yet was unable to uncover any impacts to nearby home property values. The homes were all within 10 miles of the wind energy facilities - about 1,100 homes were within 1 mile, with 331 within half a mile. The report is therefore based on a very large sample and represents an extremely robust assessment of the impacts of wind farm development on property prices. It concludes that: "Across all model Specifications, we find no statistical evidence that home prices near wind turbines were affected in either the post-construction or post announcement/pre-construction periods."

Both LBNL studies note that their results do not mean that there will never be a case of an individual home whose value goes down due to its proximity to a wind farm – however if these situations do exist, they are considered to be statistically insignificant. Therefore, although there have been claims of significant property value impacts near operating wind turbines that regularly surface in the press or in local communities, strong evidence to support those claims has failed to materialise in all the major U.S. studies conducted thus far.

A further study was commissioned by RenewableUK and carried out by the Centre for Economics and Business Research (Cebr) in March 2014. The findings of the study were produced in a report titled 'The Effect of Wind Farms on House Prices' and its main conclusions are:

- Overall, the analysis found that the county-wide property market drives local house prices, not the presence or absence of wind farms.

- The econometric analysis established that construction of wind farms at the five 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.

In September 2023, the Energy Policy Journal published 'Commercial wind turbines and residential home values: new evidence from the universe of land-based wind projects in the United States.'[30] This study targeted urban counties in the United Stated with populations over 250,000 persons, and found that on average, after a commercial wind energy project is announced, houses located within 1 mile of a proposed wind energy project experience a decrease in value of 11% relative to homes located within 3-5 miles of the proposed wind energy project. The decline in property values was found to recover post construction with property value impacts becoming relatively small (~2%) and statistically insignificant 9 years or more after project announcement (roughly 5 years after operation begins). This suggests that the housing market is reacting negatively to the expectation of likely impacts (after announcement) and the heightened activity during construction, but after operation begins, those negative perceptions and related home price impacts appear to fade.

Although there have been no empirical studies carried out in Ireland on the impacts of wind farms on property prices, the literature described above demonstrates that at an international level, wind farms have potential to impact property values in local areas; however, it is important to note that this impact is proven to reduce throughout the operational phase of a wind farm.

A study issued in October 2016 'Impact of wind Turbines on House Prices in Scotland' (2016) was published by Climate Exchange. Climate Exchange is Scotland's independent centre of expertise on climate change which exists to support the Scottish Governments policy development on climate and the transition to a low carbon economy.

The report presents the main findings of a research project estimating the impact on house prices from wind farm developments. It is based on analysis of over 500,000 property sales in Scotland between 1990 and 2014.

[30] Energy Policy (2023) *Commercial wind turbines and residential home values: New evidence from the universe of land-based wind projects in the United States*. Available at: https://www.sciencedirect.com/science/article/pii/S0301421523004226 (Accessed: 9th March 2026).

The key findings from the study are:

- No evidence of a consistent negative effect on house prices: Across a very wide range of analyses, including results that replicate and improve on the approach used by Gibbons (2014), we do 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 2km or 3km or find the effect to be positive.
- Results vary across areas: The results vary across different regions of Scotland. Our data does not provide sufficient information to enable us to rigorously measure and test the underlying causes of these differences, which may be interconnected and complex.

Correspondingly, a 2024 study by BiGGAR Economics looked at house price trends of properties in close proximity to Scotland's Beauly-Denny electricity transmission line, which runs overhead for more than 130 miles from north of Inverness to near Falkirk. The study examined house prices along the Beauly-Denny route since it became operational in 2015, finding that they had mirrored wider trends of the four local authority areas it passes through. Since 2015, house prices have surged across the local authorities of Highland, Perth and Kinross, Stirling, and Falkirk, with properties along the Beauly-Denny power line matching this growth. A similar rate of growth can be seen in house prices across South Lanarkshire, East Renfrewshire and Dumfries and Galloway, all of which host a significant number of wind farms. This again suggests broader macroeconomic factors are the primary determinant of house prices, and that visible energy infrastructure does not have a prominent influence.

It is a reasonable assumption based on the available international literature, that the provision of a wind farm at the proposed location would not impact on the property values in the area.

5.3.9 Major Accidents and Natural Disasters

The baseline condition of the receiving environmental with respect to Major accidents and Natural Disasters has been discussed in a separate chapter, **Chapter 20: Major Accidents and Natural Disasters**

5.3.10 Electromagnetic Interference

To gather information on communication networks in the area, the Broadcasting Authority of Ireland, 2rn Broadcasting, Commission for Communications Regulation, Eir Limited, RTE

Transmission Network, Tetra Ireland Communications and Vodafone Ireland, were consulted. Responses are found in **Chapter 1: Introduction, Table 1.8:** Scoping Responses Received on The Project.

5.4 ASSESSMENT OF POTENTIAL IMPACTS

As outlined in **Section 5.1** the potential impacts of the Project on the Population and Human Health factors, is measured from the perspective of the receptors. The receptors for this study are habitable dwellings and community area. In this study **sensitive receptors** are those dwellings and amenities/ communities (39 dwellings) with 1km of a proposed turbine location.

5.4.1 Population and Settlement Patterns

The Project does not contain a housing or services element and is not considered to have any direct 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. For the construction and decommissioning phase the impact on the population is considered to be **positive, short-term, not significant/imperceptible**. For the operational phase, the impact is considered to be **imperceptible** in terms of population.

The settlement patterns and social patterns may be of benefit to the region in terms of the ability to provide electricity to industry and business in a high-quality supply. This will lead to the region becoming more attractive to business with the subsequent benefit of increased employment opportunities in the region. A renewable energy supply could potentially be attractive for companies looking to develop in County Roscommon and be located in the vicinity of the Wind Farm Site. The predicted effect on the immediate settlement patterns and social patterns during the construction and decommissioning phase is **short-term, slight/ not significant/ imperceptible**. For the operational phase, the impact is considered to be **neutral, long-term, slight.**

The overall impact is considered to be **neutral and imperceptible** in terms of population and settlement patterns.

5.4.2 Economic Activity

During the construction phase, there would be economic effects resulting from the expenditure on items such as site preparation, site construction works, purchase and delivery of materials, plant, equipment, and components. Based on information provided by the Applicant and on the estimated construction activities expected on this site due to the

site size and characteristics, there is expected to be a peak on site workforce of up to approximately 61 workers. Some of these workers would be sourced from the local labour market in Study Area 2, and professional and skilled personnel may be required to be sourced from areas inclusive of Study Area 3 or even further afield.

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

BVG Associates carried out extensive assessments on the economic benefits from eight onshore wind farms in Southwest Scotland[31]. 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 windfarm OMS and also the decommissioning supply chain.

Based on this research and the largest capacity being installed, the CAPEX for the Project is estimated to be approximately € 94.05 million. This expenditure will result in economic benefit at a national, regional and local level. The OPEX (based on a 35-year project lifetime period) in nominal terms is estimated to be €110- €125 million over the lifetime of the Project. The BVG report found, for the eight projects studied, that 66% of the total project spend (CAPEX & OPEX) was retained within the National economy, 17% of the total was retained in the local region hosting the project.

Roscommon County Council will benefit from payments under both the Project Contribution Scheme and from the annual rate payments. The Applicant is also committed to a 'Community Benefit Fund'. The Community Benefit Fund belongs to the local community. The premise of the fund is that it should be used to bring about significant, positive change in the local area. To make this happen, the first task will be to form a benefit fund development working group that clearly represents both the close neighbours to the project as well as nearby communities. This group will then work on designing the governance and structure of a community entity that would administer the Community Benefit Fund. The types of projects and initiatives that could be supported by such a Community Benefit Fund could include youth, sport and community facilities, schools, educational and training initiatives, and wider heritage, and environmental projects. The number and size of grant

[31] BVG Associates (2017) Economic Benefits from Onshore Wind Farms. September 2017. Available at: https://bvgassociates.com/wp-content/uploads/2017/09/BVGA-18510-Economic-impact-onshore-wind-report-r3.pdf (Accessed: 9th March 2026).

allocations will be decided by a Community Fund liaison committee with various groups and projects benefiting to varying degrees depending on their funding requirement, further details can be found in **Appendix 1.2 Community Engagement Report**.

During the construction and decommissioning phase of the Project, the overall impact is predicted to be **positive, moderate and short-term** impact and **positive, moderate and long-term** during the operational phase.

The overall impact is considered to be **positive and moderate** in terms of economic activity.

5.4.2.1 Embedded Measures

The Applicant has a long track record of developing renewable energy projects and experience from previous wind farm construction projects is that expenditure in local goods and services is widely spread and makes a difference to existing businesses. The Applicant 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 Energy Good Practice Guide', (2023)[32] and 'Local Supply Chain Opportunities in Onshore Wind' (2014)[33].

The Applicant 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 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. Though, it is expected, on the basis of previous renewable developments in Ireland that local and regional suppliers of a wide range of goods and services will benefit from such a development (in this case, Roscommon and Ireland as a whole).

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.

[32] Local Partnerships (2023) Renewable Energy Good Practice Guidance 2023. Available at: https://www.local.gov.uk/publications/renewable-energy-good-practice-guidance-2023 (Accessed: 9th March 2026).

[33] Renewables UK (2012) Onshore Wind. Direct and Winder Economic Impacts. Available at: https://assets.publishing.service.gov.uk/media/5a74dfc7ed915d502d6cbaec/5229-onshore-wind-direct--wider-economic-impacts.pdf (Accessed: 9th March 2026).

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

Indirect: Employment and other outputs created in other companies and organisations that provide services to the Project, (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 Galway 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 employee incomes and other ripple effects that occur as a result of the direct and indirect effects of the Project.

The Project will create local employment opportunities throughout the construction, operational and decommissioning phases. These opportunities include local contractors being employed, local suppliers being sourced when possible and employment due to increased activity in local businesses, such as restaurants, hotels and accommodation, shops and delicatessens.

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)

	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 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 local 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 Project, this translates to c.21 new long-term jobs for a 62.7MW powered installation.

According to Institute for Sustainable Futures document (2015)[34], 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, up to c.200 combined jobs (i.e. direct, indirect, & induced) could be created during the construction phase (although the capacity of the Project is not fixed, this is based on an estimate of a range of likely capacity of 62.7MW).

The Sustainable Energy Authority of Ireland' 2015 report 'A Macroeconomic Analysis of Onshore Wind Deployment to 2020'[35] estimated a combined total of 2.46 jobs per MW installed are created from a new wind farm. This includes direct, indirect, induced, and investment demand jobs. SEAI split these 2.46 jobs per MW out into different categories as show in the below **Figure 5.1**. Of the 2.47MW jobs per MW, SEAI estimate 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 up to 67 jobs could be created as a result of the construction of the Project.

[34] Institute for Sustainable Futures (2015) Calculating Global Energy Sector Jobs – 2015 Methodology Update. Available at: https://opus.lib.uts.edu.au/bitstream/10453/43718/1/Rutovitzetal2015Calculatingglobalenergysectorjobsmethodology.pdf (Accessed: 9th March 2026).

[35] Sustainable Energy Authority of Ireland (2015) A Macroeconomic Analysis of Onshore Wind Deployment to 2020. Available at: https://www.seai.ie/publications/A-Macroeconomic-Analysis-of-Onshore-Wind-Deployment-to-2020.pdf (Accessed: 9th March 2026).

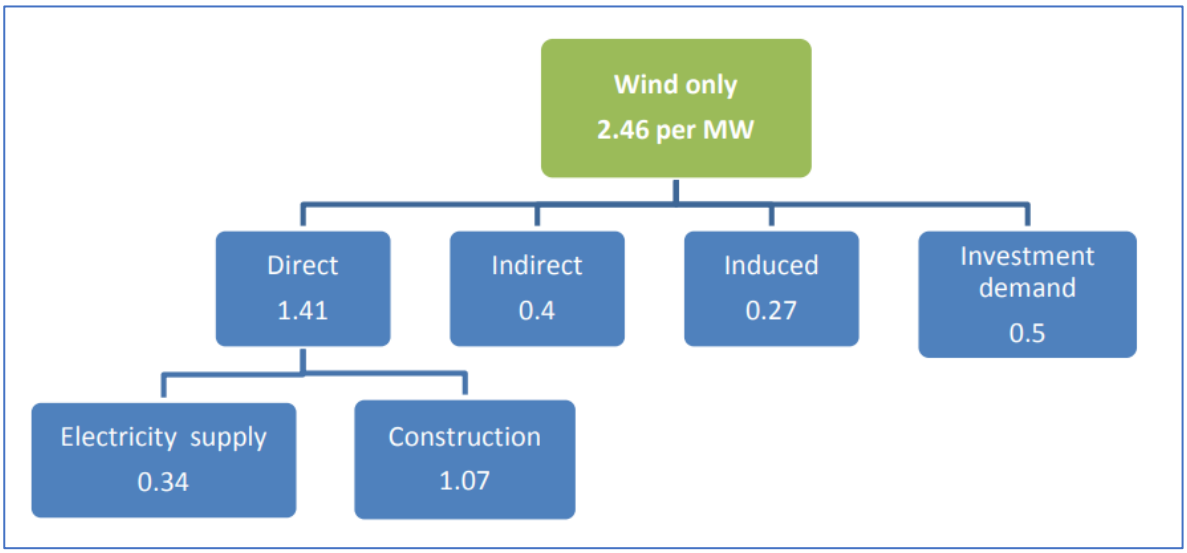

Figure 5.1 Wind only- direct, indirect, induced and investment demand jobs per MW[36]

Therefore, considering the estimated construction periods and possible capacity range', it is estimated that up to 200 direct and indirect jobs could be created during the construction phase of the 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.

An estimated breakdown of the potential construction employment is as follows:

Table 5.6: Estimated Employment breakdown during the construction phase of the Project

Occupation/Task	No. of People	Employment Period
Foundation team	8	12 weeks
Tracks & Hardstands (truck drivers)	8	36 weeks
Plant drivers	4	45 weeks
Foreman	1	50 weeks
Engineer	1	50 weeks
Engineer	2	10 weeks
Electrical Substation (Civils)	10	10 weeks
Electrical Substation (Electrical)	9	16 weeks

[36] Sustainable Energy Authority of Ireland (2015) A Macroeconomic Analysis of Onshore Wind Deployment to 2020 – Figure 9, p.19. Available at: https://www.seai.ie/sites/default/files/publications/A-Macroeconomic-Analysis-of-Onshore-Wind-Deployment-to-2020.pdf (Accessed: 9th March 2026).

Occupation/Task	No. of People	Employment Period
Foreman	2	16 weeks
Turbine Delivery, Installation and Commissioning	10	8 -10 weeks
Turbine Commissioning	3	8 weeks
General operatives	3	45 weeks

As outlined above, between 44 and 61 workers are estimated to be employed during the peak of the construction phase of civil engineering of the Site Access Roads, Wind Turbine Hardstands, Turbine Foundations, and Onsite Substation construction. These numbers will be 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 (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 Wind Farm Site over a number of months and during these times will likely use local accommodation and restaurants and other facilities.

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 to be **negligible** and **not significant,** the benefits to individual businesses will be **substantial** and **significant**.

The Project will create approximately 21 jobs during the operational phase, across several disciplines. During the operation phase of the wind farm, the operation and reliability, maintenance (turbines, civil works and electrical 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 Project 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[37]

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 contractual agreements	Construction and Maintenance material suppliers: • Local shops • Food providers • Accommodation providers
Electrical Works Contractor	Insurance	Plant Hire companies
Civil Works Contractor	Accountancy	Telecom provider
Utility	Safety Consultants	
	Community Liaison Officer	
	Environmental Monitoring • Noise • Ornithology • Habitat Management	

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

The impact is predicted to be a **moderate, positive, short-term** impact during the construction and decommissioning phase of the Project and **slight, positive long-term** during the operational phase.

Overall, there is expected to be a **slight, positive, long-term** impact on employment in the area.

[37] Irish Wind Energy Association (2019) *Life-cycle of an Onshore Wind Farm.* Ionic Consulting. Available online at: https://www.iwea.com/images/files/iwea-onshore-wind-farm-report.pdf [Accessed 24/09/2024]

5.4.4 Land Use and Topography

The majority of existing land use in the environs of the Wind Farm Site is agriculture, peat harvesting, and commercial forestry, and one-off dwellings and ribbon development. The Project will result in a change of land use. To facilitate the construction of access tracks, civil works and turbine hardstands and to implement the required ecological buffers, approx. 43.7 ha out of 233 ha of commercial forestry will need to be permanently clear-felled, subject to a felling licence. The rest of the Wind Farm Site is currently predominantly used for agricultural and commercial forestry.

There will be no impact on land use outside the EIAR Boundary. There will be no long-term impact on the TDR. Similarly, there will not be any long-term impact on the Grid Connection, as it is outside the Wind Farm Site the Grid Connection will remain as road. 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.

A new afforestation area outside the ecological zone of Influence of the Project will be identified. An afforestation licence will be required to this ensure the afforested lands are identified, assessed and licenced appropriately by the relevant consenting authority.

The impact is predicted to be **negative, long-term and slight** throughout construction, operational and decommissioning phase of the Project.

5.4.5 Tourism

Fáilte Ireland published guidelines in 2011 for the treatment of tourism in an EIAR, which describes the effects of 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[38] to assess the perceived impacts of windfarms on potential future visits to an area. The study found that 12% of those surveyed, responded that windfarms 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

[38] Fáilte Ireland (2012) Visitors' Attitudes on the Environment – Wind Farms. Available at: https://www.failteireland.ie/FailteIreland/media/WebsiteStructure/Documents/3_Research_Insights/4_Visitor_Insights/WindFarm-VAS-(FINAL)-(2).pdf?ext=.pdf (Accessed: 9th March 2026).

negative impact' and 15% stated it would have a 'slight negative impact'. The survey also found that windfarms were noted as more favourable than other forms of development such as housing, mobile phone masts or electricity pylons.

Based on historical examples and findings of the BiGGAR Economics report (mentioned in **Section 5.3.5.3**) there is not expected to be any direct relationship between the tourism sector growth and this development.

Based on the findings of the collective assessments, it is considered that the Project will not give rise to any significant effects. Overall effects of the Project with regards to tourism are considered to be **short-term, slight, negative** during both construction and decommissioning phases and **long-term**, **slight positive** impact during operation.

5.4.6 Human Health

5.4.6.1 Electromagnetic Fields

In 2014 a study was undertaken in Canada[39], 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".

As outlined in **Section 5.3.7.2**, the International Commission on Non-Ionising Radiation Protection (ICNIRP) Guidelines give a limit of 100 µT for sources of AC magnetic fields. Given the limit of 100 µT for sources of AC magnetic fields, a comparison of between 0.02 µT and 0.41 µT arises when turbines operate under "high wind" scenarios, indicating that electromagnetic activity from wind turbines are extremely low. Refer to **Section 5.4.8** (Health Impact Studies), which includes references to effects of Electromagnetic fields on Human Health.

Electromagnetic fields from other sources will also occur during the construction, operation and decommissioning of the Project. Sources include power tools used during construction and decommissioning and from wind farm infrastructure, including the Grid Connection and Electrical Substation. These EMFs are very localised and are considered to have an **imperceptible, negative and short-term** effect during the construction and

[39] Lindsay C McCallum, *et al*. (2014) *Measuring electromagnetic fields (EMF) around wind turbines in Canada: is there a human health concern?*

decommissioning phases and **imperceptible, negative and long-term** during the operational phase.

5.4.6.2 Shadow Flicker

Shadow Flicker will only occur during the operational phase of the Project. 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 the wind turbine rotation is such that it should not cause a significant risk to health.

The implementation of mitigation to cease operation of the turbines during periods of potential shadow flicker will ensure that shadow flicker effects do not exceed the 2006 or draft 2019 Guidelines at any sensitive receptor within the Study Area.

As such, shadow flicker considered to have a **neutral, imperceptible, long-term effect** during the operational phase.

Chapter 17: Shadow Flicker provides an impact assessment of the potential for shadow flicker from the Project.

5.4.6.3 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 construction process associated with wind farms is not considered intensive and any noise emitted within the construction phase is intermittent and temporary and mostly carried out a considerable distance from receptors. The main noise sources will be associated with the construction of the turbine foundations, turbine hardstands, grid connection, with lesser sources being site access roads, construction of a 110kV substation and compound and works at turbine delivery nodes. The main construction traffic to Site will be over a short period where trucks will deliver stone around the Wind Farm Site and ready-mix trucks deliver concrete for the turbine bases. The delivery of turbines by large trucks travelling at very low speed will generate very low levels of noise.

With setback distance aligning with the draft WEDG (2006) and draft WEDG (2019), no significant impact on Population and Human Health is anticipated. **Chapter 13: Noise** provides an impact assessment of the potential for Noise from the Project.

5.4.6.4 Air Quality

There are no such emissions associated with the operation of wind turbines. However, additional traffic and minor traffic delays or disruption to the public is likely at specific times during the construction and Decommissioning phases, resulting in a slightly higher portion of pollutants in the atmosphere. **Chapter 18: Air Quality** provides an assessment of air quality in relation to the Project.

The significance of potential effects of the Project on air quality has been assessed as having the potential to result in **slight, negative** and **temporary/short-term effects** on air quality during construction and Decommissioning. There will be **no significant** effect on air quality during construction and Decommissioning.

The avoidance of the production of electricity from coal, oil, peat or gas-fired power stations, will lead to a **slight, positive and long-term** effect on air quality during the operation phase.

The Project has been assessed as having **no significant** direct or indirect effects on air quality during the construction, operation or Decommissioning phases of the Project.

Potential cumulative effects were assessed as having a cumulative **long-term, significant, positive effect** on air quality.

5.4.6.5 Water Contamination

Contaminants such as sediments arising from the Project have the potential to contaminate water bodies designated for drinking water purposes, impacting on human health. Mitigations as set out in **Chapter 11: 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'. Any contaminants will be treated when water is abstracted for drinking water purposes.

Chapter 11: Hydrology and Hydrogeology provides an assessment of the hydrological impacts in relation to the Project, including the potential for water contamination. The significance of the potential effects of the Project on water contamination is specified in

Section 11.7 of **Chapter 11: Hydrology and Hydrogeology**. The range of possible effects are all graded below major or moderate significance and are therefore not considered to be 'significant' in accordance with the EPA Guidance 2022. Furthermore, there is no likelihood of significant cumulative effects over and above any pre-existing effect caused by existing, proposed or consented projects.

5.4.6.6 Traffic

It is proposed that the turbine nacelles, tower hubs and rotor blades will be landed at Galway Port, County Galway and will be transported on the N83 and N17, then N5 east towards the Wind Farm Site entrance. It is expected that the impact of increased traffic on Population and Human Health due to delivery of turbine parts will be minimal as for the most part, turbine component transport will take place during the night hours.

TDR: The active construction areas for the road works along the TDR outside the EIAR Boundary will involve only surface-level earthworks (removal of soil and unconsolidated rock) and will be temporary in nature. The proposed TDR works associated with the Project are **negligible** and will not have any long-term negative effects on the factors considered in this section.

Grid Connection: The Grid Connection works associated with the Project will potentially impact on the Human Health and Population factors considered within this section, both by means of the construction phase and the operation phase, where general maintenance of the grid connection infrastructure such as joint bays will be carried out when required over the life span of the wind farm. For these works, a traffic management plan will be agreed with the Local Authority and access priorities given to local residents where possible. The effect of the proposed Grid Connection works has been included in the assessment of the construction and operational phase of the Project. Viewed independently however, the Grid Connection works are considered **negative, long-term and not significant/ imperceptible.**

During the construction phase, there will be increased traffic to and from the Project, as detailed in **Chapter 16: Traffic and Transport.** Traffic Management Plans will be agreed in advance with the Local Authority and where possible, access priorities given to local residents. There is expected to be a minimal amount of traffic delays or disruption to the public, at specific times during the construction and decommissioning phases.

Chapter 16: Traffic and Transport provides a detailed assessment of the traffic impacts in relation to the Project. The summary of effects as referenced in **Section 16.7** and include:

Following assessment of the quality of effects on the public road network, it has been concluded that the quality of effects will be neutral with increased traffic flows during the construction and Decommissioning of the Project with no permanent changes to the horizontal or vertical geometry of the public road network and its associated junctions.
Following assessment, it has been concluded that the significance of the effects on the public road network where traffic management / two-way traffic flows can be maintained during works has been assessed as slight.

Following assessment, it has been concluded that the duration of effects relating to increased HGV traffic flows in the vicinity of the Wind Farm Site and Grid Connection works have been assessed as temporary and may last up to 18 months during the construction and Decommissioning of the Project, the maximum effects from increased HGV traffic flows will occur on 11 days during the 18 month construction period during the construction of Turbine Foundations.

Following assessment, it has been concluded that the duration of effects relating to enabling works on the TDR and delivery of the Wind Turbine components have been assessed as temporary lasting less than one year.

The assessment takes account of proposed mitigation measures embedded in the design and implementation during the construction, operation and Decommissioning of the Project. The potential effects of the Project are considered to be **Slight / Moderate** on the local road network and **Slight / Moderate** on the national and regional road network during the construction of the Project. The potential effects of the project on traffic during the operation of the Project are considered to be **Not Significant** on the public road network. The potential effects of the Project on traffic and transport during the Decommissioning of the Project are considered to be **Slight / Moderate** on the local road network and **Slight / Moderate** on the national and regional road network.

5.4.6.7 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 20: Major Accidents and Natural Disasters 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".

5.4.6.8 Health Impact Studies

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

To date, the most comprehensive multi-disciplinary, multimillion-dollar field study (including surveys and objective health measurements as opposed to relying solely on self-reported symptoms) was conducted by Health Canada (the Canadian equivalent of the U.S. Department of Health and Human Services). Health Canada found that self-reported sleep issues, illnesses, and stress were "not found to be associated with WTN exposure." Health Canada has published a series of peer-reviewed scientific publications over the past eight years consistently concluding that living adjacent to wind turbines does not pose a public health risk[40].

Most recently, in April 2022, the Ohio Department of Health (ODH) released a review and summary of the available scientific literature regarding wind turbines and public health between 2004 and 2018. ODH concluded that "*there is no significant body of peer-reviewed, scientific evidence that clearly demonstrates a direct link between adverse physical health*

[40] Health Canada (2013–2018) Wind Turbine Noise and Health Study: Scientific Journal Publications. Available at: https://www.canada.ca/en/health-canada/services/health-risks-safety/radiation/everyday-things-emit-radiation/wind-turbine-noise/scientific-journal-publications-environmental-workplace-health.html (Accessed: 9 March 2026).

effects and exposures to noise (audible, LFN, or infrasound), visual phenomena (shadow flicker), or EMF associated with wind turbine projects[41]."

Frontiers in Public Health published a study[42] in 2014 on wind turbines and human health. This review completed a bibliographic-like summary and analysis of the science around 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 (NHMRC), Australia's leading medical research body, have 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 and is further refuted by a review carried out by the NHMRC that wind turbines cause these sorts of symptoms.

The review began in late 2012 and included a literature and background review of all available evidence on the exposure to the physical 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 bias and confounding could be possible explanations for any reported association.

[41] Ohio Department of Health (2022) Wind Turbines and Wind Farms: Summary and Assessments.
[42] Knopper, L.D., *et al*. (2014) Wind turbines and human health.

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 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 the wind turbine rotation is such that it should not cause a significant risk to health.

There are no specific health and safety considerations for local populations in relation to the operation of a wind turbine. Noise and Shadow Flicker are operational Health and Safety issues and have been addressed in **Chapter 13: Noise** and **Chapter 17: Shadow Flicker**.

5.4.6.9 Turbine Safety

The Department of the Environment, Heritage and Local Government (DoEHLG)'s '*Draft Revised Wind Energy Development Guidelines December 2019'* 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 reasons. 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 (FRP's) or unsaturated polyester, a non-conducting material which will prevent any likelihood of an increase in lightning strikes within the Wind Farm Site or the local area. Lightning protection conduits will be integral to the construction of the turbines. Lightning conduction cables, encased in protection conduits, will follow the electrical cable run, from the nacelle to the base of the turbine. The conduction cables will be earthed adjacent to the turbine base. The earthing system will be installed during the construction of the turbine foundations. 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.

5.4.7 Property Value

The effects to Property values have been reviewed and assessed within **Section 5.3.8**. Based on the evidence from a number of these published studies, the operation of a wind farm at the Wind Farm Site is considered to not significantly affect property values in the area. The Project will have a **medium-short-term imperceptible** impact on property values.

5.4.8 Electromagnetic Interference

An assessment of the existing communication networks in the receiving environment showed that one Vodafone Fresnel zone (receive antenna) could potentially be affected by the Project. This has the potential to impact on Population and Human Health by obstructing communication networks. Full details are provided in **Section 14.6** of the EIAR in **Chapter 14: Material Assets**. However, this has been considered in the design of the wind farm the proposed turbine coordinates will not impact the Fresnel zone.

Electromagnetic fields from the wind farm infrastructure and power tools used during construction and decommissioning of the wind farm, are very localised and are considered to have a **negative, imperceptible, short-term effects.**

As there are potential effects on the Population due to the possibility of the proposed infrastructure obstructing communication networks the effects are considered to the **negative, slight** and **long term.**

5.4.9 Do-Nothing Scenario

If the Project was not to proceed, the existing uses of the site for agriculture, peat extraction, and commercial forestry would continue, there will no additional electro-magnetic interference. There would be no short-term impact on 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 contribute to Ireland's 2030 80% renewable electricity target and ultimate 2050 target of net-zero emissions. The opportunity to generate local employment, increase local economic activity and provide environmental benefits, such as cleaner air, would also be lost.

5.5 MITIGATION MEASURES AND RESIDUAL EFFECTS

Although no negative impact of significance has been established, there are a number of measures which may be implemented for the health and safety of the public and the workers during the construction, operational and decommissioning phases. Mitigation measures are additional to the standard / design measures (embedded mitigation) which are considered as part initial assessment of significance.

5.5.1 Embedded Mitigation

The Project, as described in **Chapter 2: Project Description**, incorporates good practice measures for limiting adverse effects of the construction works. The principal potential effects on human health 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 16: Traffic and Transport** relating to how delivery of goods and services will be managed during works to minimise impacts and details of mitigations and the use of Sustainable Drainage Systems can be found in **Chapter 11: 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 Construction Traffic

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. Measures are set out in **Chapter 16: Traffic and Transport** relating to how delivery of goods and services would be managed during works to minimise impacts. The proposed mitigation measures have been outlined in **Chapter 16: Traffic and Transport - Section 16.4**.

5.5.3 Population and Settlement Patterns

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

5.5.4 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, operational and decommissioning phase of the Project and therefore no mitigation measures are required to reduce or remedy any adverse effect.

5.5.5 Employment

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

5.5.6 Land Use and Topography

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.

In this regard, the construction and operational footprint of the Project has been kept to the minimum necessary to avoid impact on existing land uses. Furthermore, existing forestry tracks have been incorporated into the design to minimise the construction of new Site Access Roads and minimise the removal of forested areas. New Site Access Roads have been sensitively designed to minimise impact on forestry. Electricity cables will be installed underground in or alongside Site Access Roads to avoid and minimise negative impact. 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.

Chapter 16: Traffic and Transport will be referred to for all proposed works and deliveries along the turbine delivery route to avoid undue impact to adjacent land uses.

5.5.7 Tourism

Mitigation measures for recreation, amenity and tourism are primarily related to the preliminary design stage of the Project, 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 Project, careful consideration was given to the potential impact on landscape amenity and setback distances from sensitive receptors.

5.5.8 Human Health and Safety

5.5.8.1 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 Project

will be designed, constructed, operated and decommissioned in accordance with the following:

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

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

All activities carried out by the appointed Contractor on the Project will be in accordance with the requirements of the Safety, Health and Welfare at Work Act 2005 as amended and Regulations made under this Act.

All hazards will be identified, and risks assessed prior to any construction. The Health and Safety Manager will monitor the construction phase of the project and ensure works are being carried out in accordance with the agreed method statements, safety procedures and pollution control measures, as outlined in the **Construction Environmental Management Plan (CEMP), Appendix 2.1** to the EIAR. The CEMP is a live document that is reviewed and updated as required throughout the life cycle of the project works.

Safe Pass (a mandatory safety awareness training programme for construction workers) registration cards are required for all construction, delivery and security staff. Construction operatives will hold a valid Construction Skills Certificate Scheme card where required for activities such as scaffolding, tower crane operation etc. The Applicant 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.

Where elimination of the risk is not feasible, appropriate mitigation and/or control measures will be followed. A summary of all pre-empted mitigation measures has been outlined in **Chapter 21: Interactions of the Foregoing** of the EIAR. 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.

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 will be temporarily closed in sections to the public for the eighteen months 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.

All pre-empted mitigation measures have been outlined in **Chapter 21: Interactions of the Foregoing, Appendix 21.1** of the EIAR. Once mitigation measures, including health and safety measures are implemented and followed, the potential for impact on human health for members of the public and construction workers during construction and decommissioning of the Project is expected to be **not significant and temporary to short-term**.

5.5.8.2 Operation

For operation and maintenance staff working at the proposed wind farm, appropriate site safety measures as detailed in this section 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 Project are designed to ensure compliance with electro-magnetic fields (EMF) standards for human safety. At pre-construction phase, an Electrical Interference Assessment shall be carried out.

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 Project'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, and
- Emergency services present and required

All pre-empted mitigation measures have been outlined in **Chapter 21: Interactions of the Foregoing, Appendix 21.1** of the EIAR. Once mitigation measures, including health and safety measures are implemented and followed, the potential for impact on human health for members of the public and construction workers during the operational phase of the Project is expected to be **not significant**.

5.5.9 Human Health

5.5.9.1 Accidents/Disasters (incorporating Health & Safety)

Accidents to Personnel

Potential risks to personnel were identified in **Chapter 20: Major Accidents and Natural Disasters.** Current legislation relating to the Health and Safety, outlined in **Section 5.5.8.1** are designed to assist in the management of risks associated with the construction, operation, maintenance and decommissioning phase of windfarm projects.

As required under the Safety, Health, and Welfare at Work (Construction) Regulations 2013, the Client shall appoint a Project Supervisor for the Design Process (PSDP) and a Project Supervisor for the Construction Stage (PSCS). The PSDP shall compile a Preliminary Safety and Health Plan (PSHP), which details general information about the project and envisaged health and safety risks. The PSHP shall be made available to the PSCS. The PSCS shall develop a Construction Stage Health and Safety Plan (CSHSP) which incorporates the information contained in the PSHP and details how safety and health will be managed during the construction of the project. The PSCS may also develop the following documents for the construction stage:

- Construction and Environmental Management Plan
- Emergency Response Plan
- Detailed Traffic Management Plan

Accidents to Infrastructure

The PSDP shall ensure the General Principles of Prevention are taken into account for all designs relating to the project.

On very rare occasions, the structural integrity of wind turbines has failed. This is an extremely rare occurrence and, given that the turbines will be designed and installed by an experienced turbine contractor and are located well away from public roads and dwellings in line with the DoEHLG Draft Revised Wind Energy Development Guidelines (2019), it is not considered that, in the unlikely event of an accident of this type, any significant impacts to population or human health would result.

Potential accidents, such as a risk of incident during haulage, a fire on site or the risk of a turbine structural failure is assessed to be a **slight, negative, long-term effect.**

5.5.9.2 Construction and Decommissioning

A summary of all pre-empted mitigation measures for the protection of Human Health (EMI, noise, shadow flicker, air quality, water contamination and traffic) have been outlined in **Chapter 21: Interactions of the Foregoing** of the EIAR and discussed in individual chapters; **Chapter 11: Hydrology and Hydrogeology, Chapter 13: Noise**, **Chapter 18: Air Quality**, **Chapter 17: Shadow Flicker**, **Chapter 14: Material Assets** and **Chapter 16: Traffic and Transport.**

5.5.9.3 Operation

All measures outlined in **Section 5.5.8.2** also apply directly to Human Health operational phase mitigation measures. In addition, 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.

Shadow flicker detection systems will be installed on all turbines to mitigate and cease operation of the turbines during periods of potential shadow flicker and will ensure that no shadow flicker effects are experienced at any sensitive receptor.

The wind farm system shall include a kill switch that can be operated at any time with an overriding manual shutdown system in case of an emergency.

All pre-empted mitigation measures have been outlined in **Chapter 21: Interactions of the Foregoing** of the EIAR and discussed in individual chapter, as outlined in previous section. Once mitigation measures, including health and safety measures are implemented and followed, the potential for impact on human health for members of the public and construction workers during operational phase of the Project is expected to be **not significant.**

5.5.9.4 Residual Risk

Once the mitigation established for the construction, operation and decommissioning stages of the project, as detailed in this Chapter of the EIAR and other EIAR Chapters, namely **Chapter 11: Hydrology and Hydrogeology, Chapter 13: Noise**, **Chapter 18: Air Quality**, **Chapter 17: Shadow Flicker**, **Chapter 14: Material Assets and Other Issues** and **Chapter 16: Traffic and Transport** are taken into account, the residual risk on human health is assessed to be an **imperceptible, long-term** effect.

5.5.10 Cumulative Effects

An assessment of the potential cumulative effects of the Project in combination with other existing, approved or proposed plans and projects has been carried out in line with Annex IV of the EIA Directive as amended which provides that the EIAR must contain a description of the likely significant effects of the project on the environment resulting from the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources.

A radius of 20km for larger scaled projects for cumulative impact assessment was used as the study area as derived from the Wind Energy Development Guidelines (2006)[43] and Draft Wind Energy Guidelines 2019[44].

All existing and approved large-scale projects and large-scale projects in the public domain which are awaiting a decision from a planning authority within 20km of the Project were considered for potential Cumulative Assessment in all other chapters of this EIAR. This measurement was taken from the outermost turbines of the Project. A 20km distance was considered appropriate due to the size and extent of the proposed wind farm and the nature of the potential effects as detailed throughout the EIAR. All of the relevant projects with potential to create cumulative impacts have been included in **Chapter 2: Project Description** in **Section 2.3.3**.

Wind Farms

The nearest permitted wind farm to the Wind Farm Site is Leam Wind Farm comprising of two turbines located 6.8km to the west of the Wind Farm Site. The nearest operational Wind

[43] Wind Energy Development Guidelines (2006) https://www.gov.ie/en/publication/f449e-wind-energy-development-guidelines-2006/ [Accessed 24/09/2024]
[44] Draft Wind Energy Development Guidelines (2019) https://www.gov.ie/en/publication/9d0f66-draft-revised-wind-energy-development-guidelines-december-2019/ [Accessed 24/09/2024]

Farm is Roosky Wind Farm comprising 2 No. wind turbines located 13.6km to the north-west of the Wind Farm Site.

The Project will contribute to the offset of burning of fossil fuels which has the potential to positively impact human health. The cumulative impact of the Project can be predicted to be an **Imperceptible, long-term positive** impact on Human Health reducing fossil fuel consumption locally. Further details can be found in **Chapter 18: Air Quality** and **Chapter 19: Climate**. The cumulative impact of the Project can be predicted to be an **Imperceptible, short-term negative** impact on tourism and amenity during construction. There is predicted to be a **short-term**, **low to moderate positive** impact in terms of employment from the Project.

There are no proposed or operational wind farms within a 2km range of the turbines that may cause cumulative effects to Electromagnetic fields (**negative, imperceptible, short-term)** effects**.**

Gas Network

The presence of underground gas networks directly could potentially pose cumulative effects. For instance, the construction and maintenance of the gas infrastructure might disrupt the surrounding environment, including the land used for the wind farm. Additionally, there could be safety concerns if there's any interaction between the gas infrastructure and the wind turbines. Furthermore, environmental impacts could arise from any leaks or emissions associated with the gas networks, affecting air and water quality in the area this has been assessed in detail in **Chapter 20: Major Accidents and Natural Disasters**.

The risk of working in close proximity to the gas line was taken into consideration when designing the project, the required setback distances outlined by Gas Networks Ireland were adhered too for all site infrastructure[45]. The cumulative impact of gas lines around the Project and the surrounding area can be predicted to be an **Imperceptible and likely to be neutral.**

5.6 Summary of Significant Effects

The significant effects of all aspects of the construction, operation and decommissioning of the Project (Wind Farm Site, TDR and Grid Connection) on the receiving environment in terms of Population and Human Health, namely, economic activity, employment, land use,

[45] Gas Networks Ireland: Code of Practice for Working in the Vicinity of the Transmission Network - Procedure No: AO/PR/127- Rev 3 Date: May 2021

tourism and human health (EMI, noise, shadow flicker, air quality, water contamination and traffic) has been assessed individually and cumulatively, with respect to the sensitive receptors. Sensitive receptors are defined as dwellings and amenities/ communities (39 dwellings) within 1km of a proposed turbine location. The assessment has not identified any likely significant effects from the Project on population and human health.

5.7 Statement of Significance

This chapter has assessed the significance of potential effects of the Project on population and human health. There are no likely significant effects for the Project, alone or cumulatively. Through the implementation of mitigation measures, the cumulative effects associated with the Project are predicted to be not significant.