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 on Population and Human Health including the proposed grid connection and turbine delivery routes assessed as part of this EIAR (**Chapter 2: Project Description**). This chapter includes a description of the existing environment in respect of population and human health and considers the likely effects arising from the Project during the construction, operation and decommissioning under the following headings:

- Population and Settlement Patterns
- Economic Activity
- Employment
- Land Use and Topography
- Tourism
- Human Health
- Property Value

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.

Table 5.1: Common Acronyms

Glossary of Common Acronyms	
EIAR	Environmental Impact Assessment Report
BSc	Bachelor of Science
BSc (Hons)	Bachelor of Science (Honours Degree)
C_6H_6	benzene
Cd	Cadmium
CDP	County Development Plan
CH_4	methane
CO	carbon monoxide
CO_2	Carbon dioxide
CSO	Central Statistics Office
dB	Decibel (s)
DoEHLG	Department of Environment, Heritage and Local Government
ED	Electoral Division
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement (now known as EIAR)
ELF	Extremely low frequency

Glossary of Common Acronyms	
EMF	Electromagnetic Fields
EPA	Environmental Protection Agency
EU	European Union
GCR	Grid Connection Route
GDP	Gross Domestic Product
GIS	Geographical Information Systems
ICNIRP	International Commission on Non-Ionising Radiation Protection
km	Kilometer(s)
kV	KiloVolt
m	Meter(s)
MD	Municipal District
MSc	Master of Science
MW	MegaWatt(s)
Ni	Nickel
NITP	Northern Ireland Tourist Board
NO	Nitrogen Oxide
NO_2	Nitrogen Dioxide
NOx	Nitrous oxides
NPF	National Planning Framework
O_3	Ozone
PM	Particulate matter
PM_{10}	Particulate matter (less than 10 micrometers)
$PM_{2.5}$	Particulate matter (less than 2.5 micrometers)
PPE	Personal Protective Eqipment
RSES	Regional Spatial and Economic Strategy
SCADA system	Supervisory Control and Data Acquisition system
SO_2	Sulphur dioxide
SOx	Sulphur oxides
SuDS	Sustainable Drainage Systems
TDR	Transport Delivery Route
TWh	TeraWatt hour(s)
UK	United Kingdom
WEDG	Wind Energy Development Guidelines

5.1.2 Statement of Authority

This Chapter has been prepared by David Kiely, Shirley Holton and Kathlyn Feeney, of Jennings O'Donovan & Partners Ltd. (JOD).

David Kiely is a Director of JOD who 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) and has over 40 years' experience. He has extensive 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. David is the key technical reviewer in the preparation of this EIAR.

Shirley Holton is an Environmental Scientist with over 3 years' experience in coordinating EIARs for renewable energy developments. She graduated with a First-Class Honours Degree (BSc. Hons) in Environmental Science from the Institute of Technology, Sligo. She was also awarded the Governing Body award for a BSc in Environmental Protection. Shirley's key capabilities include project management; using software such as WindPRO 4.1 and ArcGIS Pro; and the preparation of planning applications, Environmental Impact Assessment Reports, Feasibility Studies, Construction & Environmental Management Plans and management plans relating to surface water, peat, spoil and waste.

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.

5.1.3 Relevant Legislation and Guidance

The Population and Human Health section of this EIAR is carried out in accordance with legislation and guidance contained in **Chapter 1: Introduction, Scoping and Consultation** and **Chapter 4: Planning Policy Context**.

Safety, Health & Welfare at Work

The design and construction of the Project including the installation of associated equipment such as switchgear and Onsite Substation and Control Building etc. is governed by the

Safety, Health and Welfare at Work Act 2005 (as amended)[1], the Safety, Health and Welfare at Work (General Application) (Amendment) (No. 2) Regulations 2021[2] and also by the Safety, Health and Welfare at Work (Construction) Regulations 2013 (as amended)[3].

Assessment of Effects on the Environment

The Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment Section 1.2.2 of the Directive states that:

"It is intended that the consideration of the effects on populations and on human health should focus on health issues and environmental hazards arising from the other environmental factors, for example water contamination, air pollution, noise, accidents, disasters, and not requiring a wider consideration of human health effects which do not relate to the factors identified in the Directive".

Wind Energy Development Guidelines

The Wind Energy Development Guidelines (DoHLG, 2006) offer advice to planning authorities on planning for wind energy through the development plan process and in determining applications for planning permission. Planning authorities are to have regard to same. The guidelines are also intended to provide a consistency of approach throughout the country in the identification of suitable locations for wind energy development and the treatment of planning applications for wind energy developments.

The Draft Wind Energy Development Guidelines (WEDGs) were published in 2019, however the current version dated 2006 remain valid until the revised, final version of the Draft WEDGs (DOHLGH, 2019) are adopted by the government. The draft guidelines set out how wind energy is to be delivered in accordance with best practice and in particular, in partnership with people living in areas local to proposed developments. The Draft guidelines, provide a roadmap as to how Ireland's 2030 climate commitments can be met and ultimately move the country towards a position of net zero emissions by 2050. The key aspects for the draft proposed wind energy guidelines involving population and human health include the following:

- Effects on tourism and recreational activities

[1] Safety, Health and Welfare at Work Act 2005 https://www.irishstatutebook.ie/eli/2005/act/10/enacted/en/print
[2] the Safety, Health and Welfare at Work (General Application) (Amendment) (No. 2) Regulations 2021 https://www.irishstatutebook.ie/eli/2021/si/619/made/en/print#:~:text=The%20Regulations%20amend%20the%20Safety,as%20part%20of%20work%20practices.
[3] S.I. No. 291/2013 - Safety, Health and Welfare at Work (Construction) Regulations 2013 https://www.irishstatutebook.ie/eli/2013/si/291/

- A visual amenity setback of 4 times the turbine height between a wind turbine and the nearest residential property, subject to a mandatory minimum distance of 500 metres
- The elimination of shadow flicker
- The application of a more stringent noise limit, consistent with World Health Organisation standards
- The introduction of new obligations in relation to community engagement with local communities along with the provision of community benefit measures.

EIAR Guidelines for the Consideration of Tourism and Tourism Related Projects, Fáilte Ireland, July 2023.

'The consideration of tourism projects within the Population and Human Health is extensive, with impacts ranging from rural employment population impacts of seasonal tourism, to the health impact of air pollution from increased traffic in urban areas.

The impact upon tourism can be considered within this section through the sensitivities of Hospitality, Safety and Pace of Life. Changes in population can impact the perception of pace of life or safety in a particular location. Impacts upon these issues in areas which rely heavily on tourism or have a particular sensitive tourism generator should be considered in this section. The EPA guidelines makes reference to amenity " which may be relevant under 'Population and Human Health' and 'Landscape'".'

5.1.4 Assessment Structure

In line with the EIA Directive, and EPA guidelines 'Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR)[4]' (published May 2022) the structure of this chapter is as follows:

- **Assessment Methodology and Significance Criteria** – a description of the methods used in Baseline 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., local electoral areas and County Cork, based on a desk-based study using Central Statistics Office (CSO) data
- **Assessment of Potential Effects** –identifying the ways in which the population and human health of the area could be affected by the Project
- **Mitigation Measures and Residual Effects** – a description of measures recommended to avoid, prevent, reduce or, if necessary, offset any potential significant

[4] https://www.epa.ie/publications/monitoring--assessment/assessment/guidelines-on-the-information-to-be-contained-in-environmental-impact-assessment.php

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 developments to affect the population and human health
- **Summary of Significant Effects**
- **Statement of Significance**

Section 1.2.2 of the EIA Directive (outlined in **section 5.1.3** of this chapter) amalgamates the findings of other assessments as part of the EIA process. Potential interactions with the effects identified in the following chapters have been assessed:

- **Introduction, Scoping and Consultation** in **Chapter 1**
- **Soils and Geology** in **Chapter 8**
- **Hydrology and Hydrogeology** in **Chapter 9**
- **Noise** in **Chapter 10**
- **Traffic and Transportation** in **Chapter 14**
- **Air and Climate** in **Chapter 15**
- **Shadow Flicker** in **Chapter 16**

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

All activities carried out by the appointed Contractor on the Proposed Development 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.

5.1.5 Scope of the Assessment

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

- Population and Settlement Patterns
- Economic Activity and Tourism
- Employment
- Topography and Land Use
- Health Impacts of Wind Farms
- Property Value
- Natural Disaster and Major Accidents (see also **Chapter 17: Major Accidents and Natural Disasters**).

Where a significant negative impact can be foreseen, it is prevented, reduced, avoided or, if necessary, offset by way of practical mitigation measures. This assessment considers the following factors:

- Sensitive receptors in the area
- Existing land use in the area
- General amenities in the area
- Potential effects from water, noise, shadow flicker, air quality and traffic.
- Effects on the linguistic and cultural heritage of the Gaeltacht including the promotion of Irish as the community language

5.2 ASSESSMENT METHODOLOGY

In line with the EIA Directive, EPA guidelines (2022) and IEMA EIA guidelines (2022)[5] this chapter includes the following elements:

- Details of Methodologies utilised in the context of legal and planning frameworks.
- Baseline Descriptions
- Assessment of Potential Effects (construction, operational and decommissioning stages)
- Detailed Mitigation Measures
- Assessment of Cumulative Impacts
- Summary of Significant Effects and Statement of Significance

Criteria for the determination of sensitivity (e.g. 'high', 'medium' or 'low') or of importance (e.g. 'international', 'national', 'regional', or 'authority area') have been established based on prescribed guidance, legislation, statutory designation and or professional judgement.

The statutory criteria (EPA 2022) for the assessment of impacts require that impacts are described with respect to their magnitude, nature (e.g. negative, positive, or neutral), transboundary nature (if applicable), intensity and complexity, probability, duration, frequency, reversibility, cumulation and possibility of reducing the effects). The descriptors used in this chapter are those set out in Guidelines on the information to be contained in Environmental Impact Assessment Reports, 2022.

Baseline Conditions:

A desk study was undertaken to describe the Baseline conditions of the receiving environment across a range of Population and Human Health factors and are presented in section 5.3 of this chapter. Where Central Statistics Office (CSO) data is available, these

[5] Institute of Environmental Management and Assessment (IEMA) Guidelines to: Determining Significance for Human Health in Environmental Impact Assessment. November 2022.

data are assessed by Study Area; within the locality of the Proposed Development and compared with both the County and National CSO data. These Study Areas are described in section 5.2.2 of this chapter. This assessment has been carried out using latest available Central Statistics Office (CSO) data[6], information and maps from the current Cork County Development Plan 2022-2028. Consideration was also given to the 2015[7] report produced by the EPA 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.

The following items were assessed in this EIAR chapter:

- Population and Settlement Patterns
- Economic Activity
- Employment
- Land Use and Topography
- Tourism
- Human Health
- Property Value

Assessment of Potential Effects:

The potential impacts of the Proposed Development are assessed as documented in section 5.4 of this chapter. The potential impacts are classified as outlined in **Table 1.6** of **Chapter 1: Introduction, Scoping and Consultation** (as prescribed in the EPA Guidelines, 2022). Typically, for each impact assessed the quality of the impact, for example, positive or negative, the significance of the impact, for example, slight or moderate and the duration of the impact, for example, short-term, medium-term, long-term are assigned. If potentially significant adverse effects are identified, the proposed practical mitigation measures assessed to prevent, reduce, avoid or, if necessary, offset such effects are documented in section 5.5 of this chapter.

5.2.1 Definition of Study Areas

Four 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 Project are used to assess local impacts within this chapter, as it is these areas that will be impacted

[6] CSO (2022) Census Interactive Map. Available online at: https://visual.cso.ie/?body=entity/ima/cop/2022 [Accessed on 16 July 2024]
[7] Golder Associates (2015) *Investigation into the Assessment of Health Impacts within National Environmental Regulation Processes*. Available online at: http://www.epa.ie/pubs/reports/research/health/assessmentofhealthimpactsreport.html [Accessed on 09 May 2024]

the most by the Proposed Development. The local Study Area 1 lies within Study Area 2 (County Cork). Study Area 3, The Southwest Region, has been included is this assessment as Study Areas 1 and 2 fall within this Strategic Planning Area of the Southern Regional Assembly. Study Area 4 (Republic of Ireland) provide national baseline statistical data for this chapter.

The four Study Areas are described in more detail below:

Study Area 1: **The Project and Environs – Electoral Divisions (EDs) Bealanageary, Douce and Garrown (153 km^2).**
In order to make inferences about the population and other statistics in the vicinity of the Site, Electoral Divisions (EDs) were analysed.

The majority of the Proposed Development falls under the Municipal District (MD) of West Cork, the remainder come under the MD of Macroom. The location of the Site falls within the Electoral Divisions of Bealanageary, Douce and Garrown, while the Grid Connection Route options (as part of the Project) fall within the EDs mentioned above and also Bealock, Coolmountain, Aultagh, Manch, Carrigboy and Dunmanway South EDs. The 18 areas along the Turbine Delivery Route (TDR) (also part of the Project) which require works in third party lands fall within Aultagh and Kealkill EDs. Each ED can be separated into distinct townlands.

The Proposed Development is predominantly situated within An Seithe Bheag (Shehy Beg), Gortloughra, Cloghboola and Inchiroe townlands.

Grid Connection Route Options and Onsite Substation and Control Building
While not part of this planning application, two Grid Connection Route Options and an Onsite Substation and Control Building have been included in the assessment of the overall project. The Onsite Substation and Control Building is located within the Red Line Boundary although it is subject to a separate planning consent process.

The Grid Connection Route Options are as follows: (Option A) Dunmanway 110 kV Substation or (Option B) Carrigdangan 110 kV Substation.

In order to assess potential impacts on population and human health along the Grid Connection Route Options, a review of properties and planning applications in the vicinity of the proposed works was carried out, with the majority of developments along the routes comprising one-off houses.

The land-use along both Grid Connection Route Options comprise mainly transport, and surrounding land use is mainly agriculture with some areas of peat harvesting and forestry. There is an existing 110 kV overhead line which runs south and east from Grid Connection Route Option A. The active construction area for either of the Grid Connection Route Options will be small and transient in nature as the construction itself is a rolling operation of opening the road, laying the joint bays and cable and closing the road behind the cable- further information is contained in **Chapter 2: Project Description**.

Turbine Delivery Route

While not part of this planning application, this EIA also assesses the works at 18 No. locations along the TDR from Port of Cork (Ringaskiddy) to the Site.

To assess potential impacts on human beings and human health along the TDR, a review of properties and planning applications in the vicinity of the TDR was carried out (**Appendix 2.4**). Most developments along the TDR comprise one-off houses. The nearest Large-Scale Development to the TDR is for quarrying activities at an existing quarry (Cork County Council Ref 205074) which is located approximately 0.42 km from the N22 at its nearest point. 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.

Study Area 2: **Cork County** (7,316 km^2).

County Cork was chosen as a study area to examine and conclude the extent of effects (if any) on the population and human health within the county as a result of the Project.

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

Study Area 2 falls within Study Area 3: The Southwest Region. The Southwest Region consists of Cork City, Cork County and Kerry County. The Southwest Region is a Strategic Planning Area of the Southern Regional Assembly.

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

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

Descriptive terminology for impact assessment follows the systematic method of description of the EPA Guidelines (2022), as outlined in **Chapter 1: Introduction, Scoping and Consultation**, **Table 1.4**.

[8] https://www.southernassembly.ie/the-assembly [Accessed: 02 Oct 2024]

5.2.2 Consultation

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

Table 5.2: Summary of Consultation response on Human Health

Consultee	Type and Date	Summary of Consultee Response
Environmental Health Service (Dept. of the HSE)	Email in Response to Scoping Report received on 11/01/2022 (**Appendix 1.3**)	Response Received 11/01/2022: Recommendations were made on *Assessment of Consideration of Alternatives, Noise and Vibration, Shadow Flicker, Air Quality, Climate, Surface and Ground Water Quality* and *Geological Impact. (*Addressed respectively in Chapters 3, 10, 12, 8 and 9). The Environmental Health Service (EHS) recommended that the matters of Public Consultation and Decommissioning Phase were included and assessed in the EIAR (Addressed in Chapter 1). A section on *public consultation* further recommended that the applicant develop a dedicated website for the proposed wind energy project. All correspondence, maps, project updates and documentation, including the EIAR, should be uploaded to this site (Addressed in Chapter 1). A section on *Opportunity for Health Gain* recommended that the proposed development should be assessed with a view to the potential to include opportunities for health gain within the site of the proposed wind farm by including greenways, cycle-paths or walking trails within the development site. A section on *Ancillary Facilities* recommended that the EIAR should include details of the location of all site office, construction compound, fuel storage depot, sanitary accommodation and canteen, First Aid facilities, disposal of wastewater and the provision of a potable water supply to the site canteen (Addressed in **Chapter 2: Project Description**).

Consultee	Type and Date	Summary of Consultee Response
		A section on *Cumulative Impacts* recommended that the EIAR should include a detailed assessment of any likely significant cumulative impact of the proposed renewable energy development (Addressed in Chapter 1 and in the relevant technical assessment chapters of the EIAR).
Irish Water (Now operating as Uisce Éireann)	Email in Response to Scoping Report received on 10/05/2024 (**Appendix 1.3**)	The following aspects of Water Services should be considered in the scope of an EIA where relevant; a) Where the development proposal has the potential to impact an Uisce Éireann Drinking Water Source(s), the applicant shall provide details of measures to be taken to ensure that there will be no negative impact to Uisce Éireann's Drinking Water Source(s) during the construction and operational phases of the development. Hydrological / hydrogeological pathways between the applicant's site and receiving waters should be identified as part of the report. b) Where the development proposes the backfilling of materials, the applicant is required to include a waste sampling strategy to ensure the material is inert. c) Mitigations should be proposed for any potential negative impacts on any water source(s) which may be in proximity and included in the environmental management plan and incident response. d) Any and all potential impacts on the nearby reservoir as public water supply water source(s) are assessed, including any impact on hydrogeology and any groundwater/ surface water interactions. e) Impacts of the development on the capacity of water services (*i.e. do existing water services have the capacity to cater for the new development*). This is

Consultee	Type and Date	Summary of Consultee Response
		confirmed by Uisce Éireann in the form of a Confirmation of Feasibility (COF). If a development requires a connection to either a public water supply or sewage collection system, the developer is advised to submit a Pre-Connection Enquiry (PCE) enquiry to Uisce Éireann to determine the feasibility of connection to the Irish Water network. All pre-connection enquiry forms are available from https://www.water.ie/connections/connection-steps/. f) The applicant shall identify any upgrading of water services infrastructure that would be required to accommodate the proposed development. g) In relation to a development that would discharge trade effluent – any upstream treatment or attenuation of discharges required prior to discharging to an Uisce Éireann collection network. h) In relation to the management of surface water; the potential impact of surface water discharges to combined sewer networks and potential measures to minimise and or / stop surface waters from combined sewers. i) Any physical impact on Uisce Éireann assets – reservoir, drinking water source, treatment works, pipes, pumping stations, discharges outfalls etc. including any relocation of assets. j) When considering a development proposal, the applicant is advised to determine the location of public water services assets, possible connection points from the applicant's site / lands to the public network and any drinking water abstraction catchments to ensure these

Consultee	Type and Date	Summary of Consultee Response
		are included and fully assessed in any pre-planning proposals. Details, where known, can be obtained by emailing an Ordnance Survey map identifying the proposed location of the applicant's intended development to datarequests@water.ie k) Other indicators or methodologies for identifying infrastructure located within the applicant's lands are the presence of registered wayleave agreements, visible manholes, vent stacks, valve chambers, marker posts etc. within the proposed site. l) Any potential impacts on the assimilative capacity of receiving waters in relation to Uisce Éireann discharge outfalls including changes in dispersion / circulation characterises. Hydrological / hydrogeological pathways between the applicant's site and receiving waters should be identified within the report. m) Any potential impact on the contributing catchment of water sources either in terms of water abstraction for the development (*and resultant potential impact on the capacity of the source*) or the potential of the development to influence / present a risk to the quality of the water abstracted by Uisce Éireann for public supply should be identified within the report. n) Where a development proposes to connect to an Uisce Éireann network and that network either abstracts water from or discharges wastewater to a "protected"/ sensitive area, consideration as to whether the integrity of the site / conservation objectives of the site would be compromised should be identified within the report.

Consultee	Type and Date	Summary of Consultee Response
		o) Mitigation measures in relation to any of the above ensuring a zero risk to any Irish Water drinking water sources (Surface and Ground water).
Cork County Council	Email in Response to Scoping Report received on 11/04/2022 (**Appendix 1.3**)	<u>Environment</u> *The following are the requirements of the Council's Environment Officer:* • *A map of the site showing all occupied dwellings within the 500m zone and the 1000m zone of the wind turbines.* • *Within the 500m zone and the 1000m zone of the wind turbines, the applicant should provide details of the predicted noise levels — noise levels should be 43dB or less.* • *A Waste management Plan giving details of the management of waste at the site during the construction phase shall be included*
Transport Infrastructure Ireland (TII)	Response to Scoping Report received on 06/01/2022 (**Appendix 1.3**)	The developer/scheme promoter should have regard, inter alia, to the following: • It appears that the proposed windfarm site accesses the local and regional road network prior to access to the national road network. Access to the road network shall be developed in accordance with official policy and road safety considerations, as outlined above. Consultations should be had with the relevant Local Authority/National Roads Design Office with regard to the locations of existing and future national road schemes. • TII would be specifically concerned as to potential significant impacts the development would have on the national road network (and junctions with national roads) in proximity to the proposed development. • The developer should assess visual impacts from existing national roads. • The developer should have regard to any EIAR/EIS and all conditions and/or modifications imposed by An Bord Pleanála regarding road schemes in the area. The developer should, in particular, have regard to any potential cumulative impacts.

Consultee	Type and Date	Summary of Consultee Response
		• The developer, in preparing EIAR, should have regard to TII Publications (formerly DMRB and the Manual of Contract Documents for Road Works). • The developer, in preparing EIAR, should have regard to TII's Environmental Assessment and Construction Guidelines, including the 'Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes' (National Roads Authority (NRA), 2006). • The EIAR/EIS should consider the 'Environmental Noise Regulations 2006' (SI 140 of 2006) and, in particular, how the development will affect future action plans by the relevant competent authority. The developer may need to consider the incorporation of noise barriers to reduce noise impacts (see 'Guidelines for the Treatment of Noise and Vibration in National Road Schemes' (1st Rev., NRA, 2004)). • It would be important that, where appropriate, subject to meeting the appropriate thresholds and criteria and having regard to best practice, a Traffic and Transport Assessment (TTA) be carried out in accordance with relevant guidelines, noting traffic volumes attending the site and traffic routes to/from the site, with reference to impacts on the national road network and junctions of lower category roads with national roads.

Public Consultation has been outlined in **Chapter 1: Introduction, Scoping and Consultation** and further detailed in **Appendix 1.2: Public Consultation Report**.

The decommissioning phase has been assessed throughout the entire EIAR and a Decommissioning Plan accompanies **Appendix 2.1 Construction Environmental Management Plan** as **Management Plan 6**.

Siting and location of turbines is discussed in **Chapter 3: Alternatives Considered** and **Chapter 2: Project Description**.

Human health is assessed within this chapter and in the below:

- **Chapter 8: Soils and Geology** (Geological Impacts)
- **Chapter 9: Hydrology and Hydrogeology** (Surface and Groundwater Quality)
- **Chapter 10: Noise & Vibration**
- **Chapter 15: Air Quality**
- **Chapter 14: Traffic and Transportation**
- **Chapter 16: Shadow Flicker**

With respect to the EIA Directive as amended, Section 1.6.2 (outlined in Section 5.1.3 and the Proposed Development, this amalgamates the findings of other assessments undertaken as part of the EIA process.

The cumulative impacts of the projects listed in **Chapter 2: Project Description** at **Appendix 2.4: List of Projects for Cumulative Assessment** have been assessed throughout the entire EIAR.

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

5.2.3 Impact Assessment Methodology

Descriptive terminology for impact assessment follows the systematic method of description of the EPA Guidelines (2022), as outlined in **Chapter 1: Introduction, Scoping and Consultation**, **Table 1.6**. The sensitive receptors in this Population and Human Health study are primarily people and where they reside. This is best measured by using habitable dwellings and community areas.

A total of 73 no. receptors were identified, this consists of dwellings which are all situated within 2 km of the proposed turbines. A minimum separation distance between turbines and occupied dwellings of 4 x Tip Height has been achieved where possible. This complies with the Draft 2019 WEDGs which recommend a minimum setback distance of 4 x tip height from a proposed turbine. Written consent has been obtained in the case where receptors are within 4 x tip height of a proposed turbines. There is one receptor (H67) located less than 500 m (485 m) of a proposed turbine (T7), this landowner has financial involvement in the Project. All receptors located within 2 km of the proposed turbines are shown on **Figure 1.3** of **Chapter 1 Introduction, Scoping and Consultation.**

5.3 BASELINE DESCRIPTION – RECEIVING ENVIRONMENT

5.3.1 Population and Settlement Patterns

Study Area 1: The Project and Environs (EDs Bealanageary, Douce and Garrown)

According to the 2022 census, there are no defined community settlements with a population greater than 2,500 people within a 10 km radius of the Proposed Development. Béal Átha An Ghaorthaidh (Ballingeary), the nearest settlement to the Proposed Development, is located approximately 6.3 km north of the Site and has a population of 235[9] (CSO). Inchigeelagh which is located 8.5 km northeast has a population of 136[10] (CSO). Kealkill which is located 9.5 km west has a population of 362[11] (CSO) and Dunmanway which is located 10 km southeast has a population of 1,964[12] (CSO). The nearest centre of population to the Site, as defined **in Chapter 1: Introduction**, is Cork City, which is located approximately 48 km east. According to the CSO 2022 census, there were 222,526 persons living in Cork City in 2022.

The surrounding area is comprised of agricultural sheep grazing, farmland and open mountain heath. Nearby settlements include the villages of Béal Átha An Ghaorthaidh (Ballingeary) (6.3 km north), Inchigeelagh (8.5 km northeast), Kealkill (9.5 km west) and Dunmanway (10 km southeast). The Site and a section (3.1 km) of both potential grid connection routes are located in An Gaeltacht Mhúscraí (the Múscraí Gaeltacht). This Gaeltacht is made up of four native Irish speaking communities Baile Mhúirne (Ballyvourney), Béal Átha an Ghaorthaidh (Ballingeary), Cúil Aodha (Coolea) and Oileán Cléire (Clear Island). It covers an area of 626 km^2. The Cork Gaeltacht, or Múscraí as it is

[9] https://visual.cso.ie/?body=entity/ima/cop/2022&boundary=C04160V04929&guid=b0015ff8-cedd-4702-b5c9-31c3f351e4e4
[10] https://visual.cso.ie/?body=entity/ima/cop/2022&boundary=C04160V04929&guid=9e527851-3b3e-498f-8e45-3a46cef7613f
[11] https://visual.cso.ie/?body=entity/ima/cop/2022&boundary=C04172V04943&guid=4c07d11d-fc45-851d-e053-ca3ca8c0ca7f
[12] https://visual.cso.ie/?body=entity/ima/cop/2022&boundary=C04172V04943&guid=4c07d11e-02d8-851d-e053-ca3ca8c0ca7f

known locally, has a population of 3,530 people, which is 4 per cent of the total Gaeltacht population. It covers a geographical area of 262 km squared. This represents 6% of the total Gaeltacht area.[13]

There are five windfarms within Study Area 1, namely Shehy More Wind Farm, Carrigdangan Wind Farm, Curraglass Wind Farm, Barrboy Wind Farm and Dromleena Wind Farm. Proximity of these wind farms to the Proposed Development is discussed in **Chapter 2: Project Description** and a full list of cumulative windfarms is available in **Appendix 2.4**.

Planning permissions in Study Area 1 include one off housing, alterations to existing dwelling houses, development of new housing and agricultural buildings, all of which have either been constructed or have expired. A full list of projects and plans for cumulative assessment has been included in **Appendix 1.2**.

An application of note, due to its proximity to the Proposed Development, within Study Area 1 is a planning permission for the provision of car parking for access to existing hill-walking routes at Shehy Mountain (Planning Reference: 2374). The description is as follows:
'(i) construction of parking area for bicycles, cars and small buses at Shehy Beg, Dunmanway, Co. Cork, (ii) installation of 5 no. road signs along public roads in Glanycarney, Dunmanway, Co. Cork. (iii) installation of 1 no. road sign along public road at Derragh, Dunmanway, Co. Cork and (iv) ancillary site works at Shehy Beg, Dunmanway, Co. Cork'

The application was granted on 9th of May 2023 and has since been constructed. The hill-walking routes at Shehy Mountain will be closed temporarily during the construction phase of the Proposed Development, which will have an **imperceptible, short-term** impact on the local community. Although, the closure of these trails will ensure the safety of the local community, avoiding an active construction site.

The 2022 Census statistics note that between the three Electoral Divisions within Study Area 1 there is a total population of 761 and 273 occupied residences. There were 403 No. males and 358 No. females. The population density of Study Area 1 is 5 persons per km^2.

The closest receptor (H67) is located 486 m from the nearest turbine (T8) and is involved in the project. The closest non-involved receptor, H10, is located 697 m from the nearest

[13] https://www.askaboutireland.ie/learning-zone/primary-students/looking-at-places/cork/rivers-and-mountains-of-c/cork-places/the-cork-gaeltacht/

turbine (T5). There are 67 houses within 2 km of the proposed turbines. All houses located within 2 km of the proposed turbines are shown on **Figure 1.3**.

Grid Connection Route Options

In order to assess potential impacts on population and human health along the Grid Connection Route (GCR) Options, a review of properties and planning applications within 500 m of each option was carried out, with the majority of developments along the routes comprising one-off houses. The land-use along the GCR options comprises mainly roads and transport, while the surrounding land use is mainly peat, agriculture and forestry. The active construction area for the chosen GCR will be small and transient in nature as it moves along the route. The GCR options associated with the Project (subject to a separate planning application) are not envisaged to have any long-term negative impacts on population or settlement patterns as all works along the GCR are temporary, as discussed further in **Chapter 2: Project Description**.

Turbine Delivery Route (TDR)

To assess potential impacts on human beings and human health along the TDR, a review of properties and planning applications within 50 m either side of the proposed TDR was carried out. The majority of developments along the route comprises one-off houses and agricultural buildings. The land-use along the TDR is comprised mainly of transport infrastructure, and surrounding land use is mainly agriculture with some areas of small scale peat harvesting and forestry.

The TDR passes through three defined settlements - Cork City, Farran, and Crookstown. However, all TDR works are proposed outside of defined settlement areas. The active construction areas for the road works along the TDR will involve only surface-level earthworks (removal of soil and unconsolidated rock, targeted strengthening of key road edges) and will be temporary in nature. There are two areas along the TDR where works are required for two blade transfer stations, namely Shanavalla and Castlemore. These areas can be used and reinstated with grass during operation and reactivated at decommissioning. The TDR works associated with the Project will not have any long-term negative impacts on population, human health or settlement patterns, as discussed further in **Chapter 10: Noise**, **Chapter 14: Traffic and Transport** and **Chapter 15: Air and Climate**.

Study Area 2: Cork County

The total population in the 2022 CSO for County Cork was 584,156 of which males numbered 288,845 and females were 295,311. There has been an 8% increase in the population since 2016. The population density is 79 persons per km^2. The total number of households was 240,942 in 2022, a 5% increase since 2016. Average size of households (in persons) has generally remained the same at approximately 2.8-2.9 persons per household over the past two census reports.

Cork is the largest county in Ireland with a land mass of 7,316 km^2 including Cork City. The economic performance of Cork is strong and plays a critical role in both our regional and national economies. Cork contributes 19% to the national GDP.

The extent of County Cork can be seen in **Figure 5.2**. There are a number of medium sized towns and villages geographically spread throughout County Cork. These settlements number 102 and provide essential services for the local communities and the rural hinterlands. The different settlement tiers perform differing roles with the result that no area in the county is significantly peripheral or isolated.

The increase in rural population over a 5-year period from 2011 to 2016 in Cork County was 6,946. In 2022, the towns of Carrigaline (18,239), Cobh (14,148), Midleton (13,906) and Mallow (13,456) are the most populated within the County.

Study Area 3: Southwest Region

The Regional Spatial and Economic Strategy (RSES) for the Southern Regional Assembly 2040[14] outlines the assembly's aim of reversing of town/village and rural population decline, by encouraging new roles and functions for buildings, streets and sites amongst other things. The National Planning Framework (NPF)[15] projects a population growth for the southern region of between 340,000 to 380,000, during this period, with an additional 225,000 people in employment.

RSES notes that the population living in '*aggregate rural area'* (i.e. persons living in the open countryside or in settlements of less than 1,500) are home to almost 49.15% of this region's population, and as such represent a sizeable cohort of the population. Population growth needs to be matched by the delivery of critical enabling infrastructure and services,

[14] Southern Regional Assembly, *'Regional Spatial & Economic strategy 2020-2040 (RSES)'*. Available at: https://www.southernassembly.ie/regional-planning/rses- [Accessed 09/05/2024]
[15] The Department of Housing Planning and Local Government, on behalf of the Government, 'Project Ireland 2040 - The National Planning Framework' published February 2018. Available at: https://npf.ie/project-ireland-2040-national-planning-framework/ [Accessed 09/05/24]]

thus enabling these places to grow as successful significant employment centres and service locations not only for the urban areas themselves but, importantly, for their extensive hinterlands that include smaller towns, villages and rural areas. The RSES outlines the importance for the energy sector being a regional driver of the rural economy (White Paper-Irelands transition to a Low Carbon Energy Future 2015-2030[16]). The RSES outlines a key objective relating to supporting enterprise and employment in rural areas, as set out in the Department of Heritage, Regional, Rural and Gaeltacht Affairs Action Plan for Rural Development[17], which includes the support of sectoral growth through roll out of initiatives to develop the renewable energy sector in rural Ireland.

Study Area 4: Ireland

Ireland has experienced rapid population growth in recent years with an improved standard of living and infrastructure growth resulting in a net inflow of population. The country has seen a population increased by 8% since 2016 from 4,761,865 to 5,149,139 as per the 2022 census[18]. 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[19]. The National Planning Framework (NPF) (2018) has set out its intention to facilitate a significant growth in Ireland's population by 2040. Full achievement of the targets set out in the 'Project Ireland 2040 National Planning Framework would accommodate around 1.1 million additional people residing in Ireland by 2040.

5.3.2 Economic Activity

5.3.2.1 Primary sectors

Study Area 1: Gortloughra and Environs (DEDs Bealanageary, Douce and Garrown)

The main sectors in this Study Area are professional services followed by commerce and trade. Bealanageary and Garrown have the highest proportion of the working population in the professional services, with 21% and 24% respectively. This is then followed by commerce, which employs 17% of the working population in Baelanageary and 21% of the working population in Garrown. Douce has higher portions of the population working in the agriculture, forestry and fishing sector, employing 24% of the working population. This is

[16] The Department of Communications, Energy & Natural Resources, 'Ireland's Transition to a Low Carbon Energy Future, 2015-2030' published June 2020. Available at: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.gov.ie/pdf/?file=https://assets.gov.ie/77389/e5aa9f25-da81-43eb-804d-57309615681e.pdf [Accessed 14/01/2025]
[17] The Department of Rural and Community Development 'Action Plan for Rural Development' Available at: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://assets.gov.ie/10916/951861650a4142b3a5bd0b4339f19509.pdf [Accessed 14/01/2025]
[18] Central Statistics Office (CSO), 'Census 2022 Reports'. Available at: https://www.cso.ie/en/statistics/population/censusofpopulation2022/censusofpopulation2022-summaryresults/ - [Accessed 09/05/24]
[19] The Department of Housing Planning and Local Government, on behalf of the Government, 'Project Ireland 2040 - The National Planning Framework' published February 2018. Available at: https://npf.ie/project-ireland-2040-national-planning-framework/ - [Accessed 09/05/24]

then followed by the building and construction sector, which employs 19% of the working population in Douce[20].

Study Area 2: Cork County

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

Cork also has a very significant agriculture and food sector. It has the most people employed in agriculture in the state. In 2010, the recorded numbers on farms in Cork was 14,222. This was 5.5% higher than the next highest at 13,445 in Galway[21], with a number of indigenous enterprises having a significant international presence including Dairygold and Midleton Distillery. Danone and Kerry Foods are also present in Cork and together produce approximately 8% of the world infant milk formula[22].

Study Area 3: The Southwest Region[23]

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

Study Area 4: **Ireland**

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

[20] CSO (2022) 'Census Interactive Map' https://visual.cso.ie/?body=entity/ima/cop/2022&boundary=C04167V04938&guid=2ae19629-1f4d-13a3-e055-000000000001 [Accessed online: 16/07/2024]
[21] Life in 1916 Ireland: Stories from statistics https://www.cso.ie/en/releasesandpublications/ep/p-1916/1916irl/economy/ag/ [Accessed online 09/05/2024]
[22] County Development Plan Review, Economy and Employment, Background Document No.6, Planning Policy Unit, Cork County Council (2019), chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.corkcoco.ie/sites/default/files/2022-04/economy-and-employment-pdf.pdf [Accessed online 09/05/2024]
[23] https://www.southernassembly.ie/the-assembly [Accessed: 02 Oct 2024]
[24] CSO (2022) 'Census Interactive Map' https://visual.cso.ie/?body=entity/ima/cop/2022&boundary=C03880V04631&guid=604546A1-A856-4B9B-AD46-E88B27C27155&theme=13 Accessed online: 25/10/2024

5.3.3 Employment

Study Area 1: Gortloughra and Environs (EDs Bealanageary, Douce and Garrown)

Bealanageary: The number of employed people (over the age of 15) in Bealanageary in 2022 is 108; an increase of 21.3% from 2016 (90). There are 27 people retired, a decrease of 44.4% from 2016 (39).
Douce: The number of employed people (over the age of 15) in Douce in 2022 is 100; an increase of 11.1% from 2016 (89). There are 44 people retired, a decrease of 25.7% from 2016 (35).

Garrown: The number of employed people (over the age of 15) in Garrown in 2022 is 131; an increase of 10.1% from 2016 (119). There are 36 people retired, an increase of 33.3% from 2016 (27).

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

Study Area 2: Cork County

According to the CSO 2022 there were 470,500 persons over 15 years of age in the labour force in Cork County of which 264,400 were in employment, an overall increase of 15% since 2016.

The leading employment sectors are manufacturing, health, wholesale and social work sectors which employ approximately 104,100 persons[25]. Of the 113,556 persons aged 15 years and over who were outside the labour force, 27.3% were students, 18.3% were looking after the home/family and 40% were retired. **Table 5.3** sets out labour force status in Cork County in 2022.

Table 5.3: Cork County Labour Force Status (2022)

Principal Economic Status	No. Persons
At work	161,174
Looking for first regular job	1,682
Long term unemployed	5,233

[25] Press Statement Census 2022 Results Profile 7 - Employment, Occupations and Commuting Cork, https://www.cso.ie/en/csolatestnews/pressreleases/2023pressreleases/pressstatementcensus2022resultsprofile7-employmentoccupationsandcommutingcork/ [Accessed online 10/05/2024]

Principal Economic Status	No. Persons
Short term unemployed	3,537
Student	31,048
Looking after home/family	20,833
Retired	45,484
Unable to work due to permanent sickness or disability	12,562
Other	1,947
Total	**567,100**

Study Area 3: The Southwest Region

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

Study Area 4: **Ireland**

Employment Rate in Ireland increased to 74.40 percent in the second quarter of 2024 from 73.80% in the first quarter of 2024. Employment Rate in Ireland averaged 67.23% from 1998 until 2024, reaching an all-time high of 74.40% in the second quarter of 2024 and a record low of 59.30% in the first quarter of 2012.[26]

Ireland's seasonally adjusted unemployment rate fell to 4.3% in August 2024, down from a 28-month high of 4.7% in the previous month as the number of unemployed fell by 9,800 to 124,600.[27]

5.3.4 Land Use and Topography

Study Area 1: Gortloughra and Environs (EDs Bealanageary, Douce and Garrown)

Bealanageary:

[26] Central Statistics Office (CSO) Available: https://www.cso.ie/en/index.html [Accessed 29th October 2024)

[27] Trading Economics. Available: https://tradingeconomics.com/ireland/unemployment-rate#:~:text=Irish%20Unemployment%20Rate%20Falls%20From,and%20females%20decreased%20to%204.3%25. [Accessed 29th October 2024]

Study Area 1 consists of lands which are upland, peatland, agriculture and forestry. Corine 2018[28] denotes most of the Study Area as 'Peat bogs'.

The Site, as defined in **Chapter 1: Introduction, Scoping and Consultation**, is located on relatively high ground, at elevations ranging from 243 m Above Ordnance Datum (AOD) on the northern side of the Site, 326 m at the entrance, to 510 m AOD towards the middle of the Site and 306 m AOD on the southern side of the Site. Further information on the composition of the lands in which the Proposed Development resides is found in **Chapter 8: Soils and Geology**.

Chapter 11: Landscape and Visual Amenity has included a full assessment of the Project. The Landscape Character Assessment (LCA) has located Study Area 1 in the Landscape Character Type '15a Ridged and Peaked Upland' landscape character type. The Ridged and Peaked Upland landscape type is described as having High landscape sensitivity and value. This Landscape type (according to Cork County Development Plan) is described as:

'The ridged, peaked and forested upland landscape type flanks much of the mid-western boundary of County Cork, from the vicinity of Bantry in the south to Millstreet in the north. This landscape type has been glaciated and comprises a fairly rugged and rolling mountainous topography at a relatively high elevation. The area around the Cousane Gap provides a good example of this landscape type which is inclined towards the rugged whereas the southern slopes of the Boggeragh Mountains further to the north in type 15B are a somewhat smoother example, thus adding to the openness of the moorland. These are often delineated by tight gorse hedgerows, walls, banks or post and wire fencing and punctuated by coniferous or broadleaf shelterbelts around small farmsteads. The landscape, with its rapid and steep rising and falling, seems to tumble down along the valleys. The rugged and diverse landcover, involving moorland, heath and scrub, lends a strong sense of the naturalistic. Urban settlements tend to be located on lower ground and include Ballingeary, Inchigeelagh.'

There are nine scenic routes designated in the Cork County Development Plan (2022-2028) within this landscape type. Scenic routes are discussed further in **Chapter 11: Landscape and Visual Amenity.**

Further information on landscape is found in **Chapter 11: Landscape and Visual Amenity**.

[28] Environmental Protection Agency Maps https://gis.epa.ie/EPAMaps/ [Accessed Online 10/05/2024]

Study Area 2: Cork County

The county of Cork has long east-west ridges forming uplands and hills. Less than one-third of its area is rough pasture, and farmlands climb as high as 245 m. In east and central County Cork are broad valleys and lowlands, which give way in the west to narrower valleys with coastal lowlands backed by high mountains.[29]

Study Area 3: The Southwest Region

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

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

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

The highest elevations on the peninsulas include Baurtregaum (853 m) and Brandon Mountain (953 m) on the Dingle Peninsula and Mangerton (840 m) and Carrantuohill (1,041 m) on the Iveragh Peninsula. The latter peak is the highest point in the country.[30]

Study Area 4: Ireland

Ireland has a diverse landcover, including forestry, peat bogs, grassland, sand dunes, mud flats, salt marsh, bracken, hedgerows and more, as well as man-made structures and cultivated fields.[31]

Carrauntoohil is the highest point in Ireland. The peak lies in County Kerry and is 1,041 m high. Carrauntoohil is the central peak of Mackgillycuddy's Reeks range. The lowest point in Ireland is the North Slob in County Wexford. This is an area of mudflats. The area was reclaimed in the 19th century when a sea wall was built and has an area of 1,000 hectares.[32]

[29] Britannica, 2024. Accessed 29th October 2024. [Available: https://www.britannica.com/place/Cork-county-Ireland]
[30] https://www.britannica.com/place/Kerry
[31] https://www.tailte.ie/en/blog/a-new-national-landcover-map-for-ireland.html#:~:text=The%20landcover%20of%20the%20Republic,made%20structures%20and%20cultivated%20fields.
[32] https://www.worldatlas.com/articles/the-most-extreme-points-of-ireland.html

5.3.5 Tourism

5.3.5.1 Tourist Attractions

Study Area 1: **The Project and Environs – Electoral Divisions (EDs) Bealanageary, Douce and Garrown**

The Site is located approx. 3 km northeast of the Bandon River Valley and 5 km south of the Lee River Valley. Cork County Council has held public consultation in May 2024 in relation to developing a Greenway, which may be used for cycling or walking, on sections of the Bandon River, which is hoped to '*encourage visitors to come and explore the local heritage and scenic areas of West Cork*'[33]. Both these areas are recognised as nationally significant tourism assets within the Cork County Development Plan[34]. Both valleys are important for recreational amenity, heritage and as fishery areas.

Sections of the Cork City-Beara-Gougane Barra Cycling Route traverse the northwestern side of the Site. It is a 318[35] kilometre-long route which commences in Cork City and finishes at the Beara Peninsula (Inchigeelagh) via Gougane Barra. It is a moderate 8-day (318 km) cycling route which can be broken up into ideal smaller half day (40 km) stages. This route is joined by the Pass of Keimaneigh to the west of the Site and the Beara to Breifne Way to the north.

The Beara to Breifne Way, Ireland's longest national waymarked walking/cycling trail runs 7 km north of the Site. The Way runs almost the length of the country and takes the walker and cyclist to some of its most beautiful and least explored areas; along the coast of the Beara Peninsula, across six mountain ranges, along the banks of the River Shannon and through the lake regions of Roscommon and Leitrim. The Shehy Mountains are also located to the north of the Site, which are popular for adventure related tourist activities, with trails for walking and cycling.

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

[33] https://www.corkcoco.ie/en/news/public-consultation-now-open-for-the-bandon-sections-of-the-west-cork-greenway
[34] https://www.corkcoco.ie/sites/default/files/2022-06/volume-1-main-policy-material.pdf
[35] https://www.coillte.ie/site/gougane-barra-forest-park/#:~:text=Cycle%3A%20The%20318%20kilometre%2Dlong,plant%2C%20animal%20and%20bird%20life

Grid Connection Routes (GCR) Options and Onsite Substation and Control Building

A section of GCR Option B (Carrigdangan 110 kV substation) is located along the South Lake Road designated scenic route in the Cork County Development Plan (2022-2028). This route is designated for its views of Lough Allua and surrounding mountains. The overall landscape value of the South Lake Road route is classed as Medium in the Cork CDP, meaning this landscape can accommodate development pressure although this is limited depending on scale and magnitude.

GCR Option A and the Onsite Substation and Control Building do not contain any designated scenic routes.

Turbine Delivery Route

A short section of the L8544, is designated as a scenic route (S32) which is designated for mature trees, pastoral landscape with hills in the distance. The landscape value of this route is classed as Medium.

Study Area 2: Cork County

Tourism in County Cork is an important industry based on its rich natural and built heritage. Many areas that are important to the tourism industry of County Cork owe their attraction to the exceptional quality of the landscape or particular features of the built environment[36].

There are a number of policies in the Cork County Development Plan 2022-2028 which seek to promote tourism in the county. Policy TO 1-2: Promotion of Sustainable Tourism in County Cork is '(a) *Promote a sustainable approach to the development of the tourism sector within Cork County* ….." and Policy TO 7-1: Walking/Cycling and Greenways is "*Promote the development of walking and cycling routes throughout the County as an activity for both international visitors and local tourists…*"

County Cork is home to a number of nationally recognized visitor attractions including; Blarney Castle, Fota Wildlife Park, Jameson Distillery Midleton, Charles Fort and The Titanic Experience, all of which were included in Ireland's top 50 fee charging visitor attractions according to Failte Ireland figures[37]

[36] County Development Plan 2022, Section 10, https://www.corkcoco.ie/sites/default/files/2022-06/volume-1-main-policy-material.pdf, [Accessed Online_27/06/2022]
[37]County Development Plan 2022-2028, Chapter 10, https://www.corkcoco.ie/sites/default/files/2022-06/volume-1-main-policy-material.pdf

Study Area 3: The Southwest Region

The coastline of the Southwest offers opportunity for cliff-top walks and rambles. Inland, the landscape is scarcely less rugged: throughout the region, farmland is interspersed with rocky outcrops and bogs which break up the green vistas. The Southwest Region is also home to two of Ireland's top tourist towns, Killarney and Cork which are firm favourites for first-time visitors to Ireland.[38]

Study Area 4: Ireland

Overseas tourism to the island of Ireland continued to rebound in 2023 – the first full year of trading for tourism since the pandemic – and was worth around €6 billion. All of this helped to sustain 300,000 vital jobs in communities across the island, helping to make tourism one of the island's largest indigenous industries. [39]

5.3.5.2 Tourism: Numbers and Revenue

Study Area 1:

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

Study Area 2: Cork County

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

In 2021 a Failte Ireland report[40] found that there was a total of €167 million spent by visitors to Cork, down 26% from 2019.

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

- 75% of guests staying in Cork were Irish residents.
- 3% originated from Northern Ireland.
- 22% originated from Overseas.[41]

[38] https://www.myirelandtour.com/travelguide/south-west-ireland/index.php
[39] https://www.tourismireland.com/about-us
[40] Failte Ireland, 'Irish Resident Travel by County 2019 & 2021' Accessed on: 15/01/2025. Available at: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.failteireland.ie/FailteIreland/media/WebsiteStructure/Documents/Publications/Domestic-Trips-and-Revenue-by-County-2019-and-2021.pdf?ext=.pdf
[41] Cork City Councils Local Economic and Community Plan 2023-2029 Socio-Economic Statement, Cork City Council, 2023. Available online: https://publications.corkcity.ie/view/925196156/ Accessed 29th October 2024.

Study Area 3: The Southwest Region

The South-West Region which includes the Counties of Cork and Kerry has consistently been the most popular region in Ireland outside Dublin for overseas tourist and domestic visitors[42]. Regional tourism performance figures for 2018 for the South-West Region show overseas tourist numbers for the South-West Region totalled 2,335,000 in 2019 and tourist revenue accounted for €970,000,000 from overseas tourists. Domestic visitors from Ireland and Northern Ireland accounted for 2,354,000 visits to the region in 2019, with €536,000,000 in revenue generated from domestic and Northern Ireland visitors[43]. In 2023, Cork and Kerry had a combined 3,032,000 domestic visitors, with an overall spending of €835,000,000 in both counties[44]

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

Cork is also included in 'Wild Atlantic Way" which is one of the longest defined coastal routes in the world (the closest extent of this route is located 33 km south-west of the Project). It was devised as a new 'experience' and 'destination' by Fáilte Ireland to present the West Coast of Ireland as a compelling international tourism product. It is an over-arching brand which individual destinations and businesses can trade collectively with much greater potential visibility and clarity of message in the international marketplace[45].

Study Area 4: Ireland

In 2023, the total contribution of travel and tourism to Ireland's gross domestic product (GDP) was roughly 17.7% higher than in 2019, the year before the onset of the COVID-19 pandemic. Overall, the total contribution of these industries to the country's GDP amounted

[42] Cork County Council 'Cork County Development Plan 2022' Available at: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.corkcoco.ie/sites/default/files/2022-06/volume-1-main-policy-material.pdf
[43] Failte Ireland, Key Tourism Facts 2019, March 2021, http://docstore.kerrycoco.ie/KCCWebsite/Tourism/TourismStrategy.pdf, accessed 12/05/2021https://www.failteireland.ie/FailteIreland/media/WebsiteStructure/Documents/3_Research_Insights/Key-Tourism-Facts-2018.pdf?ext=.pdf, accessed 12/05/2024
[44] Irish Resident Travel by County 2023 chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.failteireland.ie/FailteIreland/media/WebsiteStructure/Documents/Publications/irish-resident-travel-by-county-2023.pdf?ext=.pdf
[45] Wild Atlantic Way1 Operational Programme 2015-2019, Failte Ireland, August 2015, https://www.failteireland.ie/FailteIreland/media/WebsiteStructure/Documents/2_Develop_Your_Business/Key%20Projects/Wild-Atlantic-Way-Operational-Programme_1.pdf, accessed 12/05/2024

to 19.3 billion euros in 2023. This figure is expected to reach an estimated 20.4 billion euros in 2024.[46]

5.3.5.3 Tourist Attitudes to Windfarms

Wind Energy Guidelines

'The effect of wind energy development on tourism and recreational activities must be assessed. In this regard, it is desirable that the relevant regional tourist authority should be consulted. In many areas in Ireland, tourism and recreation underpin the local economy and can depend to varying degrees on the quality of the environment. Wind energy developments are not incompatible with tourism and leisure interests, but care needs to be taken to ensure that insensitively sited wind energy developments do not impact negatively on tourism potential. The results of survey work indicate that tourism and wind energy can co-exist happily.'

Tourism related consultation responses are summarised in **Table 1.6** of **Chapter 1: Introduction, Scoping and Consultation** and details of the scoping and consultation process are further included in **Appendix 1.3**. This includes Cork County Council, Department of Tourism and Fáilte Ireland. Tourism is assessed for potential effects in Section 5.4.5 and mitigation measures and residual effects are included in Section 5.5.6. The visual effects on tourism is also fully assessed in **Chapter 11: Landscape and Visual Amenity**.

Scottish Tourism Survey 2017 and 2022

BiGGAR Economics undertook an independent study in 2017, entitled 'Wind Farms and Tourism Trends in Scotland', to understand the relationship, if any, that exists between the development of onshore wind energy and the sustainable tourism sector in Scotland. In recent years the onshore wind sector and sustainable tourism sector have both grown significantly in Scotland. The findings of the report show that there is no pattern emerging that would suggest the development of onshore wind energy has a detrimental impact on the tourism sector. The report concludes by stating that 'Although this study does not suggest that there is any direct relationship between tourism sector growth and windfarm development, it does show that wind farms do not cause a decrease in tourism employment either at a local or a national level.'

[46] https://www.statista.com/statistics/941487/travel-and-tourism-s-total-contribution-to-gdp-in-ireland/

In 2021, BiGGAR Economics published research findings, on research carried out in Scotland on 44 wind farms and tourism trends[47]. This research also re-examined 28 wind farms constructed between 2009 and 2015 that had been analysed in the previous 2017 study, 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.

Fáilte Ireland Surveys 2007 and 2012

In 2007 Fáilte Ireland, in association with the Northern Ireland Tourist Board (NITB), (67 wind farms established in Ireland at the time) carried out a survey of both domestic and overseas holidaymakers to Ireland to determine their attitudes toward windfarms. The purpose of the survey was to assess whether or not the development of windfarms 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 between 2007 and 2012.

The 2007 research, presented in the Fáilte Ireland Newsletter 2008/No.3 entitled '*Visitor Attitudes on the Environment: Wind Farms'*, found that the majority of visitors felt that wind farms had either no impact (49%) or a positive impact (32%) on the landscape, whilst only 17% felt they had a negative impact. The updated study was published in the 'Fáilte Ireland Newsletter 2012/No.1 entitled '*Visitor Attitudes on the Environment: Wind Farms – Update on 2007 Research*'. The 2012 research indicated an increase in the polarisation of opinion – with increased positive (47%) and negative responses (30%) and less neutral responses (23%). It was notable that those interviewed who did not see a wind farm during their trip held more negative perceptions and opinions on windfarms to those that did. Of the wind farms viewed the majority (59%) contained less than ten turbines, 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

[47] BiGGAR 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 28/08/2024]

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%).

As part of the study, visitors were 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 2012, 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.

Coastal areas (91%) followed by mountain moorland (83%) and fertile farmland (81%) 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. 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.

5.3.6 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 (**Chapter 16: Shadow Flicker** and **Chapter 10: Noise and Vibration**) in addition to air quality (**Chapter 15: Air and Climate**) and water contamination (**Chapter 9: Hydrology and Hydrogeology**). Potential effects on human health are included in Section 5.4.6 and mitigation measures as well as residual effects are included in Section 5.5.7.

5.3.6.1 General Health of Population

The overall health of the population in each Study Area is summarised in **Table 5.4,** this gives an indication of the Baseline health within each Study Area prior to the Proposed Development.

Table 5.4: Population by General Health (CSO, 2022)

General Health	Study Area 1: The Project and Environs – Electoral Divisions (EDs) Bealanageary, Douce and Garrown	Study Area 2: Cork County	Study Area 3: The Southwest Region	Study Area 4: Ireland
	Percentage (%)			
Very good	51	55	54	53
Good	32	29	30	30
Fair	10	8	8	9
Bad	1	1	1	1
Very bad	<1	<1	<1	<1
Not stated	5	6	6	7

Study Area 1: The Project and Environs – Electoral Divisions (EDs) Bealanageary, Douce and Garrown

The health status of Study Area 1 (**Table 5.4**) for the majority of the population (51%) is 'Very good' or 'Good' (32%). Overall, 93% of the population have stated that their health is

'Fair' or better ('Good' or 'Very good'). Less than 2% of the population have stated that their health is 'Bad' or 'Very bad'.

Study Area 2: Cork County

The "Very Good" health status for County Cork at 55% is just above the national average (53%) and is the highest of all the Study Areas. The second highest rating for health is 'Good' at 29% of the population of County Cork. Overall, 92% of the population of Study Area 2 have stated that their health is 'Fair' or better. Less than 2 % of the population have stated that they have 'Bad' or 'Very bad' health. This is illustrated in **Table 5.4.**

Study Area 3: The Southwest Region

Study Area 3 shows health statuses similar to that of Study Area 1 and Study Area 2 (**Table 5.4**). The majority of the population for Study Area 3 consider their health to be 'Good' (30%) or 'Very good' (54%). Overall, the population consider their health to be 'Fair' or better (92%). Again, less than 2% of the population consider their health to be 'Bad' or 'Very bad'.

Study Area 4: Ireland

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

The 2022 census data for the general health of the population as shown in **Table 5.4** indicates the health status across three of the study areas is "Very Good" to "Good". Overall, in Ireland, the percentage of people reporting their health status as either very good or good has fallen from 87% in 2016 to 83% in 2022.

5.3.6.2 Electromagnetic Interference

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

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

National and international health and scientific agencies (as cited in EMF and You) have reviewed more than 35 years of research including thousands of studies. None of these agencies have 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 for 110 kV underground cable when directly above it, 1.29 µT for 220 kV underground cable when directly above it and 11.4 µT for 400 kV AC underground cable that is one metre deep and measured directly above it. The ESB published an information booklet in 2017 called "EMF & You" which provides information about Electric & Magnetic Fields and the electricity network in Ireland[48].

5.3.6.3 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 Site.

5.3.6.4 Noise

A 2013 EPA study[49] in South Australia on low frequency noise near wind farms and in other environments, found that infrasound levels from wind turbines is insignificant and no different to any other source of noise, and that the worst contributors to household infrasound are air-conditioners, traffic and noise generated by people.

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

[48] EMF & You, ESB, 2017 - https://esb.ie/docs/default-source/default-document-library/emf-public-information_booklet_v9.pdf?sfvrsn=0, accessed 14/05/2024

[49] EPA South Australia, 2013. Wind Farms. https://www.epa.sa.gov.au/environmental_info/noise/wind_farms [Accessed 11/02/2025]

Baseline noise monitoring was then undertaken between 21st February and 21st March 2022,

Chapter 10: Noise provides an assessment of noise in relation to the Project.

5.3.6.5 Air Quality

Environmental Protection Agency (EPA, 2016)[50], EU and World Health Organisation (WHO, 2014)[51] 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). These emissions, along with others including nitrogen oxides (NO_x) and sulphur oxides (SO_x) are produced during the burning of fossil fuels for energy generation, transport or home heating. There are no such emissions associated with the operation of wind turbines.

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

Chapter 15 provides an assessment of air quality (including the impact of dusts) in relation to the Project. **Chapter 14** provides an assessment of traffic and transport.

5.3.6.6 Water Contamination

Contaminants such as sediments arising from the Project have the potential to contaminate water bodies designated for bathing and/or drinking water purposes. Mitigations as set out in **Chapter 9: Hydrology and Hydrogeology** will prevent and reduce risk of contamination of waterbodies. The drainage design and surface water network (**Appendix 2.1 Construction Environmental Management Plan, Management Plan 3: Surface Water Management Plan**) are considered in terms of assimilative capacity. Any contaminants will be treated when water is abstracted for drinking water purposes.

Mapping and searches of the Geological Survey Ireland (GSI) well databases confirm that there are no known groundwater abstraction wells located within the Redline Boundary. The closest known groundwater well is located approximately 2 km to the northeast of the Site boundary in the townland of Coolcaum.

[50] EPA 2016, Irelands Environment An Assessment 2016, Available at: https://epawebapp.epa.ie/ebooks/soe2016/files/assets/basic-html/page-1.html [Accessed 11/02/2025]
[51] WHO 2014, News release 25 March 2014, 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 11/02/2025]

Chapter 9 provides an assessment of the hydrological impacts in relation to the Project, including the potential for water contamination. A summary of potential effects has been included in Section 5.4.6.5.

5.3.6.7 Traffic

It is proposed that the turbine nacelles, tower hubs and rotor blades will be landed in the Port of Cork. From there, they will be transported to the Site via the N28, N40, N22, R585, R587 and the L8544 to the upgraded Site entrance.

To assess the impact of the Proposed Development on the existing road network when the Proposed Development is constructed and fully occupied, Baseline traffic volumes in the area are required. Jennings O'Donovan carried out classified traffic counts Wednesday 20th November 2024 to record traffic volumes and turning movements of vehicles at the R584/L4607 junction, R585/L4607 junction and at the L4607/L4608 junction.

The morning peak hour traffic period on the public road network in the vicinity of the Proposed Development are obtained from the traffic counts. The Traffic counts show that peak traffic occurs between 8.00am and 9.00am in the morning.

Chapter 14 provides an assessment of traffic in relation to the Project. A Traffic Management Plan has also been included in this EIAR as **Appendix 14.2**. A summary of potential effects has been included in Section 5.4.6.6 of this chapter.

5.3.6.8 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.

A Health Service Executive (HSE) 2017 paper 'Position Paper on Wind Turbines and Public Health' concluded that:
'*Published scientific evidence is inconsistent and does not support adverse effects of wind turbines on health. However, adequate setback distances and meaningful engagement with local communities are recommended in order to address public concern.*'

Wind Energy Development Guideline (2006) setback distances have been reached for all non-involved receptors, as shown in **Table 16.2.** A multistage approach was given to public consultation comprising webinars, in person events, newspaper advertising, door to door

public engagement and brochures / leaflet distributions, this is detailed further in **Chapter 1: Introduction**.

Frontiers in Public Health published a study[52] 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[53] 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 this sort 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.

[52] Knopper, L. D., Ollson, C. A., McCallum, L. C., Whitfield Aslund, M. L., Berger, R. G., Souweine, K., & McDaniel, M. (2014). Wind turbines and human health. *Frontiers in public health*, *2*, 63. https://doi.org/10.3389/fpubh.2014.0006
[53] Merlin, T, Newton, S, Ellery, B, Milverton, J & Farah, C (2015). Systematic review of the human health effects of wind farms, National Health and Medical Research Council, Canberra.

In general, there are no specific health and safety considerations in relation to the operation of a wind turbine. The area surrounding the turbine base will still be available for use as normal. Noise and Shadow Flicker are operational Health and Safety issues have been addressed in **Chapter 10** and **Chapter 16**.

5.3.6.9 Turbine Safety

Turbines pose no threat to the health and safety of the general public. The Department of the Environment, Heritage and Local Government (DoEHLG)'s '*Wind Energy Development Guidelines for Planning Authorities 2006*' state that there are no specific safety considerations in relation to the operation of wind turbines. Fencing or other restrictions are not necessary for safety considerations. People or animals can safely walk up to the base of the turbines. The DoEHLG Guidelines state that there is a very remote possibility of injury to people from flying fragments of ice (ice throw) or material from a damaged blade. A study[54] carried out on the failure rates of wind turbines, which was based on ~350 offshore wind turbines located throughout Europe, estimated the minor repair requirement for blades as 0.456/turbine/year and major repair requirements as 0.01 turbine/year.

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 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 Foundations. 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 (24.5 - 28.4m/s) or greater) the turbines will shut down to prevent excessive wear and tear, and to avoid any potential damage to the turbine components.

[54] Carroll, J., McDonald, A. and McMillan, D. (2015) 'Failure rate, repair time and unscheduled O&M cost analysis of offshore wind turbines', Wind Energy, 19(6), pp. 1107–1119. doi:10.1002/we.1887.

Health and safety issues are not covered in the Wind Energy Development Guidelines and are covered by separate legislation (Section 5.1.3).

5.3.6.10 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 17: Major accidents and Natural Disasters.** Health and safety issues are not covered in the Wind Energy Development Guidelines and are covered by separate legislation (Section 5.1.3).

5.3.7 Public Perception of Wind Energy

Sustainable Energy Ireland Survey 2003

The first wind farm in Ireland was completed in 1992 at Bellacorrick, Co. Mayo and since then wind farms have elicited a range of reactions from Irish people (Failte Ireland, 2012). In 2003, Sustainable Energy Ireland (SEI) now the Sustainable Energy Authority of Ireland (SEAI) commissioned a survey aimed at identifying public attitudes to renewable energy, including wind energy in Ireland[55]. A windfarm catchment area survey was also carried out by SEAI (formerly SEI) in order to focus specifically on people living with a wind farm in their locality or in areas where wind farms are planned.

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

Similar to the national survey, the surveys of those living within the vicinity of a wind farm found that the findings are generally positive towards wind farms. Perceptions of the impact of the development on the locality were generally positive, with some three-quarters of interviewees believing it had impacted positively. In areas where a wind farm development had been granted planning permission but was not yet under construction, three quarters

[55] Sustainable Energy Ireland (2003), Attitudes towards the Development of Wind Farms in Ireland, Dublin

of the interviewees expressed themselves in favour of the wind farm being built in their area. Four per cent were against the development. The reasons cited by those who expressed themselves in favour of the wind farm included the fact that wind energy is clean (78%), it would provide local jobs (44%), it would help develop the area (32%) and that it would add to the landscape (13%).

Survey Update 2017

Additionally, a survey[56] carried out by Interactions in October 2017, published by the SEAI, show 47% of Irish adults polled said they were strongly in favour of wind power in Ireland while a further 38% favour it.

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

The final section of the 2017 report states:

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

IWEA Interactions Opinion Poll on Wind Energy (2017-2022)

Interactions Research have conducted omnibus research commissioned by Irish Wind Energy Association (IWEA) (now known as Wind Energy Ireland (WEI)), in October 2017, November 2018, November 2019, November 2020 and again in December 2022 with the objective to *"measure & track perceptions and attitudes around wind energy amongst Irish adults."*

The most recent survey, conducted online in December 2022[57] sampled a representative sample of 1,017 Irish adults nationwide, together with a supplementary booster sample of 201 rural dwellers. The key findings from the survey included:

[56] Energy Research, Development and Demonstration Programme (2017), An economic analysis of wind farm externalities and public preferences for renewable energy in Ireland

[57] https://windenergyireland.com/about-wind/more-resources/annual-wind-survey

- 4 in 5 nationally (80%) are now in favour of wind power.
- 83% Agree that offshore wind farms can support Irelands energy security
- Nationally, 58% said they would be in favour of a wind farm in their area
- The top reasons for supporting wind energy were identified as:
  - Cheaper Electricity
  - Reducing CO_2 emissions
  - Good for the Environment

As a result of the ongoing research, trends in the attitudes of windfarms over the past previous years can be assessed. The survey showed that the trend in attitude amongst the nationally represented 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[58]

Ireland's 2030 targets for renewables (primarily wind, solar) in electricity generation are ambitious, essentially doubling growing from 40.7% in 2023 to 80% by 2030[59]. The electricity demand is anticipated to be between 28% and 55% higher in 2030 compared to 2018[60]. To meet the anticipated growth in electricity demand in Ireland, as well as achieve the renewable electricity policy targets, a substantial investment in electricity infrastructure is required. However, often these large new scale power system infrastructure developments face public opposition.

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

The current research shows impact of public acceptance levels for new energy infrastructure is significant. The cost of building and operating the power system could dramatically escalate if there is a sharp deterioration in the public's acceptance of new energy infrastructure. The implication for policy and the wider electricity sector is that community and stakeholder engagement should remain a top priority.

[58] Tong Koecklin, M., Longoria, G., Fitiwi, D., DeCarolis, J., and Curtis, J. (2021). Public acceptance of renewable electricity generation and transmission network developments: Insights from Ireland, Energy Policy, Vol, 151, April 2021, 112185, https://doi.org/10.1016/j.enpol.2021.112185

[59] First Look: Renewable Energy in Ireland 2023, SEAI. September 2024.

[60] https://www.esri.ie/system/files/publications/RB202105_0.pdf

Irish National Survey of Households Near New Commercial Wind and Solar Farms 2023

SEAI commissioned a national survey of the attitudes of people who live near to 50 new commercial solar or wind farm projects in Ireland. This forms part of a long-term study to understand the effects of government policies under the Renewable Electricity Support Scheme (RESS) on the public's support for Ireland's energy transition. In 2022, surveyors conducted in-person interviews on the doorstep across rural Ireland. They surveyed 1,764 households. This included 1,116 households within 5 km of a new commercial wind or solar project sites, of which 219 live within 1 km of a project site.

The results showed that 67% of respondents hold a positive or very positive view towards wind energy, while a further 73% of respondents who live <1 km of a RESS1 wind project hold positive or very positive attitudes towards wind energy. Additionally, 59% of survey respondents felt Ireland has too few wind farms.

Respondents were asked their attitudes towards wind farms planned or under development in their area (<5 km), in total 50% of those surveyed had positive or very positive attitude toward wind farm development. Of those within <1 km of a RESS1 site, 58% felt positive or very positive towards a local wind energy development, compared to 45% of those who live within 1-2 km of a potential wind energy development.

Public Consultation

Public consultation was carried out from 2019 for the Proposed Development. A detailed report on this has been appended to this EIAR as **Appendix 1.2**.

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*[61]*'*. 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

[61] Centre for Economic Research on Inclusivity and Sustainability (2023) Wind Turbines and House Prices Along the West of Ireland: A Hedonic Pricing Approach. <https://www.universityofgalway.ie/media/researchsites/ceris/files/WP-2023-01.pdf>

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 (0-5 km and 5-15 km 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 1 km of a turbine location. While the results of this study identified a potential negative price effect of -14.7% on property values within 0-1 km of a wind turbine, this was only in comparison to houses located between 5-15 km distance from the same turbine location and is only seen for properties whose housing listing is updated within 5-10 years of the turbines connection date into the national grid. Also, this effect was found only on a limited subset of studied houses and these effects were not persistent and diminished over the operational lifetime of the turbines.

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*[62]', 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 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

[62] Hoen, Ben & Wiser, Ryan & Cappers, Peter & Thayer, Mark & Sethi, Gautam. (2009). The Impact of Wind Power Projects on Residential Property Values in the United States: A Multi-Site Hedonic Analysis. Journal of Real Estate Research. 33. 10.2172/978870.

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[63]', 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 five-kilometre radius of the sites.

[63] Hoen, Ben & Brown, Jason & Jackson, Thomas & Thayer, Mark & Wiser, Ryan & Cappers, Peter. (2014). Spatial Hedonic Analysis of the Effects of US Wind Energy Facilities on Surrounding Property Values. The Journal of Real Estate Finance and Economics. 51. 10.1007/s11146-014-9477-9.

A study issued in October 2016 'Impact of wind Turbines on House Prices in Scotland[64]' (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.

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.

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*[65].' 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 3-5miles 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.

[64] ClimateExhange (2016) Impact of wind turbines on house prices in Scotland. Available at: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://scotlandagainstspin.org/wp-content/uploads/2019/08/Impact-on-house-prices-in-Scotland-2016.pdf

[65] 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

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.

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.

5.4 ASSESSMENT OF POTENTIAL IMPACTS

As outlined in Section 5.2.3, 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 (67 dwellings) within 2 km of a proposed turbine location and receptors within 100 m of GCR Options works.

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

Grid Connection Route Options: The Grid Connection works (Option A or Option B) associated with the Proposed Development 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 Junction Boxes will be carried out when required over the life span of the Wind Farm. For these works, 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 Route works (Option A and Option B) have been included in the assessment of the construction and operational phase of the Proposed Development within the following subsection. Viewed independently however, the Grid works are considered **negative, long-term** and **not significant/ imperceptible**.

5.4.1 Population and Settlement Patterns

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

The predicted effect on the immediate settlement patterns and social patterns is also **slight to non-existent**. There is however the benefit which would accrue 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, green energy supply could potentially be attractive for companies looking to develop in County Cork and be located in the vicinity of the Site.

During the construction phase, there is the potential for limited impacts on the residential amenity of the local population. These would be short-term impacts relating primarily to an increase in construction traffic causing noise, dust, and an increase in traffic volume. The levels been defined as **slight negative** in the construction and decommissioning phases and **imperceptible** in the operational phase. The impacts of construction traffic are assessed and outlined in more detail in **Chapter 14: Traffic and Transport.**

The Site is located within the Múscraí Gaeltacht area. While the construction phase will see the arrival of construction workers to the area, this will be a short-term occurrence and will not result in permanent settlement of the area by non-Irish speakers. The Project is, therefore, predicted to result in a negligible, indirect, not significant impact on the Irish language during the construction phase. Please see **Chapter 13: Cultural Heritage** for more details.

While this is not likely to result in a marked increase in settlement in the area, or a change in social patterns in the area, it should provide the provision of a secure, renewable energy source which would prove attractive to industry. This is dependent on national and global economic conditions, as well as the types of industry which may locate in the region.

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

5.4.2 Economic Activity

Construction Phase

During the construction phase, there would be economic effects resulting from the expenditure on items such as Site preparation, site access tracks, purchase and delivery of materials, plant, equipment and components. According to Institute for Sustainable Futures document[66] (2015), 3.2 jobs are created per MW of wind energy development during the

[66] 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 17th July 2024]

construction and installation phase. Based on this employment estimate, and an approximate 18-month construction phase, approximately 154 jobs could be created during the construction phase (for an installed capacity of approximately 48 MW.). Some of these workers would be sourced from the local labour market in Study Area 2, but professional and skilled personnel may be required to be sourced from areas inclusive of Study Area 3 or even further afield.

During the construction phase, 154 no. jobs are likely to be created. Local employment will be provided, as well as employment on local, national and international levels both directly and indirectly. Throughout the project lifetime, employment will be both created and maintained on local, regional, national and international levels.

It is envisaged that labour and materials will be sourced from the local area during construction where possible. Natural resources used for the construction of the Project will be sustainably sourced from properly recognised and licensed facilities. Ready-mix concrete and any crushed stone required will also be sourced from a local supplier, again subject to authorisation, and to quality and quantity being available.

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

Operational Phase

Employees also involved in the subsequent operation of the Proposed Development (see Section 5.4.3) will use local shops, restaurants and hotels/accommodation. The number of employees required during the operational phase is significantly less than that of the construction and decommissioning phases and will therefore have a negligible effect on the Region.

Decommissioning Phase

During the decommissioning phase, similar effects to those in the construction phase are envisaged.

5.4.2.1 Capital Expenditure

In 2017 BVG Associates carried out extensive assessments, on behalf of Scottish Power Renewables, on the economic benefits from eight onshore wind farms in Southwest

Scotland[67]. 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 Proposed Development is estimated to be approximately €90 million. This expenditure will result in economic benefit at a national, regional and local level. The OPEX (based on a conservative 24-year period) in nominal terms is estimated to be €105 million. 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.

Cork County Council will benefit from payments under both the Development Contribution Scheme and from the annual rate payments. The Applicant is also committed to a Community Benefit Fund, which is detailed further in **Chapter 1: Introduction, Scoping and Consultation**. This package will be advertised annually and managed by the local community or an independent body by the local community. The purpose of the community fund is to enable the local community to share in the benefits of the Proposed Development. Statkraft's community benefit funds typically support local projects, with funds allocated to projects from all aspects of the community.

During the operational phase, the land value would increase as a result of the Proposed Development, resulting in a minor beneficial effect on land use within the Site.

The overall impact is predicted to be a **moderate, positive, short-term** impact during the construction phase of the Proposed Development and **moderate, positive and long-term** during the operational phase.

5.4.3 Employment

The employment effects that are attributable to the Project can be outlined as direct, indirect and induced.

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

[67] Economic Benefits from onshore wind farms, September 2017, BVG Associates, accessed 18/05/24

filled by employees of the Developer or the appointed Contractor (or sub-contracted employees).

Indirect: Employment and other outputs created in other companies and organisations that provide services to the 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 Port of Galway; fewer indirect manufacturing jobs will be generated domestically in Ireland.

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

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 5.6**).

Table 5.6: Capital Investment breakdown for onshore wind supply (Source SEAI, 2015[68])

	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

[68] SEAI (2015) A Macroeconomic Analysis of Onshore Wind Deployment to 2020. Available at: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.seai.ie/sites/default/files/publications/A-Macroeconomic-Analysis-of-Onshore-Wind-Deployment-to-2020.pdf

manufactured materials such as cables, underground pipes, insulators and conductors are sourced from abroad.

According to SEAI[69], there are approximately 0.34 new long-term jobs per MW, which falls in line with European Wind Energy Association (EWEA) estimates for direct employment in Europe. In the case of the Proposed Development, this translates to an estimated 16 for a 48 MW powered installation.

The Proposed Development will create the most employment during the construction phase. It is estimated that 92 construction workers (not at the same time) will be employed directly during this phase. An estimated breakdown of the potential construction employment is shown in **Table 5.7**.

Table 5.7: Estimated Employment breakdown during the construction phase of the Proposed Development

Occupation/Task	No. of People (Employment Period)
Foundation team	eight (10 weeks)
Tracks & Hardstands (truck drivers)	eight (36 weeks)
Plant drivers	four (52 weeks)
Foreman	one (56 weeks)
Engineer	one (56 weeks)
Engineer	two (12 weeks)
Substation Civils	ten (10 weeks)
Substation electrical	sixteen (16 weeks)
Foreman	two (15 weeks)
General operatives	three (56 weeks)

During the peak of the construction phase of civil engineering of site access tracks, Turbine Hardstand, Turbine Foundation, and Onsite Substation and Control Building construction, 92 persons will be employed. These numbers will be somewhat less for the turbine delivery, assembly and commissioning activities. A mixture of skills will be required, including unskilled/semi-skilled/skilled manual (construction labour and machine operators), non-manual (administration roles), managerial and technical (civil, electrical, mechanical

[69] SEAI '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: 17th July 2024]

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 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 Proposed Development will create approximately two full-time jobs during the operational phase. In addition to these jobs, various personnel will be required for the successful and continued operation of the wind farm. During the operational 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 Proposed Development and will provide continuous employment for the lifetime of the wind farm. A general outline of the employment associated with the operational phase of the wind farm is outlined in **Table 5.8.**

Table 5.8: Parties involved during the operational phase[70]

Maintenance Contracts	Financial and Services Contracts	Other Stakeholders
Project Manager	Lenders	Local Community
Asset Management	PPA Provider	Local Authority (incl. rates payments)
Turbine Contractor • Transport Companies • Crane Hire • Plant and Vehicle Hire • Site Facilities	Landowner Agreements	Construction and Maintenance material suppliers: • Local shops • Food providers

[70] Irish Wind Energy Association (2019) *Life-cycle of an Onshore Wind Farm.* Ionic Consulting. Available online at: https://windenergyireland.com/images/files/iwea-onshore-wind-farm-report.pdf [Accessed 23/05/2024]

Maintenance Contracts	Financial and Services Contracts	Other Stakeholders
		• Accommodation providers
	Insurance	Plant Hire companies
	Accountancy	Telecom provider
	Safety Consultants	
	Community Liaison Officer	
Electrical Works Contractor	Environmental Monitoring • Noise • Ornithology • Habitat Management	
Civil Works Contractor		
Utility		

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

Therefore, overall, there will be a **slight positive short-term** impact on employment in the area.

5.4.3.1 Embedded measures

The Developer has a long track record of developing wind farms domestically and internationally with a globally installed onshore wind generation capacity of 4.5 TWh[71]. The Developer's 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 Developer is committed to employing good practice measures regarding maximising local procurement and will adopt measures such as those set out in the Renewables UK Good Practice 2014: 'Local Supply Chain Opportunities in Onshore Wind' (Renewable UK, 2014).

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

[71] https://www.statkraft.com/what-we-do/wind-power/

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. However, it is evident from the Developer's recent experience that local and regional suppliers of a wide range of goods and services will benefit from such a Proposed Development (in this case, Cork and Ireland as a whole).

5.4.4 Land Use and Topography

Chapter 8: Soils and Geology found that with the use of the mitigation measures proposed, the Project is not predicted to have a significant effect on the environment. It is recommended that suitable monitoring programmes are proposed and implemented to see that there is adherence to the Construction Environmental Management Plan (**Appendix 2.1**) and to the mitigation measures outlined here during construction, operation and decommissioning of the wind farm.

5.4.5 Tourism

Fáilte Ireland published guidelines[72] in 2011 for the treatment of tourism in an EIS (Environmental Impact Statement, now known as Environmental Impact Assessment Report, 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 11: Landscape and Visual Amenity**.

Fáilte Ireland published a study on 'Visitor Attitudes on the Environment' in 2012[73] 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 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 Proposed Development.

[72] Failte Ireland (2011) 'Guidelines on the treatment of tourism in an Environmental Impact Statement'
[73] Fáilte Ireland (2012) Visitors Attitudes on the Environment – Wind Farms - https://www.failteireland.ie/FailteIreland/media/WebsiteStructure/Documents/3_Research_Insights/4_Visitor_Insights/WindFarm-VAS-(FINAL)-(2).pdf?ext=.pdf [Accessed on 13/05/2024]

Landscape impacts on the S29 scenic route, as designated under Cork County DP 2022, are predicted to be substantial to moderate, but will not be significant and therefore, it can be predicted that tourism impacts on the scenic route will be moderate, negative. More information on landscape impacts can be found in **Chapter 11: Landscape and Visual Amenity.**

Based on the findings of the collective assessments, it was considered that the Proposed Development will not give rise to any significant effects. Overall effects of the Proposed Development with regards to tourism are considered to be, **slight, negative** during the construction, operational and decommissioning phases.

5.4.6 Human Health

5.4.6.1 Electromagnetic fields

National and international health and scientific agencies (as cited in EMF and You) have reviewed more than 35 years of research including thousands of studies. None of these agencies have 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.

As outlined in section 5.3.6.2, 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.

In 2014 a study was undertaken in Canada[74], measuring electromagnetic fields around wind farms and the impact on human health. The study from Canada 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".

Electromagnetic fields from wind farm infrastructure, including the Grid Connection Route Option A and Option B to Carrigdangan or Dunmanway 110 kV substation, are very localised and are considered to be **imperceptible, long-term** impact.

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

5.4.6.2 Shadow flicker

The Developer has committed that The Proposed Development will not generate any Shadow Flicker. The implementation of mitigation to cease operation of the turbines during periods of potential shadow flicker will ensure that no shadow flicker effects are experienced at any sensitive receptor within the Study Area. It is therefore considered that Gortloughra Wind Farm will comply with the Draft 2019 Guidelines.

Chapter 16 provides an impact assessment of the potential for shadow flicker from the Proposed Development.

5.4.6.3 Noise

A Baseline assessment of the existing background noise conditions was carried out, the results of which are presented in **Chapter 10** of the EIAR. A noise assessment of the operational phase of the Proposed Development has also been carried out through modelling of the Proposed Development using noise prediction software. The predicted noise levels for the Proposed Development have been compared with the existing background noise levels and the guidance levels for noise emissions from wind farms as set out by the 2006 Wind Energy Development Guidelines WEDGs[75]. The Draft Revised Wind Energy Development Guidelines of December 2019 propose noise restriction limits consistent with World Health Organisation Guidelines[76], proposing a relative rated noise limit of 5 dB(A) above existing background noise within the range of 35 to 43 dB(A), with 43 dB(A) being the maximum noise limit permitted, day or night. In summary, the noise assessment found that no properties in the Study Area are predicted to experience noise levels above 40 dB, therefore the potential effects of noise caused by the Proposed Development are considered **not significant.**

5.4.6.4 Air Quality

Chapter 15 provided an assessment of air quality in relation to the Project. The impact assessment is concluded that:

- The Project has been assessed as having the potential to result in slight, negative, temporary/short-term effects during construction.
- Potential cumulative effects were assessed as being of a **slight, negative, short-term** impact. Given that only effects of significant impact or greater are considered "significant" in terms of the EIA Regulations, the potential effects of the Proposed Development on air quality are considered **not significant**.

[75] Department of Environment, Heritage and Local Government: Wind Energy Development Guidelines, Guidelines for Planning Authorities 2006 Energy
[76] WHO (2018) Environmental Noise Guidelines - https://www.who.int/europe/publications/i/item/9789289053563 [Accessed on 23/05/2024]

- There will be slight, long term, positive effects on air quality because of the wind farm during operation.

5.4.6.5 Water Contamination

Chapter 9: Hydrology and Hydrogeology provides an assessment of the hydrological impacts in relation to the Project, including the potential for water contamination. The conclusion is referenced at **Section 9.6** and states that:

"During both the construction and operational phases of the proposed Development, activities will take place at the Site that will have the potential to significantly affect the hydrological regime or water quality at the Site or its vicinity. These significant potential impacts generally arise from sediment input from runoff and other pollutants such as hydrocarbons and cementitious substances, with hydrocarbons or chemicals spills to surface waters having the most potential for impact…

…The implementation of mitigation through avoidance principles, pollution control measures, surface water drainage measures and other preventative measures have been incorporated into the project design in order to minimise potential significant adverse impacts on water quality at the Site…

…This in turn will reduce the potential for adverse impacts on downstream designated Sites…

…Implementation of the control measures outlined in this EIAR are considered to result in a likely, neutral to negative, imperceptible to slight significance"

5.4.6.6 Traffic

Chapter 14: Traffic and Transport provides an assessment of the traffic impacts in relation to the Project. The conclusion is referenced at Section 14.7 and states that:

- The quality of effects has been assessed as neutral with increased traffic flows during the construction and decommissioning of the project with no permanent changes to the geometry of the public road network and its associated junctions.
- The duration of effects relating to grid connection works, enabling works on the turbine delivery route and delivery of turbine components have been assessed as short-term lasting less than one year. Grid connection works on the local road network requiring road closures have been assessed as negative due to the short-term disruption for public road users.

- The significance of the effects has been assessed as slight on the public road network where traffic management / two-way traffic flows can be maintained during enabling works and moderate / significant on local roads where road closures will be required to carry out the grid connection works.

The potential effects of the project are considered to be **Moderate to Significant** on the local road network and **Moderate** on the regional road network during the construction of the Proposed Development. The potential effects of the project on traffic during the operation of the Proposed Development 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 Proposed Development are considered to be **Moderate to Significant** on the local road network and **moderate** on the 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 17: Major Accidents provides an assessment of the vulnerability of the Project to major accidents and natural disasters. Possible risks associated with the Project during the construction, operation and decommissioning phases are outlined and assessed. These risks have the potential to directly or indirectly impact Population and Human Health. The consequence ratings assigned to each potential risk assumes that all proposed mitigation measures and safety procedures have failed to prevent the major accident and/or disaster. All scenarios when assessed were considered "low risk".

5.4.7 Property Value

The effects to Property values are introduced in Section 5.3.8. Based on the evidence from a number of these published studies, the operation of the Project is considered to not significantly affect property values in the area. The Project will have a **medium-short-term imperceptible** impact on property values.

5.5 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 safety of workers and the public during the construction, operational and decommissioning phases.

5.5.1 Embedded Mitigation

The Project, as described in **Chapter 2: Project Description**, incorporates good practice measures for limiting the adverse effects of the construction works. The principal potential effects arising from works tend to relate to construction traffic affecting the use of national roads, local primary roads and access roads by the general public. Measures are set out in **Chapter 14: Traffic and Transport** relating to how delivery of goods and services would be managed during works to minimise impacts on the road network. The proposed mitigation measures have been further developed in the CEMP (**Appendix 2.1**).

5.5.2 Population and Settlement Patterns

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

5.5.3 Economic Activity

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

5.5.4 Employment

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

5.5.5 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. The construction and operational footprint of the Proposed Development has been kept to the minimum necessary to avoid impact on existing land uses and habitats.

The construction and decommissioning works will be planned and controlled by a CEMP (**Appendix 2.1**). 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 and on the dedicated Project website (www.gortloughrawindfarm.ie).

5.5.6 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, as discussed in **Chapter 11: Landscape and Visual Amenity**.

The main tourist attractions at the Site and surrounding area was identified as cultural heritage, visual amenity, trail walking and hiking.

In providing for public safety, appropriate signage and safety measures will be put in place and the Site will be closed to the public during construction and decommissioning activities. The Project is partially located within the Múscraí Gaeltacht area and any signage erected within Gaeltacht areas of the public realm during the construction phase will include Irish and English text.

Further detailed mitigation measures are also included in **Chapter 13: Cultural Heritage**.

5.5.7 Human Health

5.5.7.1 Accidents/Disasters (incorporating Health & Safety)

Accidents to Personnel

Potential risks to personnel were identified in Section 5.4.6. Current legislation relating to the Safety, Health and Welfare of persons at work and industry specific Codes of Practice / Guidance documents, are designed to assist in the management of risks associated with the construction, operation, maintenance and decommissioning phase of windfarm projects.

The construction of the Project shall be managed in accordance with the Safety, Health and Welfare at Work Act 2005 (as amended), the Safety, Health and Welfare at Work (General Application) Regulations 2007 (as amended), and the Safety Health and Welfare at Work (Construction) Regulations 2013 (as amended).

As required under the Safety, Health and Welfare at Work (Construction) Regulations 2013 (as amended), Gortloughra Wind Farm Limited 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. Pending approval of the application, the PSCS may also further develop/update the following documents during the pre-construction stage of the Proposed Development, for implementation during the construction stage:

- Construction Environmental Management Plan (CEMP) (**Appendix 2.1**)
- Emergency Response Plan (**Appendix 2.1**)
- Detailed Traffic Management Plan (**Appendix 14.2)**

Accidents to Infrastructure

The PSDP shall see that the General Principles of Prevention, outlined under the safety design advice provided by the Health and Safety Authority (HSA), 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 2006 Wind Energy Development Guidelines and the DoEHLG Draft Revised Wind Energy Development Guidelines (2019), it is not considered (in the unlikely event of an accident of this type) that it would result in any significant impacts to population or human health.

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.

Further detailed mitigation measures have been included in **Chapter 17: Major Accidents and Natural Disasters**.

5.5.7.2 Operation

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

will manage and monitor all work, and only personnel who have received a site induction and who have the appropriate training will be permitted to work on the Site.

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

A Supervisory Control and Data Acquisition ("SCADA") system will monitor the Proposed Development's performance. SCADA is a system of software and hardware elements that allows organizations to control and monitor industrial processes by directly interfacing with plant-floor machinery and viewing real-time data. If a fault occurs, then a message is automatically sent to the operations personnel preventing emergency situations.

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

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

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

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

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

Shadow flicker detection systems will be installed on all turbines to manage occurrence of shadow flicker on nearby receptors.

The noise emissions from the Proposed Development are predicted to be compliant and well within the WEDG 2006 guideline limits, so it is not envisaged that curtailment of any turbines will be required. However, if any exceedances were to occur, then some of the turbines could be operated in noise reduced modes of operation to protect residential amenity.

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.

Warning signs and security infrastructure will be in place around the onsite switchgear and control building to provide for public safety. The Project is partially located within the Múscraí Gaeltacht area and any signage erected within Gaeltacht areas of the public realm during the construction phase will include Irish and English text.

5.5.7.3 Residual Risk

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

5.5.8 Cumulative Effects

The nearest operational wind farm to the Site is Shehy More Wind Farm comprising 11 no. wind turbines located 0.55 km to the north of the Proposed Development. The next nearest wind farm to the Proposed Development is Barryboy Wind Farm comprising 5 no. turbines located 4.4 km to the south of the Proposed Development.

The Proposed Development, along with the Shehy More Wind Farm, and other Irish renewables generation is considered to be a fundamental change in the climate effects of Ireland's energy supply, which is an important, positive effect that is significant under the EIA regulations and will contribute to Ireland's legally binding reduction targets. The Proposed Development will contribute to the offset of burning of fossil fuels which has the potential to positively impact human health.

The Landscape and Visual Impact Assessment contained in **Chapter 11: Landscape and Visual Amenity** (**Section 11.6.6**) shows that the cumulative impact of the Proposed Development on landscape and visual impact is in the order of **Medium.** Although it is not

considered that there will be any significant landscape, visual and cumulative effects arising from the Proposed Development.

The cumulative impact of the Proposed Development can be predicted to be a **small, short-term negative** impact on tourism and amenity during construction. There is predicted to be a **short-term, moderate positive** impact in terms of employment from the Project.

5.6 Summary of Significant Effects

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

5.7 Do Nothing Scenario

The potential for any likely and significant adverse environmental impacts arising from the construction, operational and decommissioning phases of the Project would not arise. However, similarly the potential for any likely and significant positive impacts on population and human health arising from the construction, operational and decommissioning phases of the Project would also not arise.

The local economy would not experience the direct and indirect positive effects of the construction phase of Project, including employment creation. The local construction sector and associated industries and services would be less viable than they might otherwise be.

The status of the receptors described throughout this EIAR document would be likely to remain unchanged.

5.8 Statement of Significance

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