5 POPULATION AND HUMAN HEALTH

5.1 INTRODUCTION

5.1.1 Background and Objectives

This Chapter of the EIAR assesses the effects of the Proposed Development on population and human health. The Proposed Development refers to all elements of the application for the construction of the proposed Tirawley Wind Farm including the Turbine Delivery Route (TDR) and Grid Connection Route (GCR) (**Chapter 2: Development Description**). Where negative effects are predicted, the chapter identifies appropriate mitigation strategies. The assessment considers the potential effects during the following phases of the Proposed Development:

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

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

5.1.2 Statement of Authority

This chapter has been prepared by Jennings O'Donovan & Partners Limited. It was prepared by Angelika Thiel with the assistance of Darren Timlin of JOD.

Ms. Angelika Thiel has a Bachelor's Degree in Geography from the Leibniz University of Hannover, Germany. She has worked in environmental consultancy for over 3 years and her key capabilities are in report writing, field work, assisting with project management and GIS.

Darren Timlin is an Environmental Scientist with three years' experience and holds a Bachelor (Hons.) Degree in Environmental Science from the Atlantic Technological University (2022). Darren has experience drafting EIAR's, Screening Reports and Appropriate Assessments for Wind Farms, Hydrogen Plants and Power Generation Plants. He also has experience in the use of ArcGIS Pro and Auto CAD 2D. Darren has been involved in the preparation of over eight EIARs since joining JOD.

The Chapter has been reviewed by Mr. David Kiely of JOD. Mr. Kiely has 41 years' experience in the civil engineering and environmental sector. He has obtained a bachelor's degree in civil engineering and a Masters in Environmental Protection, has overseen the

construction of over 50 wind farms and has carried out numerous soils and geology assessments for EIAR's. He has been responsible in the overall preparation of more than 60 EIA Reports (EIARs).

5.1.3 Relevant Legislation and Guidance

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

The Proposed Development has been designed in compliance with the Wind Energy Development Guidelines (2006). We note that the Draft Revised Wind Energy Development Guidelines (2019) is currently at draft stage and has not yet been formally adopted by the government. However, the design and assessment of the Proposed Development has had regard to the draft guidelines and has provided for key elements as set out in the guidelines such as the provision of 4-times the tip height setback distance between turbines and residential properties. The Wind Farm provides a minimum 540 m setback distance (135 m tip height x 4) from turbines (Vestas V117) and non-project dwelling structures allowing for 4-times the tip height of the proposed turbines.

The design, construction, operation and decommissioning of the Proposed Development including the installation of associated equipment such as the Battery Energy Storage System (BESS), switchgear and the Electrical Substation etc. is governed by the Safety, Health and Welfare at Work Act 2005 (as amended), the Safety, Health and Welfare at Work (General Application) Regulations 2007 to 2023.

The assessment complies with the EPA 2015[1] report 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.

European Commission guidance relating to the implementation of the 2014 Directive, in reference to "human health" states "Human health is a very broad factor that would be highly Project dependent. The notion of human health should be considered in the context of the

[1] Golder Associates (2015) *Investigation into the Assessment of Health Impacts within National Environmental Regulation Processes*. Available online at: https://www.epa.ie/publications/research/environment--health/assessment-of-health-impacts-report.php [Accessed: 17/09/2025]

other factors in Article 3(1) of the EIA Directive and thus environmentally related health issues (such as health effects caused by the release of toxic substances to the environment, health risks arising from major hazards associated with the Project, effects caused by changes in disease vectors caused by the Project, changes in living conditions, effects on vulnerable groups, exposure to traffic noise or air pollutants) are obvious aspects to study. In addition, these would concern the commissioning, operation, and decommissioning of a Project in relation to workers on the Project and surrounding population.[2]"

5.1.4 Assessment Structure

In line with the EIA Directive[3], as amended and EPA guidelines the structure of this Chapter is as follows:

- Assessment Methodology and Significance Criteria – a description of the methods used in desktop surveys and in the assessment of the significance of effects;
- Baseline Description – a description of the socio-economic profile of the local area of the Proposed Development i.e., local electoral areas and County Mayo, based on a desk-based study using Central Statistics Office (CSO) data;
- Assessment of Potential Effects – including the "Do Nothing" scenario (accounts for likely changes in the baseline due to natural changes and nearby projects) and identifying the ways in which the population and human health of the area could be affected by the Proposed Development during the construction, operational and decommissioning stages;
- Mitigation Measures and Residual Effects – a description of measures recommended to avoid, prevent, reduce or, if necessary, offset any potential significant adverse effects and a summary of the significance of any residual effects of the Proposed Development after mitigation measures have been implemented;
- Cumulative Effects – identifying the potential for effects of the Proposed Development to combine with those from other existing, permitted and/or proposed projects as listed in **Chapter 2: Development Description** of this EIAR, to affect the population and human health;
- Summary of Significant Effects; and
- Statement of Significance.

[2] Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report, European Commission, 2017 http://ec.europa.eu/environment/eia/eia-support.htm
[3] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014L0052&rid=1 [Accessed: 17/09/2025]

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

- **Chapter 8**: Soils and Geology
- **Chapter 9**: Hydrology and Hydrogeology
- **Chapter 10**: Air and Climate
- **Chapter 11**: Noise
- **Chapter 12**: Landscape & Visual
- **Chapter 15**: Shadow Flicker
- **Chapter 17:** Traffic and Transportation

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. The contractor will be appointed at the pre-construction period.

5.1.5 Scope of the Assessment

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

- Population and Settlement Patterns
- Economic Activity
- Employment
- Land Use and Topography
- Tourism
- Health effects of Wind Farms
- Property Value
- Major Accidents and Natural Disasters

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

- Sensitive receptors in the area

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

5.2 ASSESSMENT METHODOLOGY

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

- Details of Methodologies utilised in the context of legal and planning frameworks.
- A description of the Baseline Environment
- Assessment of Potential Effects (construction, operational and decommissioning phases)
- Detailed Mitigation Measures
- Assessment of Cumulative Effects
- 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 data are assessed by Study Area; within the locality of the Wind Farm Site and compared with the both the County and National CSO data. These Study Areas are described in **Section 5.3.1** of this chapter. This assessment has been carried out using latest available Central Statistics Office (CSO) data, information and maps from the current Mayo County Development Plan 2022-2028; other relevant studies.

'Do Nothing' Effect Assessment:

This section outlines effect if the Proposed Development were not to go ahead and the likely evolution thereof without the Proposed Development as far as natural changes from the baseline scenario.

Assessment of Potential Effects:

The potential effects of the Proposed Development are assessed as documented in **Section 5.4**. The potential effects are classified as outlined in **Table 1.5** of **Chapter 1: Introduction** (as prescribed in the EPA Guidelines, 2022). Typically, for each effect assessed the quality of the effect, for example, positive or negative, the significance of the effect, for example, slight or moderate and the duration of the effect, for example, short-term or long-term are assigned. If potentially significant adverse effects are identified, the proposed practical mitigation measures assessed to prevent, reduce, avoid or, if necessary, offset such effects are documented in **Section 5.5**.

Mitigation measures:

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

Cumulative Assessment:

Other wind farms (operational and in the planning process) within 20 km of the Proposed Development and other developments (bigger than a one-off house and within the last 5 years) (operational and in the planning process) within 10 km of the Proposed Development (shown in **Chapter 2: Development Description, Table 2.1** and **Table 2.2**), in conjunction with the Proposed Development, are assessed to determine the potential cumulative effects on Population and Human Health.

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

- Central Statistics Office (www.cso.ie);
- Mayo County Development Plan 2022-2028;
- Renewable Energy Strategy for County Mayo 2011-2020;
- The Northern and Western Regional Assembly (NWRA);

- Regional Spatial & Economic Strategy (RSES) 2020-2032 (https://www.nwra.ie/rses/);
- Fáilte Ireland (www.faillteireland.ie);
- National Parks and Wildlife Services (www.npws.ie);
- Sustainable Energy Authority of Ireland (www.seai.ie);
- Mayo County Council (https://www.mayo.ie/)
- Mayo County Council Local Area Plan (LAP) (https://www.mayo.ie/planning/local-area-plan)
- The National Planning Framework Ireland 2040 (www.npf.ie)

The Wind Farm Site is located within the townland of Aghaleague, Ballymurphy, Ballynaleck, Barnhill Lower, Barnhill Upper, Barroe, Billoos, Carn, Carrickanass, Carrowmore, Castlelackan Demesne, Castletown, Cloonanass, Conaghra, Glebe, Lackanhill, Lecarrowntemple, Lissadrone east and Lissadrone West.

5.2.1 Evaluation of Potential Effects

Following on from the identification of the baseline environment, the available data is utilised to identify, categorise and assess potential effects likely to have a significant effect on the population and human health, as a result of the proposed EIA Development.

The statutory criteria (EPA, 2002; EPA, 2003) for the assessment of impacts require that likely effects are described with respect to their extent, magnitude, type (i.e. negative, positive or neutral) probability, duration, frequency, reversibility, and transboundary nature (if applicable). The descriptors used in this ER are those set out in EPA (2002) 'Glossary of Impacts'.

Effects may be categorised as follows:

- Direct: where the existing socio-economic baseline along or in close proximity to the Proposed Development is altered, in whole or in part.
- Indirect: where the socio-economic baseline beyond the Proposed Development is altered by activities related to the construction or operation.
- No Effect: where the Proposed Development has neither negative nor a positive impact upon the socio-economic baseline.

5.2.1.1 *Magnitude*

The magnitude of potential effects has been defined in accordance with the criteria provided in the 2002 EPA publication 'Guidelines on the information to be contained in Environmental Impact Statements' as outlined within **Table 5.1** below.

Table 5.1: Impact Assessment Criteria

Magnitude of Impact	Description
Imperceptible	An impact capable of measurement but without noticeable consequences
Slight	An impact that alters the character of the environment without affecting its sensitivities
Moderate	An impact that alters the character of the environment in a manner that is consistent with existing or emerging trends
Significant	An impact, which by its character, magnitude, duration or intensity alters a sensitive aspect of the environment
Profound	An impact which obliterates all previous sensitive characteristics
Magnitude of Impact	Description

5.2.1.2 *Significance Criteria*

The significance of the potential effects of the Proposed Development have been classified by taking into account the sensitivity of receptors and the magnitude of the potential effect on them, combined with the likelihood of an impact occurring as defined in **Table 5.2**.

Table 5.2: Rating of Significant Environmental Impacts

Importance of Attribute	Magnitude of Impact				
		Negligible	**Small**	**Moderate**	**Large**
	Extremely High	Imperceptible	Significant	Profound	Profound
	Very High	Imperceptible	Significant/ Moderate	Profound/ Significant	Profound
	High	Imperceptible	Moderate/ Slight	Significant/ Moderate	Severe/ Significant
	Medium	Imperceptible	Slight	Moderate	Significant
	Low	Imperceptible	Imperceptible	Slight	Slight/ Moderate

5.2.2 Definition of Study Areas

Four geographical Study Areas have been outlined for this assessment. While the greater geographical Study Areas (3 and 4) provide a baseline of statistical data for this chapter, they are not considered for local impacts of this assessment. Note: Study Area 1 lies within Study Area 2 and information outlined for Study Area 2 incorporates data for Study Area 1. The four Study Areas are outlined below:

Study Area 1: The Wind Farm Site and Environs – Electoral Divisions (EDs) Ballycastle, Killala, Lackan North and Lackan South (**160.09 km^2**) (**Figure 5.1**).
The Proposed Development falls within the Ballina Municipal District (MD) and the Electoral Divisions (ED) of Ballycastle, Killala, Lackan North and Lackan South. In order to make inferences about the population and other statistics in the vicinity of the Wind Farm Site, Electoral Divisions were analysed. The ED's can be separated into distinct townlands. The townlands that have the potential to be affected as a result of the Wind Farm Site are shown in **Figure 5.2**.

The DEDs and townlands that have the potential to be affected as a result of the various elements of the Proposed Development are outlined in **Table 5.3**.

The Wind Farm Site falls under four ED:
Ballycastle[4] which is separated into distinct townlands Aghaleague, Aghoo, Ballinglen, Ballycastle, Ballyglass, Ballyknock, Ballymurphy, Barnhill Lower, Barnhill Upper, Barroe, Billoos, Carrowcuilleen, Carrowhibbock Lower, Carrowkibbock Upper, Carrowmore, Carrownisky, Cloonanass, Crott, Doonfeeny Lower, Doonfeeny Upper, Glencullin, Glenora, Glenulra, Gortatoor, Killerduff, Lisbrin, Muingelly, Rathoonagh, Sralagagh East, Sralagagh West;

Killala[5] which is separated into the distinct townlands Abbeylands, Ardnagor, Atticloghy, Ballybeg, Ballygowan, Bartragh Island, Baunrosbeg, Baunrosmore, Bellasallagh, Carn, Carrowkeel, Cartoon, Castlereagh, Cloonconway, Cloonskirtaun, Creevagh More, Croghan, Crosspatrick, Farmhill, George's Island, Green Island, Horse Island, Illaungeesaun, Kilgobban, Killala, Killogunra, Killybrone, Kilroe, Leadymore, Lecarrowanteean, Meelick, Moneen, Moyne, Rathcash, Rathnadoffy, Rathowen East,

[4] https://visual.cso.ie/?body=entity/ima/cop/2022&boundary=C04167V04938&guid=2ae19629-18cc-13a3-e055-000000000001 [Accessed: 02/07/2025]
[5] https://visual.cso.ie/?body=entity/ima/cop/2022&boundary=C04167V04938&guid=2ae19629-193f-13a3-e055-000000000001 [Accessed: 02/07/2025]

Rathowen West, Rathreagh, Ross, Ross (Bourke), Ross (Fallon), Ross (Gardiner), Ross (Goodwin), Springhill, Tawnaghmore Lower, Tawnaghmore Upper, Tonroe Lower, Tonroe Upper, Townplots East, Townplots West;

Lackan North[6] which is separated into the distinct townlands Keeloges Lower, Ballymachugh, Castletown, Glebe, Cabintown, Knockaun, Muingrevagh, Kilbride, Carrowmore, Killeen, Shanaghy, Carrowmacshane, Moyny, Carrowneden, Conaghra, Carrowcor, Lissadrone West, Lecarrowntemple, Doonadoba, Knockboha, Lackanhill, Rathlackan, Lissadrone East, Beltra, Castletown, Creevagh, Castlelackan Demesne, Keeloges Upper, Killogeary; and

Lackan South[7] which is separated into the distinct townlands Killeencreevagh, Carrad More, Knockroe, Rathbaun - Rathreagh Parish, Ballynaleck, Rathbaun - Templemurry Parish, Carrickanass, Cloonavarry, Doonamona, Tooracappul, Rathnawooraun, Cloonalaghan, Cloonboy, Carbad Beg, Foghill, Breastagh, Tooreen, Rathfranpark, Fallataggart, Rathfran, Carrowsteelagh, Carrowtrasna, Cashel, Steelaun, Banagher, Castlenageeha, Kilcummin, Ballygarry and Ballinlena.

The ED's and townlands that have the potential to be affected as a result of the various elements of the Proposed Development are set out in **Table 5.3**. Parts of the Turbine TDR and GCR also fall with Study Area 1 (Lackan South, Ballycastle and Killala).

Study Area 2: Mayo County (5,587 km^2)

The Wind Farm Site, GCR and sections of the TDR fall within County Mayo. A full description of the GCR and TDR as is detailed in **Chapter 2: Development Description**. As all developments have the potential to effect upon the population and human health, County Mayo was chosen as a study area to conclude the extent of effects (if any) on the population and human health within the county as a result of the Proposed Development.

Study Area 3: Northern and Western Region Assembly: Cavan, Donegal, Leitrim, Galway, Mayo, Monaghan, Roscommon and Sligo (**25,800 km^2**).

Study Area 3 provides a baseline of statistical data for this chapter, it is not considered for local effects of this assessment.

[6] https://visual.cso.ie/?body=entity/ima/cop/2022&boundary=C04167V04938&guid=2ae19629-18c5-13a3-e055-000000000001 [Accessed: 02/07/2025]
[7] https://visual.cso.ie/?body=entity/ima/cop/2022&boundary=C04167V04938&guid=2ae19629-18c6-13a3-e055-000000000001 [Accessed: 02/07/2025]

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

Study Area 4, Ireland, provides a national baseline of statistical data for this chapter. It is not considered for local effects of this assessment.

Table 5.3: EDs and Townlands that will be Affected as a Result of the Proposed Development and all Associated Works

Element of the Development	Electoral Division (ED)	Townlands	Study Area
Turbine Haul Route & Wind Farm Site Pinch Points			
Pinch Point 1	Kilfian South	Garranard	Study Area 2
Pinch Point 2	Killala	Creevagh More	Study Area 1
Pinch Point 3, 4 & 5	Kilfian West	Annagh Beg	Study Area 2
Pinch Point 6	Ballycastle	Biloos	Study Area 1
Pinch Point 7, 8 & 9	Killala	Carn	Study Area 1
Pinch Point 10, 11 & 12	Ballycastle	Barroe	Study Area 1
Pinch Point 13	Ballycastle	Ballymurphy	Study Area 1
Pinch Point 13	Ballycastle	Biloos	Study Area 1
Pinch Point 14	Ballycastle	Barnhill Upper	Study Area 1
Pinch Point 15	Ballycastle	Aghaleague	Study Area 1
Pinch Point 16	Ballycastle	Cloonanaas	Study Area 1
Pinch Point 17 & 18	Lackan North	Lissadrone West	Study Area 1
Pinch Point 19	Lackan North	Lecarrowntemple	Study Area 1
Pinch Point 20	Lackan North	Conaghra	Study Area 1
Pinch Point 21	Lackan North	Lecarrowntemple	Study Area 1
Grid Connection Route			
	Ballycastle	Barroe	Study Area 1
	Lackan South	Carrickanass	Study Area 1
	Lackan South	Carrad More	Study Area 1
	Lackan South	Cloonavarry	Study Area 1
	Lackan South	Doonamona	Study Area 1
	Lackan South	Rathbaun	Study Area 1
	Killala	Castlereagh	Study Area 1
	Killala	Rathcash	Study Area 1
	Killala	Rathowen East	Study Area 1
	Killala	Rathowen West	Study Area 1
	Rathoma	Magherabrack	Study Area 2
	Rathoma	Farragh	Study Area 2
	Ballysakeery	Cloonawillin	Study Area 2

Element of the Development	Electoral Division (ED)	Townlands	Study Area
	Ballysakeery	Mullafarry	Study Area 2
	Ballysakeery	Lisglennon	Study Area 2
	Killala	Tawnaghmore Upper	Study Area 1
	Ballysakeery	Ballinteean	Study Area 2
	Ballysakeery	Carrowreagh	Study Area 2
	Killala	Tawnaghmore Lower	Study Area 1
Wind Farm Site			
Tirawley Wind Farm	Ballycastle	Aghaleague	Study Area 1
	Ballycastle	Ballymurphy	Study Area 1
	Lackan South	Ballynaleck	Study Area 1
	Ballycastle	Barnhill Lower	Study Area 1
	Ballycastle	Barnhill Upper	Study Area 1
	Ballycastle	Barroe	Study Area 1
	Ballycastle	Biloos	Study Area 1
	Killala	Carn	Study Area 1
	Lackan South	Carrickanass	Study Area 1
	Ballycastle	Carowmore	Study Area 1
	Lackan North	Castlelackan Demense	Study Area 1
	Lackan North	Castletown	Study Area 1
	Ballycastle	Cloonanass	Study Area 1
	Lackan North	Conaghra	Study Area 1
	Lackan North	Glebe	Study Area 1
	Lackan North	Lackanhill	Study Area 1
	Lackan North	Lecarrowntemple	Study Area 1
	Lackan North	Lissadrone East	Study Area 1
	Lackan North	Lissadrone West	Study Area 1

Grid Connection Route (GCR)

A Grid Connection between the Wind Farm Site and the national electricity grid will be necessary to export electricity from the Proposed Development. It is intended that the Proposed Development will connect to the national grid via a 110 kV Grid Connection to the existing Tawnaghmore 110 kV Substation, located in the townland of Tawnaghmore Lower, Co. Mayo. The Tawnaghmore substation is located approximately 7.17 km southeast of the Proposed Development at its closest point. The proposed GCR between Tirawley Wind Farm and the Tawnaghmore 110 kV substation is as an underground cable (UGC), utilising sections of the public roads. The length of the Grid Connection is c. 13.55 km. **See Figure 2.2.**

The Proposed Development is in close proximity to the proposed Killala Energy Hub south of Killala Village. Planning permission for the proposed Killala Energy Hub has been granted by Mayo County Council on the 27/05/2025 (Planning Ref: 2360266). Subject to planning permission of both developments, the Proposed Development would be in a position where renewable electricity could also be made available through an interconnector (subject to planning) to the proposed Killala Energy Hub for the production of green hydrogen.

Thus, a second connection option considered in this EIAR is a 110 kV underground Interconnector cable between Tirawley Wind Farm and the Proposed Hydrogen Plant (Killala Energy Hub). The Killala Energy Hub is located in the Killala Business Park in the townland of Tawnaghmore Lower, south of the Killala Village, Co. Mayo. Refer to **Figure 2.3** for Proposed Interconnector Cable Route.

Both connections follow the same cable route from the Wind Farm Site to the townland of Tawnaghmore Lower, where the existing EirGrid 110 kV substation and the Proposed Killala Energy Hub are located.

Both the Proposed Tirawley Wind Farm and Killala Energy Hub Developments are in the control of the Developer. An EIAR and NIS were prepared as part of Killala Energy Hub application, a copy can be found on the Mayo E-planning website.

Turbine Delivery Route

Option 1: It is proposed that turbine nacelles, tower hubs and rotor blades will be landed in Killybegs Port (Donegal). From there, they will be transported to the Wind Farm Site via the R263, N56, N15, N4, N59, L-1141, R294, L-1119, N59, L-1108, R315, L-51722, L-51732 as shown on **Figure 2.8**.

Option 2: It is proposed that turbine nacelles, tower hubs and rotor blades will be landed in Galway Port (Galway). From there, they will be transported to the Wind Farm Site via the R339, R336, N83, N17, N5, L-1331, N5, N58, N26, N59, L-1108, R315, L-51722, L-51732 as shown on **Figure 2.9**.

Option 3: It is proposed that turbine nacelles, tower hubs and rotor blades will be landed in Foynes Port (Limerick). From there, they will be transported to the Wind Farm Site via the N67, N69, N18, M18, M17, N17, N5, L-1331, N5, N58, N26, R294, N59, L-1108, R315, L-51722, L-51732 as shown on **Figure 2.10.**

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

5.2.3 Consultation

Consultation with relevant organisations was initiated during the initial stage of the EIA process to identify any effects that could be initiated by the Proposed Development. A summary of the findings is detailed in **Table 5.4**.

Table 5.4: Summary of Consultation response on Human Health

Consultee	Type and Date	Summary of Consultee Response
Environmental Health Service (Dept. of the HSE)	Letter in Response to Scoping Report received on 29/03/2023	Response Received 29/03/2023: Recommendations were made on *Assessment of, Siting and Location of Turbines, Noise and Vibration, Shadow Flicker, Air Quality, Surface & Groundwater Quality and Geological Impacts (*Addressed respectively in **Chapters 3 - 17** of the EIAR). The Environmental Health Service (EHS) recommended that the matters of Public Consultation and Decommissioning Phase were included and assessed in the EIAR (Addressed in **Chapters 1, and 2** of the EIAR). 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**) & the recommendation to hold public consultations.

Consultee	Type and Date	Summary of Consultee Response
		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** of the EIAR). 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 17** and in the relevant technical assessment chapters of the EIAR).
Department of Public Health (Dept. of the HSE)	Letter in Response to Scoping Report received on 06/03/2023	Response Received 06/03/2023: Recommendations were made on *Visual impacts, Noise impacts, impacts of Healthy Lifestyles, Social/Cultural impacts, Community Consultation, the Wider Socioeconomic benefits of the Development and the Health Inequalities associated with the location of the Development* (Addressed respectively in **Chapters 3, 4, 5, 11, 12, 13, 14, 15, 16 and 17** of the EIAR).

5.3 BASELINE DESCRIPTION

The existing environment, as it relates to population and human health is outline in the following section.

5.3.1 Population and Settlement Patterns

Study Area 1 (District Electoral Divisions) Ballycastle, Killala, Lackan North and Lackan South (**160.09 km^2**).

According to the 2022 census, there is no defined community settlement having a population greater than 2,500 people within a 10 km radius of the Proposed Development. The town of Ballina, the nearest urban settlement with a population greater than 2,500 people, is located approximately 14.5 km southeast of the Wind Farm Site and has a population of 10,556[8] (CSO) people. The nearest urban settlements to the Wind Farm Site, are the villages of Ballycastle and Killala. Ballycastle is located approximately 2.4 km west of the Wind Farm Site and has a population of 220[9] (CSO) people, while Killala is located approximately 5.2 km southeast of the Wind Farm Site and has a population of 587[10] (CSO) people. Nearby settlements include the villages of Ballycastle and Killala (as mentioned above), Inniscrone (approximately 12.7 km east), and Crossmolina (approximately 13.8 km south). The nearest major centre of population to the Proposed Development is Sligo, Co. Sligo, which is located approximately 48 km east of the Wind Farm Site. According to the CSO, there were 20,608 persons living in the urban area of Sligo, Co. Sligo in 2022.

The area surrounding the Proposed Development is largely rural, with a mixture of agricultural grassland, peatland, forestry plantations, and interspersed housing. The pNHA Creevagh Head (to the north), Lackan Saltmarsh and Kilcummin Head SAC and pNHA (to the east), the Killala Bay/Moy Estuary pNHA, SAC and SPA (to the east/southeast) are located within the vicinity of the Proposed Development.

Over the last five years, Mayo County Council have granted planning permission in the Ballycastle, Killala, Lackan North and Lackan South Electoral Division areas for development including construction of new dwelling houses, alterations and demolitions to existing dwelling houses, agricultural buildings, road developments, and an Energy Storage facility (now operational). Planning permissions granted beyond the 5 years include a waste-water treatment plant, retention of telecommunication support structures, the Killala Community Windfarm (5-turbine Windfarm) and the 1 turbine extension to the Killala Community Windfarm (all operational)[11].

[8]https://visual.cso.ie/?body=entity/ima/cop/2022&boundary=C04160V04929&guid=452304c3-d48e-49c5-938b-c9b9d646e654– [Accessed: 17/09/25]
[9]https://visual.cso.ie/?body=entity/ima/cop/2022&boundary=C04160V04929&guid=452304c3-d48e-49c5-938b-c9b9d646e654 – [Accessed: 17/09/25]
[10]https://visual.cso.ie/?body=entity/ima/cop/2022&boundary=C04160V04929&guid=452304c3-d48e-49c5-938b-c9b9d646e654 – [Accessed: 17/09/25]
[11] Mayo County Council. *Planning map Search* Available online at https://www.mayo.ie/planning/search [Accessed: 17/09/25]

The 2022 Census statistics note 1,088 occupied permanent residences and a total population of 2,676 in the four Electoral Divisions stated above.

There are 284 properties within 2 km of the proposed turbines. The closest inhabited dwelling to a V117 turbine not associated with the Proposed Development (H5) is located 554 m from the nearest turbine (AT10). The V117 turbine with a 135 m blade tip height (4 x 135 m = 540 m) maintains 540 m housing buffer.

The total population (2022 Census) in the Ballycastle ED was 585, of which males numbered 281 and females were 304. In Lackan North ED, the total population was 306, of which males numbered 155 and females were 151. In Lackan South ED, the total population was 460, of which males numbered 243 and females were 217 and in Killala ED, the total population was 1,325, of which males numbered 667 and females were 658.

Grid Connection Route (GCR)

As outlined in **Section 5.2.2**, part of the GCR fall within Study Area 1 (Ballycastle, Lackan South & Killala). In order to assess potential effects on human beings and human health along the GCR, a review of properties and planning applications in the vicinity of the proposed works was carried out, with the majority of developments along the route comprise mainly of one-off houses other developments include Mullafarry Quarry, the proposed Mayo Renewables Ltd. Biomass Electricity Generating Station and the Killala Business Park. The land-use along the GCR comprises mainly transport, and the surrounding land use is mainly agriculture with some areas of forestry and industrial.

The area of construction and activity for the Grid Connection will be localised and transient in nature as it moves along the route. The Grid Connection trenches, joint bays and link boxes will be installed in Local and Reginal Roads L-31143, L-1114, R314, L-5177, L-5176, L-1107, L-1111, L-1116 and the L-5147. The GCR associated with the Proposed Development is not envisaged to have any long-term negative effects on population or settlement patterns.

Turbine Delivery Route (TDR) including Public Roads within the Wind Farm Site

As outlined in **Section 5.2.2**, parts of the TDR fall within Study Area 1 (Ballycastle, Lackan North, Lackan South & Killala). To assess potential effects on human beings and human health along the TDR and public roads within the Wind Farm Site, a review of properties

and planning applications in the vicinity of the 21 areas which are planned to be the subject of temporary widening works was carried out. The 21 areas which are planned to be subject to temporary widening roads are common to the 3 TDR options surveyed. The majority of development along the TDR and public roads within the Wind Farm Site comprises of rural farmstead properties and one-off housing. The land-use along the TDR and public roads within the Wind Farm Site is comprised mainly of transport infrastructure, and surrounding land use is mainly agriculture with some areas of peat harvesting, forestry and quarrying.

However, all proposed works on the TDR and public roads within the Wind Farm Site associated with the Proposed Development are located outside of defined settlement areas. The active construction areas for road works along the TDR and public roads within the Wind Farm Site will involve only surface-level earthworks (removal of soil and unconsolidated rock) along the R315, L-51722, L-51732, L-5179, R314, L-31143, L51791, L5179-23, L-51731, L-31142, L-5187, L5187-47 and L21147. Once works have been completed, the works will be reinstated in accordance with the requirements of the relevant County Councils.

Study Area 2: Mayo County (**5,587 km^2**)

Over the past century[12], County Mayo has seen an overall decrease in population of approximately 32 % from 192,177 in 1911 to 137,970 in 2022 (**Figure 5.3**). The total population in the 2022 CSO for County Mayo was 137,970, of which males numbered 68,392 and females' number 69,578. There has been a 5.72 % increase in population since 2016. The population density is 24.69 persons per km^2 versus 23.36 persons per km^2 in 2016 (CSO). The total number of households was 52,114 in 2022, a 6.36 % increase since 2016[13].

The main town in the County is Castlebar, which is also the county town and administrative centre, with a population of 13,054 persons in 2022. This is closely followed by Ballina which had a population of 10,556 and then Westport with 6,872.

For Census 2022, the Central Statistics Office has introduced a new way of defining urban areas. These new urban areas, or Built-Up Areas (BUAs), were developed in conjunction with the Department of Housing, Local Government and Heritage, and Ordnance Survey

[12] http://www.cso.ie/en/releasesandpublications/ep/p-1916/1916irl/people/population/ [Accessed: 17/09/2025]

[13] Central Statistics Office (CSO), 'Census Mapping'. Available at: https://visual.cso.ie/?body=entity/ima/cop/2016&boundary=C03849V04599&guid=2ae19629-1493-13a3-e055-000000000001 - [Accessed: 17/09/2025]

Ireland (now Tailte Éireann). The new BUA boundaries were created using a different approach to the Settlements used in Census 2016 so there is no direct comparison of the data for urban areas between the two censuses. Settlements used 50 occupied dwellings as a starting point, BUAs on the other hand use 100 buildings, not just dwellings. Where the word 'town' is used in this release, it is referring to the BUAs. According to the CSO's parameters, 70.8 % of people in Mayo live in rural areas (outside towns of 1500+). For the rest of the state as a whole (including Western Region Countries) 36.3% live in rural areas[14].

Study Area 3: Northern and Western Region: Cavan, Donegal, Leitrim, Galway, Mayo, Monaghan, Roscommon and Sligo (25,800 km^2)

The Regional Spatial and Economic Strategy (RSES) for the Northern and Western Regional Assembly Area 2020-2032[15] provides a robust strategy to deliver anticipated growth, building upon the region's key strategic assets and opportunities, addressing future challenges. It provides Regional Development Objectives to guide policy responses to ensure that people's needs, such as access to housing, jobs ease of travel and overall well-being are met up to 2040 and beyond. The National Planning Framework (NPF)[16] projects a population growth for the Northern and Western region of between 160,000 to 180,000, during this period, with an additional 115,000 people in employment.

The RSES notes that the *'population living in rural towns, villages and the countryside (i.e. other than the Cities and Regional Growth Centers and Key Towns) are home to almost 80 % of the region's population and such represents a sizeable cohort of the population and land area'*. Population growth needs to be matched by the delivery of critical enabling infrastructure and services, thus ensuring that these places 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 West Region as being particularly rich in renewable energy resources. These sources of renewable energy generation are dispersed across the region but particularly concentrated along the western coastline. The main demand centers are composed of a mix of residential, commercial and industrial demand, which is expected to grow over the period of the RSES. The RSES states the country and region are in a period

[14] Western Development Commission – 'WDC Census 2022 Summary Report – Highlights for Western Region' Available at: https://westerndevelopment.ie/wp-content/uploads/2023/08/WDC-Census-2022-Summary-Report-for-Western-Region-July-2023-Final-18.07.23.pdf [Accessed: 17/09/2025]
[15] Northern & Western Assembly – '*Regional Spatial and Economic Strategy 2020 – 2023'* Available at: https://www.nwra.ie/pdfs/NWRA-RSES-2020-2032.pdf [Accessed: 17/09/2025]
[16] 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: 17/09/2025]

of economic growth, this naturally increases electricity consumption, and such increases are expected to continue up to 2025.

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

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 increase since 2016 from 4,761,865 to 5,149,139 as per the 2022 census[17]. The most recent census was taken in 2022 and preliminary statistical datasets released in June 2022 record an 8.1% increase in the national population, versus the 2016 census data statistics, and bringing the national total population count to 5,149,139[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[14].The National Planning Framework (NPF)[19] (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'[20] would accommodate around 1.1 million additional people residing in Ireland by 2040.

5.3.2 Economic Activity

5.3.2.1 Primary sectors

Study Area 1: The Development and Environs (EDs) Ballycastle, Killala, Lackan North and Lackan South (160.09 km^2).

The main sectors in this Study Area are 'Professional services', 'Manufacturing industries', and 'Commerce and trade', as can be seen in **Table 5.5**. Industries considered to be most relevant to the Proposed Development are 'Agriculture, forestry and fishing' and 'Building and construction'.

[17] Central Statistics Office (CSO), 'Census Mapping'. Available at: https://visual.cso.ie/?body=entity/ima/cop/2022&boundary=C04160V04929&guid=452304c3-d48e-49c5-938b-c9b9d646e654 [Accessed: 17/09/2025]
[18] Central Statistics Office (CSO), 'Census 2022 Preliminary Reports'. Available at: https://www.cso.ie/en/releasesandpublications/ep/p-cpsr/censusofpopulation2022-summaryresults/keyfindings/ - [Accessed: 17/09/2025]
[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: 17/09/2025]
[20] 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: 17/09/2025]

Table 5.5: Persons at Work by Industry (2022)

Persons at Work by Industry	Ballycastle	Killala	Lackan North	Lackan South	Total
Agriculture, Forestry and Fishing	38	43	31	26	**138**
Building and Construction	20	43	14	15	**92**
Manufacturing Industries	24	129	7	36	**196**
Commerce and Trade	27	103	26	34	**190**
Transport and Communications	10	24	3	8	**45**
Public Administration	17	26	14	14	**71**
Professional Services	44	117	32	41	**234**
Other	33	65	14	16	**128**
Total	**213**	**550**	**141**	**190**	**1,094**

Study Area 2: Mayo County

The economy of County Mayo is broadly based and diverse with strength in the areas of professional services, commerce and trade, manufacturing industries, building and construction and other. County Mayo in 2022, as a mostly rural constituency, has more residents working in agriculture, forestry or fishing than nationally (6.18 % compared to 4.19 %). County Mayo also has slightly more residents working in manufacturing industries than nationally (15.69 % compared to 11.77 %). County Mayo has a lower share of workers in commerce and trade (20.45 % compared to 23.99 %), as well as a lower proportion working in transport and communications than seen nationally (4.89 % compared to 8.5 %). County Mayo has higher rates of workers in skilled manual occupations (15.03 % compared to 12.93 %) than nationally. County Mayo has lower proportions of workers in professional occupations (7.58 % compared to 9.26 %) and managerial and technical occupations (29.44 % compared to 30.68 %) than the corresponding national share[21]. Mayo has an extensive national road and rail network, strong digital infrastructure and has a broad range of

[21] CSO, Census Mapping: https://visual.cso.ie/?body=entity/ima/cop/2022&boundary=C03880V04631&guid=B1A65D7C-1984-4A87-AD58-0E846812C992- [Accessed 02/07/25]

industries with over 4,000 businesses ranging from start-ups to large multinational companies including Baxter, Allergan, Hollister and Ballina Beverages.

Ballina is identified as a key town in the Mayo County Development Plan 2022-2028 and a key economic driver in the northwest of the county. Castlebar, also a key town, is identified as the main centre for commerce and enterprise, administration, healthcare and education in the county. Westport is identified as a key economic driver in the county and as a national tourism hub.

The county contains Ireland West Airport Knock, which provides an international gateway to the region. This is located within a Strategic Development Zone which has the potential to become a major enterprise and employment hub within the Atlantic Economic Corridor.

5.3.3 Employment

5.3.3.1 Primary sectors

Study Area 2: Mayo County

According to the CSO 2022 there were 111,608 persons over 15 years of age in the labour force in Mayo County of which 58,334 (or 52.27 %) were in employment.

The 'Professional services', 'Commerce and trade', and 'Manufacturing industries' employ approximately 35,182 persons[22]. Of the 53,274 persons aged 15 years and over who were outside the labour force, 20.32 % were students, 13.95 % were looking after the home/family and 43.27 % were retired. **Table 5.6** sets out labour force status in Mayo County in 2022.

Table 5.6: Mayo County Labour Force Status (2022)

Principal Economic Status	No. Persons
At work	58,334
Looking for first regular job	905
Long term unemployed	3,021
Short term unemployed	1,757
Student	10,823
Looking after home/family	7,430

[22] CSO, Census Mapping: https://visual.cso.ie/?body=entity/ima/cop/2022&boundary=C03880V04631&guid=B1A65D7C-1984-4A87-AD58-0E846812C992- [Accessed: 17/09/2025]

Principal Economic Status	No. Persons
Retired	23,054
Unable to work due to permanent sickness or disability	5,408
Other	876
Total	**111,608**

5.3.4 Land Use and Topography

5.3.4.1 Study Area 1: Development Site & Environs

County Mayo is located in the Northern and Western Region Assembly and is bordered by the counties Sligo, Roscommon and Galway.

The Wind Farm Site is located within the Municipal District Ballina and the Electoral Division areas of Ballycastle, Killala, Lackan North and Lackan South. Due to the expanse and variety of the landscape the County Mayo Landscape Appraisal[23]. According to the Landscape Appraisal for County Mayo, the Wind Farm Site is at the juncture of two units;

- D - 'North Coastal Plateaux'; and
- G - 'North Mayo Drumlins'.

The Landscape Appraisal for County Mayo also identifies vulnerable features and vulnerable areas[24].

Chapter 4: Planning and Policy, Section 4.5.4 and **Chapter 12: Landscape and Visual, Section 12.3.5** of the EIAR provides a full description of County Mayo's Landscape Appraisal, Landscape Character Units and associated vulnerable features related to the Proposed Development.

The Wind Farm Site covers an area of c. 119.12 ha. Topography across the Wind Farm Site is variable, ranging from ~20 to 155 mOD (meters above Ordnance Datum). The north and center of the Wind Farm Site are located on elevated ground. The greatest elevations are found in the north of the Wind Farm Site, which is situated on the southeastern slopes of Knockboha Hill, which stands at an elevation of ~186 mOD. There are also several other local high points further to the south which range in elevation from ~108 to 137 mOD.

[23] Landscape Appraisal for County Mayo https://www.mayo.ie/getmedia/d64fadfc-f8b5-4f1c-971d-624fd9527e04/Landscape-Appraisal-of-County-Mayo.pdf [Accessed: 17/09/2025]
[24] As defined in the Landscape Appraisal for Co. Mayo and the Mayo County Development Plan or appropriate Development Plan or Local Area Plan

Meanwhile, the southern section of the Wind Farm Site is located on lower ground with topography sloping gently to the southeast towards Cloonaghmore Estuary and Killala Bay. The Wind Farm Site is comprised of blanket bog and cutaway peatlands, coniferous forestry, transitional woodland scrub and agricultural pastures. Land cover at the Wind Farm Site is mapped by Corine (2018) as inland wetland peat bogs, with some smaller areas of coniferous forestry, semi natural areas and agricultural pastures (www.epa.ie). The 'Renewable Energy Strategy for County Mayo 2011-2020' carried out a detailed study to identify potential areas for renewable energy developments[25]. These potential areas for wind energy developments (On-shore) were classified as Priority Areas, Tier 1 – Preferred (Large Wind Farms), Tier 1 Preferred (Cluster of Turbines) and Tier 2 Open for Consideration.

Notwithstanding, the RES states that the Planning Authority will consider all proposed renewable energy developments submitted through the planning system and irrespective of the wind energy classification identified within the Strategy, each will be assessed on the principles of proper planning and sustainable development. The RES's tiered strategic wind energy strategy was designed in 2011 when turbines were smaller.

The Wind Farm Site comprises of a mix of areas classed as Tier 1, Tier 2 and a non-designated area. Of the 18 no. turbines, 3 no. turbines are in a 'Tier 1 Preferred Large Windfarms' area, 10 no. turbines are within an area 'Open for Consideration' and 5 no. turbines are on a non-designated area. However, these 5 no. turbines are within 820 m of a designated area, as shown on **Figure 4.1**. The areas of the proposed site that are located outside the designated areas are 'unclassified' and share the same characteristics as the portion within the classified lands i.e. agricultural lands (grazing) and planted conifer forestry. Accordingly, the principle of a wind farm at the Study Area is acceptable in planning terms, subject to other Development control considerations, including consideration of likely significant adverse effects on the environment of the Proposed Development.

5.3.5 Tourism

5.3.5.1 Tourist Attractions

Study Area 1: Development Site and Environs (10 km)

The scenic route of the Wild Atlantic Way runs proximate to the Proposed Development. Discovery Points along the route and in the vicinity of the Proposed Development are

[25] Mayo County Council, '*Renewable Energy Strategy for County Mayo 2011-2020*'. Available at: Mayo-Renewable-Energy-Strategy.pdf [Accessed: 17/09/2025]

Downpatrick Head to the north, Céide Fields to the northwest, Lackan Strand to the east and further south Killala Quay.

The Study Area does contain a number of other key attractions also (**Table 5.7**).

Table 5.7: Selected Tourist Attractions Within the Study Area (10 km)

Tourist attraction	Location Description	Distance (km)
Lackan Strand	South of Rathlackan	1.1
Rathfran Abbey	North of Killala	3.1
Downpatrick Head	North of Ballycastle	4.2
Ballycastle Beach	North of Ballycastle	4.5
Killala Round Tower	Killala	5.6
Ross Beach, Killala	North-east of Killala	5.7
Moyne Abbey	Southeast of Killala	8.6
Blanemore Forest Walk	East of Garranard	8.7
Céide Fields	West of Ballycastle	9.5

There are four attractions within 5 km of the Proposed Development. Of these, Lackan Strand, which is located south of Rathlackan and east of the Wind Farm Site, is the closest to the Proposed Development.

A popular tourist attraction located approximately 4.2 km north of the Wind Farm Site is Downpatrick Head located along the Wild Atlantic Way. The sea stack rising from the sea provides shelter to thousands of sea birds. This signature discovery point also includes a unique vantage point over the Stags of Broadhaven.

Killala round tower, which is approximately 5.6 km south of the Proposed Development, is within the settlement of Killala. Killala is a picturesque seaside village popular with tourists. It is famous for its role in the 1798 rebellion when a French army led by General Humbert landed at Kilcummin pier, which has led to the town being popular with historians.

The Céide Fields and Visitor Centre are another discovery point located along the route of the Wild Atlantic Way, approximately 9.5 km northwest of the Proposed Development. The fields are the oldest known field system in the world, covered by a natural blanket bog with its own vegetation and wildlife.

Study Area 2: Mayo County

Tourism is important to the local economy and tourism expenditure will help support local enterprises such as hotels, B&B, camping and caravan parks, shops, restaurants, public houses, golf clubs, and the visitor attractions themselves. Mayo, as a county, is a very popular destination for international and Irish tourists alike. Many areas that are important to the tourist industry of County Mayo owe their attraction to the abundance of natural resources, pristine environment and scenic landscape as well as renowned destinations such as Céide fields, Wild Nephin Ballycroy National Park, Croagh Patrick, Downpatrick Head, Knock Shrine, Westport/Clew Bay and Achill[26].

The branding of Ireland's Atlantic coastline as the 'Wild Atlantic Way', provides an exceptional opportunity for the county to showcase its many attractions and activities along the county's Atlantic coast.

Tourism has been identified as a key economic sector for county Mayo. Alongside its existing tourist attractions, Mayo offers great opportunities for further development with the potential for significant job creation. The Mayo Tourism Strategy 'Destination Mayo 2016-2021' was developed to "*ensure a wider distribution of tourists to a range of tourist options that the County has to offer*", once successfully implemented. This would not only help to extend the tourism season, but also reduce pressure on established, more traditional tourist destinations and their infrastructure.

There are a number of policies and objectives, including development options, outlined in the Mayo CDP (2022-2028) which seek to promote tourism in the county. The CDP (2022) states, that three key tourism pillars were identified; "Firstly, the continued development and enhancement of our tourism product and the various categories of tourism that bring visitors to Mayo. Secondly, ensuring that high quality services and accommodation are accessible and available for our visitors and thirdly, the identification of priority infrastructure designed to provide new and innovative activities and flagship products".

Also, Infrastructure and Visitor Services Policies TRP 23 states, "to support and promote sustainable tourism, accessible to all throughout County Mayo, and to work in partnership with tourism organisations and adjoining local authorities, where necessary, in securing the development of tourism enterprises and infrastructure, subject to suitable locations, where

[26] Mayo County Council, '*Mayo County Development Plan 2022-2028'*. Available at: Mayo County Development Plan 2022-2028 - [Accessed: 17/09/2025]

it can be demonstrated that the development will not have significant adverse effects on the environment, including the integrity of the Natura 2000 network, residential amenity or visual amenity".

5.3.5.2 Tourism: Numbers and Revenue

At the time of writing there is no available data providing a tourism breakdown for Study Area 1 or Study Area 2 from 2018 to date. Regional tourism performance figures for 2019 for the Northern and Western Region are provided below.

Study Area 3: Northern and Western Region: Cavan, Donegal, Leitrim, Galway, Mayo, Monaghan, Roscommon and Sligo (**25,800 km^2**)

The Western Region includes the counties of Galway, Mayo and Roscommon. The region has a wealth of natural, cultural and heritage assets of national importance and is a significant tourist destination. Regional tourism performance figures for 2019 for the West Region records that overseas tourist numbers totalled 1,943,000 visitors in 2019 and tourism revenue (2019) accounted for €653,000,000 in the region from overseas tourists. Domestic visitors from Ireland and Northern Ireland accounted for 1,961,000 visits to the region in 2019, with €418,000,000 in revenue generated from Northern Ireland and domestic visitors[27].

County Mayo's coast is also included in the '*Wild Atlantic Way*" which is one of the longest defined costal routes in the world. It was devised as a new '*experience*' and '*destination*' by Fáilte Ireland to present the west coast of Ireland as a compelling international tourism product. It has become an over-arching brand which individual destinations and businesses can trade collectively under with much greater potential visibility and clarity of message in the international marketplace[28].

The Northern Region includes the counties of Donegal, Leitrim, Cavan, Sligo and Monoghan and Roscommon. The region has a wealth of natural, cultural and heritage assets of national importance and is a significant tourist destination. Regional tourism performance figures for 2019 for the Northern Region records that overseas tourist numbers totalled 768,000 visitors in 2019 and tourism revenue (2019) accounted for €259,000,000

[27] Key Tourism Facts 2019, Failte Ireland, March 2021, https://www.failteireland.ie/FailteIreland/media/WebsiteStructure/Documents/3_Research_Insights/4_Visitor_Insights/KeyTourismFacts_2019.pdf?ext=.pdf, [Accessed: 17/09/2025]
[28] 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: 17/09/2025]

in the region from overseas tourists. Domestic visitors from Ireland and Northern Ireland accounted for 1,786,000 visits to the region in 2019, with €352,000,000 in revenue (2019) generated from Northern Ireland and domestic visitors[29].

5.3.5.3 Tourist Attitudes to Windfarms

The first wind farm in Ireland was completed in 1992 at Bellacorick, Co. Mayo and since then wind farms have elicited a range of reactions from Irish people (Failte Ireland, 2012). In 2002, Sustainable Energy Ireland (SEI) - now the Sustainable Energy Authority of Ireland (SEAI) - commissioned a survey aimed at identifying public attitudes to renewable energy, including wind energy in Ireland[30]. The 2002 survey found that, in general, Irish people are positively disposed towards the development of wind farms. However, the survey also indicated that people will not accept wind farms everywhere and that special care should be taken so that wind farm development be cognisant to contextual landscape characteristics.

Ireland's scenery has been a cornerstone of international tourism marketing campaigns for decades. In 2012, 91 % of overseas holidaymakers to Ireland rated scenery as an important part of a destination with natural/unspoilt environment also rated highly at 91 %. The future sustainability of Ireland's tourism industry is therefore inextricably linked to the maintenance of the character and scenic qualities of the Irish landscape.

Fáilte Ireland Surveys 2007 and 2012

Fáilte Ireland, in association with the Northern Ireland Tourist Board (NITB), decided in 2007 to survey both domestic and overseas holidaymakers to Ireland to determine their attitudes to wind farms. The survey drew on many aspects of the original SEI survey including the use of photomontages of wind farms, and in particular a variety of landscape types, which were used to elicit a reaction from respondents. The purpose of the survey was to assess whether or not the development of wind farms would impact on the visitors' enjoyment of Irish scenery.

In 2012, this research was updated on behalf of Fáilte Ireland by the market research and analysis company Millward Browne Landsdowne to determine if there was any change in visitor attitudes during this period. The 2012 research indicated that 47 % of visitors felt an

[29] Key Tourism Facts 2019, Failte Ireland, March 2021, https://www.failteireland.ie/FailteIreland/media/WebsiteStructure/Documents/3_Research_Insights/4_Visitor_Insights/KeyTourismFacts_2019.pdf?ext=.pdf, [Accessed: 17/09/2025]
[30] Sustainable Energy Ireland (2003), Attitudes towards the Development of Wind Farms in Ireland, Dublin

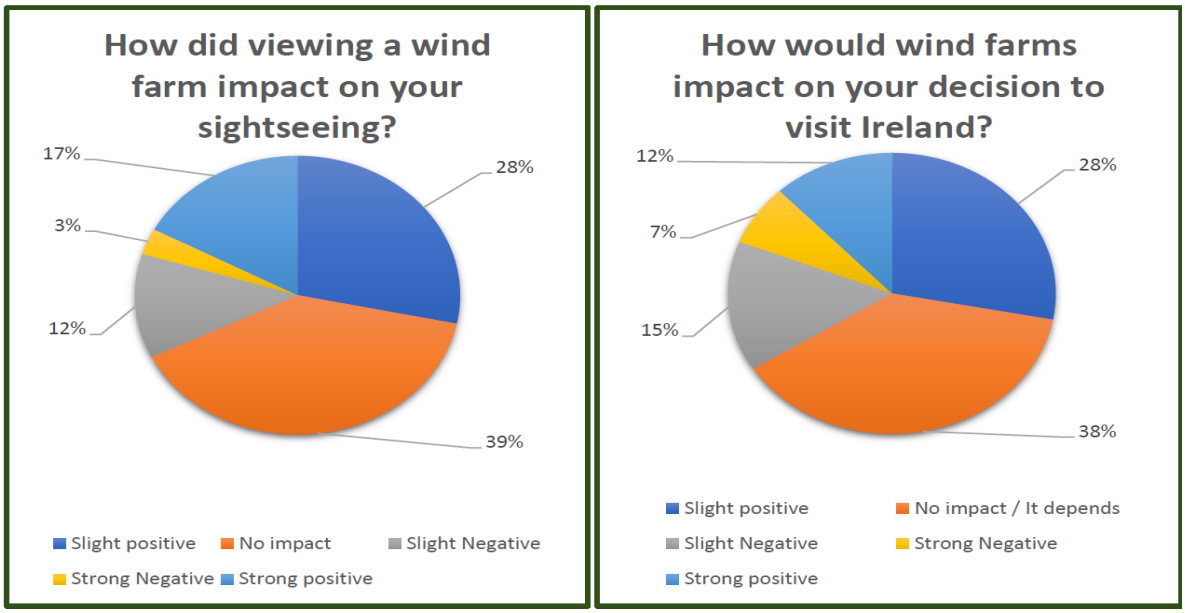
increased positive impact on landscape, compared to 32 % in 2007. Negative responses also increased, showing 30 % in 2012 against 17 % in 2007. However, 49 % of visitors felt that wind farms had no impact on the landscape in 2007 in comparison to 23 % in 2012. It was notable that those interviewed who did not see a wind farm during their trip held more negative perceptions and opinions on wind farms to those that did. Of the wind farms viewed, the majority (59 %) contained less than ten turbines in 2012, which was quite similar to 2007 (63 %). Despite the fact that there has been an increase in the number of visitors who have seen at least one wind farm on their holiday, there was also a slight increase (from 45 % in 2007 to 48 %) in the number of visitors who felt that this had no impact on their sight-seeing experience. Importantly, and as has been seen in the previous research, the type of landscape in which a wind farm is sited can have a significant impact on attitudes. Although 21 % feel that wind farms have a fairly or very negative impact on sight-seeing, this figure increases substantially for wind farms in coastal areas (36 %)[31].

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

[31] Visitor Attitudes On The Environment – Wind Farms, Failte Ireland 2012 WindFarm-VAS-(FINAL)-(2).pdf (failteireland.ie) [Accessed: 17/09/2025]

Seven out of ten (or 71 %) visitors claim that potentially greater numbers of wind farms in Ireland over the next few years would have either no impact or a positive impact on their likelihood to visit Ireland (**Graph 5.1**). Of those who feel that the potentially greater number of wind farms would impact positively on future visits, the key driver is support for renewable energy, followed by potential decreased carbon emissions. Given the scenario where more wind farms will be built in Ireland in the future, the most widely held view is that this will not impact their likelihood to visit the area again, with a slightly greater majority saying that this would have a positive rather than a negative impact.



Graph 5.1: Visitors Attitudes on the Environment – Wind Farms. Source: Fáilte Ireland (2008)

Fáilte Ireland carried out research on overseas holidaymakers' attitudes to Ireland in 2018. It noted holiday makers choice is based largely on *beautiful scenery* (93 %), followed closely by *plenty to do and see* (91 %) and *friendly people* and *natural attractions* (88 %).

Wind Farms & Tourism Trends

In 2021, BiGGAR Economics published research findings, on research carried out in Scotland on 44 wind farms and tourism trends[32]. This research also re-examined 28 wind farms constructed between 2009 and 2015 that had been analysed in a previous study by BiGGAR Economics published in 2017, finding that the localities in which they were based

[32] 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: 17/09/2025]

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.

SEAI National Survey 2022

Several studies to assess the public perception and visitor perception of wind farms have been carried out over the last 2 decades. The most recent of these studies, was carried out in 2022, by Sustainable Energy Authority of Ireland (SEAI). In-person doorstep interviews were conducted across all of rural Ireland, encompassing 1,764 households. This included 1,116 households within 5 km of a new commercial wind or solar project sites, of which 219 live within 1 km of a project site[33]. The results indicated very positive views and strong support for Wind Farms in Ireland, in summary:

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

IWEA Interactions Opinion Poll on Wind Energy

Interactions Research have conducted omnibus research annually commissioned by Wind Energy Ireland (WEI), formerly the Irish Wind Energy Association (IWEA), from 2017, to 2022 and again in November 2023 with the objective to "measure & track perceptions and attitudes around wind energy amongst Irish adults."

The most recent survey conducted in November and December 2023 and published in February 2024[34] *sampled a representative sample of 1,017 Irish adults nationwide, together with a supplementary booster sample of 221 rural dwellers. The key findings from the survey included:*

[33]SEAI, 2023 Irish national survey of households near new commercial wind and solar farms, Available at: https://www.seai.ie/publications/SEAI-RESS-National-Survey.pdf [Accessed: 17/09/2025]

- 4 in 5 people are in favour of wind energy development, with 3 in 5 supporting wind farms
- For their local area
- Opposition to wind energy at 4 %
- Cheaper electricity, reduced carbon emissions, and positive environmental impacts were cited as the top three reasons people supported wind farms, with the important role of wind energy in supporting Ireland's energy independence also recognised as a leading benefit
- There was a high level of uncertainty among respondents as to whether or not we were doing enough in terms of national policies to support the development of the industry– just 37 % of respondents agreed, while 34 % disagreed
- Respondents were asked to rank the top 5 benefits of wind energy, the responses were as follows:
  - Cheaper electricity
  - 74 % − Reduce CO2 emissions – 70 %
  - Good for the environment – 69 %
  - Supports energy independence – 52 %
  - Creates employment – 46 %
  - Good for local communities nearby – 37 %
  - I don't know of any benefits – 9 %
  - There is no benefit – 4 %

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

Public Acceptance of a New Renewable Electricity Survey 2021

A study was carried out to survey Irish public opinion, specifically in relation to wind farms and their associated grid connections[34]. The study found that over 75 % of the people surveyed are positively disposed to wind turbines but just 36 % are willing to accept the development of wind farms within 5 km of their homes. The findings of these results are

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

encouraging from a tourism perspective as many tourists who visit Mayo are from the domestic market which accounted for 738,000 visits in 2022[35]. Per the findings of the referenced study, over three quarters of participants are positively disposed to windfarms in Ireland. Interpreted on a broader level the results of the study would appear to suggest the development of windfarm infrastructure in County Mayo is unlikely to have a significant effect from a tourism related perspective.

The study results indicate there are regional variations in preferences. The results showed, the highest share of outright opposition to wind farms is in the Midlands, at 21 % of respondents, and the lowest is in the Border region at 9 %. The opposition to new transmission lines is highest at 44 % in the South-West and lowest in the West at 18 %. In respect to Tirawley Wind Farm, the Grid Connection is to be accommodated within the public road infrastructure as recommended per the ESBN functional specifications for the installation of 110 kV underground power cables for contestable projects[36].

5.3.6 Human Health

Common concerns around wind farms in terms of human health are generally associated with issues such as electromagnetic fields, shadow flicker and noise. These topics are considered in this EIAR in addition to air quality and water contamination in **Chapters 9: Hydrology and Hydrogeology, Chapter 11: Noise** and **Chapter 15: Shadow Flicker.**

5.3.6.1 General Health of Population

Human health of communities can vary greatly owing to a number of factors including susceptibility to disease, location, income inequality, access to health care etc. The Department of Health routinely publishes a review of Irish public health indicators derived from several areas, including demographics, population health, hospital and primary care, employment and expenditure. In 2022 it published "*Health in Ireland – Key Trends 2022*" which indicates a that age-standardised mortality rates have declined for all causes over the past decade by 15.8%. Recent Eurostat data for 2021, (for available countries) shows life expectancy has further dropped in 2021, most likely as a result of the Covid-19

[35]Irish Resident Travel by County 2022, May 2023 https://www.failteireland.ie/FailteIreland/media/WebsiteStructure/Documents/Publications/domestic-trips-and-revenue-by-county-2022.pdf?ext=.pdf [Accessed: 17/09/2025].
[36] Functional Specification for the Installation of 38kV Underground Power Cables for Contestable Projects Network Assets, Underground Networks SPEC-171213-AXS, Dan Giustini/ESBi [Accessed: 17/09/2025]

pandemic. According to this report Ireland has the highest self-perceived health status in the EU area, with 82.1 % of people rating their health as good or very good[37].

The 2022 census data for the general health of the population as shown in **Table 5.8** indicates the health status across three of the Study Areas as "*Very Good*" to "*Good*". The health status of the site and Environs is very similar to that of county Mayo as a whole. Both these areas are in line with the national average. The "*Very Good*" health status for county Mayo at 56% is lower than the national average.

Table 5.8: Population by General Health (2022)

General Health	The Site & Environs (10km)	County Mayo	Ireland
	Percentage (%)		
Very good	51	51	53
Good	32	32	30
Fair	11	10	9
Bad	2	2	1
Very bad	0	0	0
Not stated	3	5	7

Note: The site & Environs (10 km) Population by General Health is based of the average population by General Health for each Small Area within 10km of the site.

5.3.6.2 Health Effect 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.

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

[37] The Department of Health (2022) – "*Health in Ireland: Key Trends 2022"* Available at: https://www.gov.ie/pdf/?file=https://assets.gov.ie/241598/8a6472b4-83cf-45ec-88c9-023e0c321d8c.pdf#page=null [Accessed: 17/09/2025]

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.
The international scientific journal "*Frontiers in Public Health*" published a study[38] in 2014 on the subject of 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 concluded as follows:
"The available scientific evidence suggests that EMF, shadow flicker, low-frequency noise, and infrasound from wind turbines are not likely to affect human health; some studies have found that audible noise from wind turbines can be annoying to some. Annoyance may be associated with some self-reported health effects (e.g., sleep disturbance) especially at sound pressure levels >40 dB(A). Because environmental noise above certain levels is a recognized factor in a number of health issues, siting restrictions have been implemented in many jurisdictions to limit noise exposure. These setbacks should help alleviate annoyance from noise. Subjective variables (attitudes and expectations) are also linked to annoyance and have the potential to facilitate other health complaints via the nocebo effect. Therefore, it is possible that a segment of the population may remain annoyed (or report other health impacts) even when noise limits are enforced." 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".

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

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.

The effect of Noise and Shadow Flicker are addressed in **Chapter 11: Noise** and **Chapter 15: Shadow Flicker.**

5.3.6.3 Electromagnetic Interference

Electromagnetic fields ("EMF") are invisible lines of force that surround electrical equipment, power cords, wires that carry electricity and outdoor power lines. Electric and magnetic fields can occur together or separately and are a function of voltage and current. When an electrical appliance is plugged into the wall, an electric field is present (there is voltage but no current); when that appliance is turned on, electric and magnetic fields are present (there is both voltage and current). Both electric and magnetic fields decrease with distance. Electric fields are also dissipated by objects such as building materials. On a daily basis, people are exposed to extremely low frequency ("ELF") EMF as a result of using electricity. National and international health and scientific agencies have reviewed more than 35 years of research including thousands of studies. None of these agencies has concluded that exposure to ELF-EMF from power lines or other electrical sources is a cause of any long-term adverse effects on human, plant, or animal health. The International Commission on Non-Ionising Radiation Protection (ICNIRP) Guidelines give a limit of 100 µT for sources of AC magnetic fields. This compares to 0.13 µT that arises from a 110 kV underground cable when directly above it; 1.29 µT that arises from a 220 kV underground cable when directly above it and 11.4 µT that arises from a 400 kV AC underground cable that is one metre deep and measured directly above it. This ESB publishedin 2017 called "*EMF & You*" which provides information about Electric & Magnetic Fields and the electricity network in Ireland[39].

In 2014, a study was undertaken in Canada[40], measuring electromagnetic fields around wind farms and the impact on human health. The study found that:
"there is nothing unique to wind farms with respect to EMF exposure; in fact, magnetic field levels in the vicinity of wind turbines were lower than those produced by many common household electrical devices and were well below any existing regulatory guidelines with respect to human health".

[39] EMF & You, ESB, 2017 - https://esb.ie/docs/default-source/default-document-library/emf-public-information_booklet_v9.pdf?sfvrsn=0, [Accessed 17/09/2025]
[40] Lindsay C McCallum, *et al*. (2014) *Measuring electromagnetic fields (EMF) around wind turbines in Canada: is there a human health concern?*

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

5.3.6.4 Shadow Flicker

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

Currently there are no turbines in place at the proposed Wind Farm Site. As the nearest windfarm is over 5.2 km from the Wind Farm Site and therefore, shadow flicker is not currently if concern.

Chapter 15: Shadow Flicker provides the full assessment of shadow flicker of the Proposed Development for this EIAR.

5.3.6.5 Noise

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

Chapter 11: Noise provides an assessment of noise in relation to the Proposed Development.

5.3.6.6 Air Quality

Environmental risk factors, such as air pollution and climate change, pose growing threats to public health in the EU. In 2021, fine particulate matter ($PM_{2.5}$) exposure alone caused over 253,000 deaths, with the highest mortality in Central and Eastern Europe.[41] It is estimated that there are approximately 1,300 premature deaths annually in Ireland due to poor air quality from fine particulate matter ($PM_{2.5}$).[42]

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

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. Transport accounts for a significant portion of pollutants in the atmosphere.

Chapter 10: Air and Climate provides an assessment of air quality in relation to the Proposed Development.

5.3.6.7 Water Contamination

Contaminants such as sediments arising from the Proposed Development have the potential to contaminate water bodies designated for drinking water purposes and may cause ecological damage as well. Mitigation 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 are considered in terms of assimilative capacity, that is to dilute contaminants in receiving waterbodies as a *'last line of defence'*. Any contaminants will be treated when water is attracted for drinking water purposes.

The GSI Group Water Scheme and Public Supply Source Protection Areas database indicates that there are no mapped Group Water Schemes (GWS) or Public Water Schemes (PWS) or an associated Source Protection Area (SPA) within the Wind Farm Site or in the surrounding lands (www.gsi.ie). The closest mapped GWS is the Crossmolina-Eskereagh GWS which is located along the N59 from Crossmolina to Bellacorick and ~15 km south of Tawnaghmore substation.

Consultation with GSI well database indicates there are no mapped wells within the Wind Farm Site Boundary. Government industry guidelines stipulate a buffer zone of 250 m is required from boreholes used for drinking abstraction. A search of private well locations (only wells with a locational accuracy of 1-100 m were examined) was undertaken using the GSI well database (www.gsi.ie). The GSI mapping shows only 1 no. borehole (GSI Name: 1133SWW002) in the townland of Castletown ~786 m northeast of wind turbine AT17. This borehole is described as having agricultural and domestic uses and has a poor yield class of 16.4 m^3/day. The GSI do not map any other wells with a locational accuracy of ≤100 m in the local area.

There are 2 no. wells located between 1.3 km and 1.8 km (with a locational accuracy of 1 km) mapped to the northeast of the Wind Farm Site. The GSI states that these also have a poor yield class.

There are 1 no. wells located 1.6 km (with a locational accuracy of 1 km) mapped to the north of the Wind Farm Site. The GSI states that these also have a poor yield class.

In addition, several wells with a locational accuracy of 1 km are mapped towards the south of the Grid Connection. One of these GSI mapped wells (GSI name: 1131NWW004) is reported to be associated with water supply for the village of Killala, ~1 km to the east. This borehole is reported to have a yield of ~27 m^3/day.

The closest mapped wells are greater than 250 m from the redline boundary of the Wind Farm Site.

A map of local wells identified by the GSI is attached as **Figure 5.4**.

A Water Framework Directive (WFD) Compliance Assessment has been completed for all waterbodies (surface and groundwater bodies) with the potential to be impacted by the Proposed Development. With the implementation of the mitigation measures detailed in **Chapter 9: Hydrology and Hydrogeology** there will be no change in the WFD status of the underlying groundwater body or downstream surface waterbodies as a result of the Proposed Development. The Proposed Development has been found to be fully compliant with the WFD and will both prevent any waterbody from achieving its WFD objectives.
An assessment of the potential cumulative effects associated with the Proposed Development and other developments on the hydrological and hydrogeological environment has been completed in **Chapter 9: Hydrology and Hydrogeology.** With the implementation of mitigation measures detailed in **Chapter 9**, and **Appendix 2.1, CEMP** the cumulative assessment found that there will be no significant effects on the hydrological and hydrogeological environments.

Chapter 9: Hydrology and Hydrogeology found that no significant effects on the water environment will occur during the construction, operation or decommissioning of the Proposed Development.

5.3.6.8 Traffic

Chapter 17: Traffic and Transportation and **Appendix 17.1** provides an assessment of traffic in relation to the Proposed Development.

5.3.6.9 Turbine Safety

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

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

5.3.7 Property Value

In 2023, the Centre of Economic Research on Inclusivity and Sustainability[43] published a working paper entitled 'Wind Turbines and House Prices Along the West of Ireland: A Hedonic Pricing Approach'. At the time of writing this is the only independent academic research paper that assesses the effect of wind farms on property prices in Ireland. It is important to note that this is a working paper. Working papers are versions of research papers that have not yet been peer-reviewed or published in a journal. The study claims that properties located within 1 km of turbines experience a 14.7 % potential reduction in

[43] Centre for Economic Research on Inclusivity and Sustainability (CERIS) Working Paper Series, 2023/01 https://www.universityofgalway.ie/media/researchsites/ceris/files/WP-2023-01.pdf [Accessed: 17/09/2025]

value. However, beyond 1 km no significant reduction in house prices was observed, except for turbines connected 0-5 years before the property listing. The study also found that the effect diminishes over time, becoming insignificant after 10 years. Additionally, the research suggest that the price effect is not persistent and can be minimised through siting decisions. It is important to note the sample size is remarkably small with only 225 houses assessed and is limited to the west of Ireland. It is also important to note that the house prices were assessed based on their listed values on the Daft.ie website, rather than their actual sale agreed prices. However, a number of other studies have been undertaken outside of Ireland with the findings set out below and in **Table 5.9**.

The largest study of the effects of wind farms on property prices was conducted in the USA by Hoen *et al*[44] for the US Department of Energy. This study in the USA used data from 7,500 of homes located within 10 miles (c.16 km) of 24 existing wind farms in nine States over a 10-year study period. The findings are drawn from eight different pricing models, together with both repeat sales and sales volume models. None of the models found conclusive evidence of the existence of widespread effects on property values of properties surrounding wind farms. The study also found that neither the view of the turbines or the distance of the property to the turbines had any consistent, measurable and statistically significant effect on property prices in that area. The article does state that the analysis cannot dismiss the possibility that individual properties, or small numbers of properties could potentially be negatively affected, although if there are such properties, they are either too small or too infrequent to result any widespread, statistically observable effect.

The study outlined above was updated in 2013[45] where data was collected from 50,000 house sales in 27 counties in nine states across the USA. The properties were within 10 miles (16 km) of 67 wind farms. Of these, 1,198 sales were of properties within one mile (1.6 km) of a wind turbine. The data covers the period from before wind farms were consented in the areas to after their construction and into the operation phase. The authors used Ordinary Least Squares (OLS) and spatial process difference-in-difference hedonic models to make an estimation of the effects on house prices from wind farms. Regardless of the model used, the study found no statistical evidence that property prices near turbines were affected in the pre-planning/preconstruction or post construction periods. The research suggests that the effects of wind turbines on property prices is likely to be small, if there is any effect at all.

[44]https://www.researchgate.net/publication/242582095_The_Impact_of_Wind_Power_Projects_on_Residential_Property_Values_in_the_United_States_A_Multi-Site_Hedonic_Analysis [Accessed: 17/09/2025]
[45] https://eta-publications.lbl.gov/sites/default/files/lbnl-6362e.pdf [Accessed: 17/09/2025]

A study undertaken in 2014 by the Centre of Economics and Business Research for Renewable UK found that house prices were driven by the property market and not the presence or absence of wind farms[46]. The study analysed house prices at 7 sites across England and Wales at either planning, construction or post construction. The report concluded that: *"We can conclude that local house price growth at these sites is best explained by variations in the county level property market. When homebuyers came to purchasing a property in areas within 5km of wind farm sites, it appears that other factors that determined demand for property, such as the supply of new housing and the condition of the local economy, were more influential than the fact that a wind farm was located nearby. This resulted in properties on average retaining their value."*

Another study was undertaken in 2014 by the London School of Economics and it did find the presence of wind farms negatively impacted property values within 2 km of very large wind farms[47]. In 2016, following on from the contrasting results of the 2014 studies ClimateXChange carried out their own research in Scotland. The ClimateXChange study found no significant effect on the change in price of properties within 2 km or 3 km of studied wind farms and found the property values trended in a positive direction in most cases[48]. The ClimateXChange study also found that some wind farms can provide economic and amenity benefits to an area.

In the absence of any peer reviewed/published evidence to the contrary, the above studies provide some context from the international perspective and indicate that wind farms do not affect property/ house value. It is reasonable to conclude that the provision of a wind farm in the proposed location is unlikely to have a long-term effect on property values in the area throughout the operational phase of a wind farm once integrated into the local environment.

[46] https://cdn.ymaws.com/www.renewableuk.com/resource/resmgr/publications/reports/ruk-cebr-study.pdf [Accessed 17/09/2025]
[47]http://eprints.lse.ac.uk/58422/1/__lse.ac.uk_storage_LIBRARY_Secondary_libfile_shared_repository_Content_SERC%20discussion%20papers_2014_sercdp0159.pdf [Accessed: 17/09/2025]
[48] Heblich, D. S., Olner, D. D., Pryce, P. G. & Timmins, P. C., 2016. Impact of wind turbines on house prices in Scotland, Scotland: ClimateXChange, Available at: https://www.climatexchange.org.uk/media/1359/cxc_wind_farms_impact_on_house_prices_final_17_oct_2016.pdf [Accessed: 17/09/2025]

Table 5.9: Summary of Research Finding's between Wind Farms and Property Values

Year	Country	Research Group	Finding
2009 and 2013	USA	LBNL	Analysed nearly 7,500 home sales near wind farms and found no consistent negative impact on property prices. likely to be small, if there is any effect at all. They found no statistical evidence of wind farms affecting home prices before or after construction.
2014	UK	Centre of Economic Research	In summary the analysis found that country-wide property market drives local house prices, not the presence or absence of wind farms; and The econometric analysis established that construction of wind farms at the sites examined across England and Wales has not had a detectable negative impact on house price growth within a 5 km radius of the sites
2014	UK	London School of Economics	There was an average reduction in the value of houses (based on 125,000 house sales between 2000 and 2012) of between 5 % and 6 % within 2 km of very large wind farms.
2016	UK (Scotland)	ClimateXChange	Following a wide range of analyses, including results that replicate and improve on the approach used in the 2014 study by London School of Economics, the study did not find a consistent negative effect of wind turbines or wind farms when averaging across the entire sample of Scottish wind turbines and their surrounding houses. Most results either show no significant effect on the change in price of properties within 2 km or 3 km or find the effect to be positive. Some wind farms provide economic or leisure benefits (e.g., community funds or increasing access to rural landscapes through providing tracks for cycling, walking.
2023	Ireland	Centre for Economic Research on	14.7 % reduction in the value of properties located within 1km of wind turbines and impact on property prices is correlated with taller turbines. It finds no evidence of a

Year	Country	Research Group	Finding
		Inclusivity and Sustainability	significant impact on properties outside 1 km and it also finds that the impact on the house price within 1 km diminishes over time becoming insignificant after 10 years.

5.3.8 Major Accidents and Natural Disasters

5.3.8.1 Natural Disasters

There is limited potential for significant natural disasters to occur at the Wind Farm Site. Ireland is a geologically stable country with a mild temperate climate. The potential natural disasters that may occur are therefore limited to peat-slide, flooding and fire. The risk of peat-slide is addressed in **Chapter 8: Soils and Geology** and the **Peat Stability and Landslide Risk Assessment** (**Appendix 8.1**). A Peat and Spoil Management Plan has been prepared as part of the CEMP in **Appendix 2.1**.

The OPW Past Flood Events Maps have no records of recurring or historic flood instances within the Wind Farm Site (**Figure 9.5**). The GSI Winter 2015/2016 Surface Water Flood Map shows surface water flood extents for this winter flood event. The flood map for this event does not record any flood zones along the streams and watercourses which drain the Wind Farm Site.

The National Indicative Flood Mapping (NIFM) for the Present-Day Scenario shows flooding along the Heathfield, Carn and Cloonalaghan Rivers. The vast majority of the Wind Farm Site is mapped Fluvial Flood Zone C (Low Risk), however, some areas in the southeast are mapped within the 100-year and Extreme fluvial flood zone (Flood Zones A and B) as outlined below.

Fluvial flood zones are mapped along the Carn River, a tributary of the Cloonalaghan River. The mapped Extreme flood zone is located c. 800 m south of wind turbine AT01. From the NIFM all turbines are located outside of the Extreme probability fluvial flood zones along the Carn River. However, an internal Wind Farm Site grid cable connection between wind turbine AT02 and the internal substation crosses the Carn River and is located c. 53 m from the mapped fluvial flood zones. However, the works in the proximity of the flood zone comprise solely of temporary excavations and horizontal directional drilling under the Carn River and there will be no displacement of floodwaters or increase in downstream flood risk.

The OPW's Past Flood Event Layer (Error! Reference source not found.) records a recurring flood event (Flood ID: 10228) in the Kilgobban area just to the east of the Grid Connection. Here the R314 is noted to flood once or twice a year due to high tides. Further recurring coastal flood events (Flood ID: 10229 and 10227) are mapped to the north of Killala. Meanwhile, recurring fluvial flood events (Flood ID: 587 and 10226) are recorded on the Cloonaghmore River ~3 km west of the Grid Connection in the townland of Tonrehown.

The CFRAM River Flood Extents mapping was reviewed along the length of the Grid Connection. There are no areas along the Grid Connection mapped within the CFRAM River Flood extent mapping.

The NIFM was also reviewed along the length of the Grid Connection (Error! Reference source not found.). The Grid Connection crosses the mapped fluvial flood zones along the Cloonaghmore River at Palmerstown Bridge. Flood zones are also mapped to the west of the Grid Connection in the townland of Magherabrack.

No historic or modelled groundwater flood zones are mapped along the Grid Connection.

In summary, there are areas along the Grid Connection at existing watercourse crossings which may be prone to flooding. Due to the depth of the underground electrical cabling route, this will have no effect during the operational phase of the Proposed Development. During the construction phase, works along the underground electrical cabling route may have to be postponed following heavy rainfall events which could cause flooding in these areas

The risk of flooding is addressed in **Chapter 9 – Hydrology and Hydrogeology** and a detailed Stage II Flood Risk Assessment is also included as **Appendix 9.1** to the EIAR.
An article in Wind Power Engineering Magazine estimated that 1 in 2,000 wind turbines catch fire each year[49]. Overall, the data shows that wind turbine fires are relatively rare[50]. It is therefore considered that the risk of significant fire occurring, affecting the wind farm and causing the wind farm to have significant environmental effects is limited.

In relation to earthquakes, Donegal is situated along the boundary of a collision between two ancient continents, The Leannan Fault which ends in Donegal Bay. On 6th May 2023 at

[49] https://www.firetrace.com/fire-protection-blog/wind-turbine-fire-statistics [Accessed 17/09/2025]
[50] https://www.firetrace.com/fire-protection-blog/wind-turbine-fire-statistics [Accessed 17/09/2025]

00:32:25 local time, an earthquake of magnitude 2.5 occurred in Donegal (c. 107 km from the Site Boundary to the northeast) and at a depth of 10 km. The location of the epicentre was 54.97 N, 8.04 W. The event was felt by members of the public around Donegal[51]. The earthquake was detected automatically by the Irish National Seismic Network (INSN). There are several fault lines across Donegal; the Proposed Development site however, is not located along a fault line and there is no historical record of any earthquake causing serious damage in County Donegal, County Mayo, the surrounding counties or on the island of Ireland.

Most natural earthquakes in Ireland occur in the north of Co. Donegal and along the southern coast. Earthquakes are rare elsewhere in Ireland, including south and east of the Donegal cluster. The largest earthquakes occur offshore to the west of the island, with occasional smaller ones along the western coast. The Irish Sea, east of Ireland, experiences more and larger earthquakes than eastern Ireland. There is no historical record of any earthquake causing serious damage on the island.

5.3.8.2 Major Accidents

The duties on designers and manufacturers of machinery including wind turbines are set out in the Machinery Directive, which has been transposed into national law by the 2008 European Communities (Machinery) Regulations as amended[52]. Properly designed and maintained wind turbines and associated infrastructure are a safe technology. A suitable separation distance from turbines and other key infrastructure to properties has been embedded in the Proposed Development's design. These outlined measures will minimise the risk to humans. Overall effects associated with weather, including extreme winds, lightning strikes, ice-throws, heat waves and structural failure have been removed or reduced through inbuilt turbine mechanisms in modern machinery and have been scoped out of the assessment. Potential health effects are therefore related to decommissioning/construction related effects and operational effects on residential amenity.

[51] Irish national Seismic network (2019) Recent Earthquakes. Available online at: https://www.insn.ie/recent-local-earthquakes/ [Accessed 17/09/25]
[52] European Communities (Machinery) Regulations (2008) Statutory Instrument (S.I.) No. 407 of 2008 as amended by S.I. 310 of 2011 and S.I. 621 of 2015.

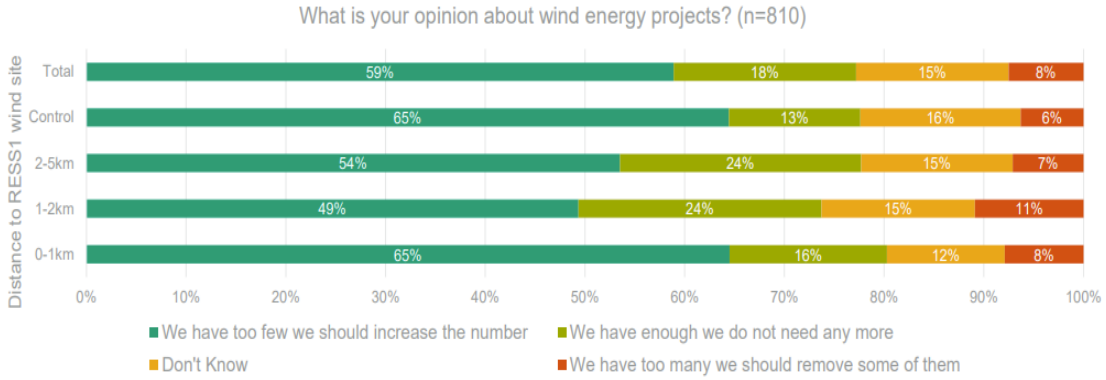
5.3.9 Public Perception of Wind Energy

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

In 2023, the Sustainability Energy Authority of Ireland (SEAI) published a national survey of the attitudes of people who live near to 50 new commercial solar or wind farm projects in Ireland. In 2022, surveyors conducted in-person interviews on the doorstep across all of rural Ireland. This included 1,116 households within 5 km of new commercial wind or solar projects of which 219 live within 1 km of a project site. 648 households surveyed were located between 5 – 10 km of a project site. The survey utilised control sample areas. The control sampling areas are Electoral Districts greater than 10 km from a Renewable Electricity Support Scheme 1 (RESS1) site.

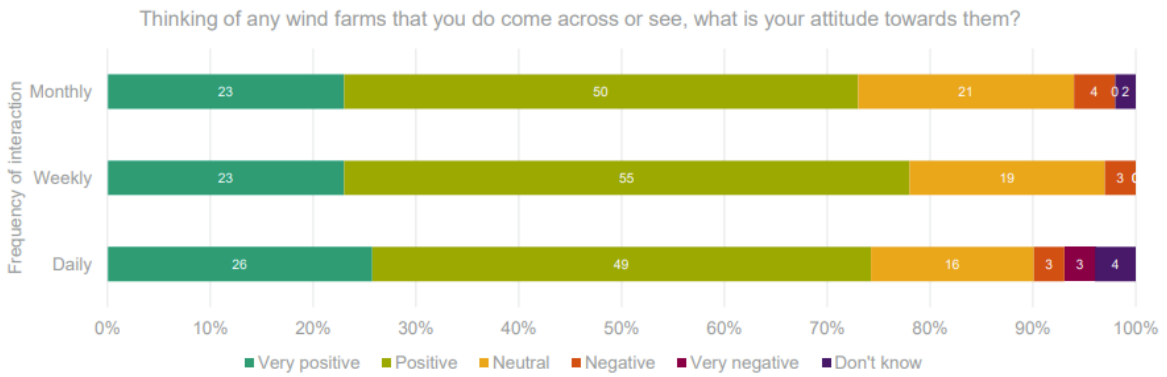
Attitudes towards Wind Farms

The results showed that 67 % of respondents hold a positive or a very positive view towards wind energy. 73 % of respondents who live less than 1 km from a RESS1 *wind* project hold a positive or a very positive attitudes towards wind energy, while 70 % of those in the control group hold such views.



Graph 5.2: Attitudes to Wind Energy Projects of Residents living within 5 km of RESS1 Wind Sites

87 % of respondents feel they know at least a little about wind energy. 22-28 % of respondents in the treatment group feel they know a lot about wind, compared to 12 % in the control group. Most respondents are positive or very positive towards wind farms they have come across, regardless of whether that is on a daily, weekly or monthly basis.



Graph 5.3: Respondents Attitude towards Wind Farms they have Encountered

41 % of respondents living less than 1 km from a RESS1 site (who were not aware of a local project under development) felt positive or very positive towards a hypothetical local wind project, compared to 52 % in the control group. The SEAI asked respondents to rank six statements on how to encourage communities to be more positive about solar farms in their area. On average, careful site location and early management with local residents appeared most important for both the treatment and control groups.

Engagement and the Planning Process

Most respondents to the SEAI survey agree that they can have a say in the planning process, regardless of distance from a RESS1 project. Between 19-22 % of respondents within 5 km of a RESS1 project do not think they have a say in planning process.

Engagement and Community

Survey results identified that 71-75 % of respondents near RESS1 installations agree that communities can have a say in the planning process; a similar majority holds for the control group. 56-61 % of respondents near a RESS1 project feel that project developers and planning authorities take account of community opinions. 26 % of the respondents near a RESS1 project do not think that project developers and planning authorities take account of community opinions. 56-61 % of respondents near a RESS1 project feel that project developers and planning authorities take account of community opinions. 26 % of respondents near a RESS1 project do not think that project developers and planning authorities take account of community opinions. However, most respondents do not think

that the planning process in Ireland is fair and transparent, regardless of distance from a RESS1 project.

Community Benefits

Results from the survey identify that attitudes towards community benefit funds are highly positive, especially among those closest to the project. Even respondents who are not close to a RESS1 project (and not likely to be in the 'catchment area' for benefit funds) are mostly positive about community benefit funds. Most respondents believe that payment should either be higher or is about right, regardless of their distance from the RESS1 wind farm site. Few respondents believe the payment should be less or is inappropriate[53].

5.3.9.2 Wind Energy Ireland Annual Wind Survey 2022

In December 2022, Wind Energy Ireland (WEI) published the results of their most recent nationwide annual poll 'Wind Energy Ireland Public Attitudes Monitor'. The WEI annual survey is used to measure and track the perceptions and attitudes around wind energy among Irish Adults. The 2022 survey sampled a representative sample of 1,017 Irish adults together with a supplementary booster sample of 201 rural dwellers. Fieldwork took place between the 23rd of November and the 8th of December 2022.

The 2022 survey reported that 4 in 5 nationally (80 %), are now in favour of wind power. This is a 6 % increase on the 2021 results. Amongst rural residents, 4 in 5 (85 %) registered favourable attitudes which is the highest level recorded since WEI tracking commenced. Almost half (45 %) ranked cheaper electricity as the top wind energy benefit. Among rural residents, reducing negative feedback is evident year on year. Nationally, 58 % said they would be in favour of a wind farm in their area, this marked the highest number since tracking began. Amongst rural residents just 1 in 10 registered as being opposed[54].

The Wind Energy Ireland 2022 survey follows the structure of previous national opinion polls on wind energy undertaken since 2017. The 2022 survey results are consistent with previous year's figures and thus indicate that approximately 4 out of 5 Irish adults have continued to support wind energy in recent years.

[53] SEAI (2023) Irish National Survey of Households near New Commercial Wind and Solar Farms. Available at: https://www.seai.ie/publications/SEAI-RESS-National-Survey.pdf [Accessed 17/09/2025]
[54] WEI (2022) Wind Energy Ireland Public Attitudes Monitor, December 2022. Available at: https://windenergyireland.com/images/Final_WEI_Annual_Attitudes_Survey_2022.pdf [Accessed 17/09/2025]

5.4 ASSESSMENT OF POTENTIAL EFFECTS

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 effect on the local or regional population levels. There is however, the benefit which would accrue to the region in terms of 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 to develop in County Mayo and to locate in the vicinity of the Wind Farm Site. 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 and would be a direct effect in terms of influencing change in local population dynamics. Overall, it is the likely effect in terms of population dynamics considered to be imperceptible.

The predicted effect on the immediate settlement patterns and social patterns is also slight to non-existent.

During the construction phase there is the potential for limited effects on the residential amenity of the local population. These would be short-term effects relating primarily to an increase in construction traffic causing noise, dust, and an increase in traffic volume. These potential effects are assessed in detail in EIAR **Chapter 10. Air & Climate, Chapter 11. Noise** and **Chapter 17. Traffic & Transportation**. These effects been defined as slight negative in the construction and decommissioning phases and imperceptible in the operational phase.

While the Proposed Development is not likely to result in a marked increase in settlement in the area, or a change in social patterns in the area, it 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 effect 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 effect 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.

No likely adverse significant effects are predicted on population and/or settlement patterns.

5.4.2 Economic Activity

During the construction phase, there would be economic effects resulting from the expenditure on items such as site preparation, Site Access Tracks, purchase and delivery of materials, plant, equipment and components. Based on information provided by the Developer on experience at other wind farms indicates that there is expected to be a peak onsite workforce of approximately 50-70 workers. Some of these workers will be sourced from the local labour market where possible in Study Area 2 and Study Area 3, and professional personnel may be required to be sourced from areas inclusive of Study Area 4 or even further afield. Throughout the Proposed Developments lifetime, employment will be both created and maintained on local, regional, national and international levels.

It is envisaged that labour and materials will be sourced from the local area during construction where possible. Ready-mix concrete and crushed stone 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 effect on employment in the Study Areas. Employees also involved in the subsequent operation of the Proposed Development will use local shops, restaurants and hotels/accommodation.

The Wind Farm operator will set up a community benefit fund which will allocate funds from the wind farm to community groups in the area should the wind farm be granted planning and be successful under the Government's RESS support programme.

The Proposed Development has the potential to bring significant positive benefits to local communities. It will support sustainable local employment; it could contribute annual rates between €866,880 to €1,021,680 to the local authority (depending on the final installed capacity, and the Annual Rate on Valuation set by the council).

If consented the proposed Tirawley Wind Farm will also provide a community fund calculated in accordance with the Renewable Electricity Support Scheme (RESS) Terms and Conditions at €2 per MWh of electricity produced by the project. This is to be made

available to the local community for the duration of the RESS (15 years). The average capacity factor of wind energy projects in Ireland is 28.3 % (SEAI, 2019). Assuming this efficiency, and a capacity of c. 77.40 MW, the community benefit fund would amount to an average of €383,743 per annum. The actual fund will vary around this average from year to year, depending on each year's wind conditions. Wind resource monitoring undertaken in the Study Area indicate that Tirawley Wind Farm could be capable of achieving an above average capacity factor and therefore contribute towards a larger community fund.

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

No likely adverse significant effects are predicted on economic activity.

5.4.3 Employment

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

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

Indirect: Employment and other outputs created in other companies and organisations that provide services to the Proposed Development, (i.e., procurement and other supply chain effects). Most manufactured materials like towers, blades and subcomponents are assumed to be imported (import intensity of 66 %) with major infrastructure delivery through one of the proposed ports namely, Option 1 Killybegs Harbour, Co. Donegal, Galway Port, Co. Galway or Foynes Port, Co. Limerick. Fewer indirect manufacturing jobs will be generated domestically in Ireland.

Induced: Additional jobs and other economic outputs that are created in the wider economy, as a result of the spreading of employee incomes and other ripple effects that occur as a result of the direct and indirect effects of the Proposed Development.
Sustainable Energy Authority of Ireland (SEAI) researched the flow of investment and sales revenue from onshore wind and the transmission grid through the different industrial sectors in the supply chain required for input–output macro-analysis (**Table 5.10**).

Table 5.10: Capital Investment breakdown for onshore wind supply (Source SEAI, 2015)

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

In terms of its capacity to capture capital investment domestically, Ireland has a strong skill set and knowledge base to potentially supply niche markets in controls and instrumentation, although the bulk of heavy manufacturing (blades, towers) will be imported. Similarly, the Irish supply chain is very well positioned in all of the preliminary design and operational aspects of the electricity grid, providing a significant boost to local employment. However, some manufactured materials such as cables, underground pipes, insulators and conductors are sourced from abroad.

According to SEAI, there are approximately 0.34 new long-term jobs per MW, which falls in line with European Wind Energy Association (EWEA) estimates for direct employment in Europe. In the case of this Proposed 77.40 MW Development, this translates to an estimated 26 long term jobs.

According to the Institute for Sustainable Future (2015)[55], 3.2 jobs are created per MW of wind energy development during the construction and installation phase, the report assumes a 2-year construction period. Using this figure, a projection of 248 jobs could be

[55] Institute for Sustainable Futures, Calculating Global Energy Sector Jobs – 2015 Methodology Update, 2015. Available:https://opus.lib.uts.edu.au/bitstream/10453/43718/1/Rutovitzetal2015Calculatingglobalenergysectorjobsmethodology.pdf [Accessed 11/10/2024]

created as a result of the construction phase of the Proposed Development (for an installed capacity of 77.40 MW the construction phase period should be c. 21 months).

The SEAI 2015 report '*A Macroeconomic Analysis of Onshore Wind Deployment*'[56] puts direct construction jobs from wind farm developments at 1.07 jobs per MW based on 1 year of construction. Using this figure, a projection of 145 jobs could be created as a result of the construction of the Proposed Development (for an installed capacity of 77.40 MW and a construction period of c. 21 months). It is not expected that all of these jobs will be based at the Wind Farm Site, however, the employment of tradespeople, labourers, and specialised contractors for the construction phase will have a direct, short-term significant, positive effect on employment in the Study Area.

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

Table 5.11: Estimated Employment Breakdown during the Construction Phase of the Proposed Development

Occupation/Task	No. of People	Employment Period
Foundation team	12	12 weeks
Tracks & Hardstands (truck drivers)	12	36 weeks
Plant drivers	8	45 weeks
Foreman (Civils)	2	50 weeks
Engineer (Civils)	2	50 weeks
Engineer (Electrical)	2	10 weeks
Electrical Substation (Civils)	10	10 weeks
Electrical Substation (Electrical)	16	16 weeks
Foreman (Electrical)	2	16 weeks
Turbine Delivery, Installation and Commissioning	11	8 -10 weeks
Turbine Commissioning	5	8 weeks
General Operatives	5	91 weeks

Approximately 50-70 persons will be employed during the peak of the construction phase during the civil engineering of Site Access Tracks, Turbine Hardstands, Turbine Foundations, and Electrical Substation construction. These numbers will be somewhat less for the turbine delivery, assembly, commissioning and decommissioning activities. A mixture of skills will be required, including unskilled/semi-skilled/skilled manual (construction labour and machine operators), non-manual (administration roles),

[56] Sustainable Energy Authority Ireland (SEAI) (2015), A Macroeconomic Analysis of Onshore Wind Deployment to 2020. : https://www.seai.ie/publications/A-Macroeconomic-Analysis-of-Onshore-Wind-Deployment-to-2020.pdf [Accessed 17/09/2025].

managerial and technical (civil, electrical, mechanical technical and engineering) and professional roles (legal, business and accounting). The manual roles will be site-based with the other roles being predominately office-based (with site visits as and when required). During construction, personnel will be at the site over a number of months and during these times will likely use local accommodation and restaurants and other facilities.

Anecdotal evidence received by the Developer on other wind farm construction projects shows that local businesses such as accommodation providers welcome the enhanced level of occupancy that is achieved due to the construction contractors using their accommodation on a year-round basis, including periods of the year that are traditionally considered *'low season*'.

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 contribution of the development itself to the tourism economy is considered to be negligible and not significant, the benefits to individual businesses serving the tourism economy will be substantial and significant.

The Proposed Development will create approximately two full-time jobs during the operational phase. In addition to these jobs, various personnel will be required for the successful and continued operation of the wind farm. During the operation phase of the wind farm, the operation and reliability, maintenance (turbines, civil works and electrical 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 5.12.**

Table 5.12: Parties Involved during the Operational Phase[57]

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

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

Therefore, overall, there will be a slight positive short-term effect on employment in the area. No Likely adverse significant effects are predicted on employment.

5.4.3.1 Embedded measures

The Developer is committed to employing good practice measures with regard to maximising local procurement and will adopt measures such as those set out in the Renewables UK Good Practice 2014: *'Local Supply Chain Opportunities in Onshore Wind*' (Renewables 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.

[57] Irish Wind Energy Association (2019) *Life-cycle of an Onshore Wind Farm.* Ionic Consulting. Available online at: https://www.iwea.com/images/files/iwea-onshore-wind-farm-report.pdf [Accessed 17/09/2025]

At this stage in the Proposed Development process, it is not possible however, to quantify economic benefits in respect of individual supply chain companies, as contracts would not be let until planning permission 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 development (in this case, County Mayo and Ireland as a whole).

5.4.4 Land Use and Topography

Chapter 8: Soils and Geology concludes that providing the mitigation measures outlined in this report are fully implemented and best practice is followed onsite, it is expected that effects associated with the development of the Wind Farm Site will not be significant. It is recommended that suitable monitoring programmes are implemented in order to ensure that there is rigid adherence both to the CEMP and to the mitigation measures outlined here during construction, operation and decommissioning of the Wind Farm.

5.4.5 Tourism

Fáilte Ireland were consulted in the scoping process for this Proposed Development (but have not responded at time of writing) and their guidelines 'EIAR Guidelines for the Consideration of Tourism and Tourism Related Projects', which describes the effects of projects on tourism, were considered in this assessment. Many of the issues covered in the report are similar to those covered in this EIAR, for example, scenery is assessed in **Chapter 12: Landscape and Visual Amenity**.

The 2017, BiGGAR Economics[58] study found that sustainable tourism appeared to perform better in areas surrounding wind farms compared to tourism at the level of the local authority area.

Fáilte Ireland published a study on '*Visitor Attitudes on the Environment*' in 2012[59] to assess the perceived impacts of wind farms on potential future visits to an area. The study found that 12 % of those surveyed, responded that wind farms would have 'a strong positive impact' on their decision to visit Ireland, with 27 % responding it would have a 'slight positive impact', whilst 38 % said it would have 'no impact'. 7 % of respondents stated it would have a 'strong negative impact' and 15% stated it would have a 'slight negative impact'. The

[58] BiGGAR. (2017). Wind Farms and Tourism Trends in Scotland. Available at: https://biggareconomics.co.uk/wp-content/uploads/2020/01/Wind-farms-and-tourism-trends-in-Scotland.pdf [Accessed: 17/09/2025
[59] Fáilte Ireland (2012) Visitors Attitudes on the Environment – Wind Farms – Available at:https://www.failteireland.ie/FailteIreland/media/WebsiteStructure/Documents/3_Research_Insights/4_Visitor_Insights/WindFarm-VAS-(FINAL)-(2).pdf?ext=.pdf [Accessed: 17/09/2025]

survey also found that wind farms were noted as more favourable than other forms of development such as housing, mobile phone masts or electricity pylons.

Attitudes to wind power were found to be 54 % strongly in favour in November 2018. While favourability towards wind continued to consolidate (compared to 74 % in October 2017), the total number in favour remained steady at just over 4 in 5, there was a 7 % shift in Irish adults from 'tending in favour' wind power into being 'strongly in favour'[60]

Based on the findings of the collective Tourism and Economics studies referenced in **Section 5.4.5** and **Section 5.3.5**, it is considered that the Proposed Development with regards to tourism are considered to be, short term, slight, negative during construction, operational and decommissioning phases.

5.4.6 Human Health

5.4.6.1 Electromagnetic fields

In 2014 a study was undertaken in Canada[61], measuring electromagnetic fields around wind farms and the impact on human health. The study found that:
"there is nothing unique to wind farms with respect to EMF exposure; in fact, magnetic field levels in the vicinity of wind turbines were lower than those produced by many common household electrical devices and were well below any existing regulatory guidelines with respect to human health".

As outlined in **Section 5.3.6.3**, the International Commission on Non-Ionising Radiation Protection (ICNIRP) Guidelines give a limit of 100 µT for sources of AC magnetic fields. Given the limit of 100 µT for sources of AC magnetic fields, a comparison of between 0.02 µT and 0.41 µT arises when turbines operate under "high wind" scenarios, indicating that electromagnetic activity from wind turbines are extremely low. Refer to **Section 5.3.6.3** (Health Impact studies), which includes references to effects of Electromagnetic fields on Human Health.

Electromagnetic fields from other sources will also occur during the construction, operation and decommissioning of the Tirawley Wind Farm. Sources include power tools used during construction and decommissioning and from wind farm infrastructure, including the Grid

[60] WEA Public Attitudes Monitor 2018, Irish Wind Energy Association. Available online: https://windenergyireland.com/images/files/iwea-report-2018.pdf [Accessed: 17/09/2025]
[61] Lindsay C McCallum, et al. (2014) Measuring electromagnetic fields (EMF) around wind turbines in Canada: is there a human health concern? [Accessed: 17/09/2025]

Connection and Electrical Substation. These EMFs are very localised and are considered to have an imperceptible, negative and short-term effect during the construction and decommissioning phases and imperceptible, negative and long-term during the operational phase. Given that only effects of significant or greater are considered "significant" in terms of the EIA Directive the potential effects of the Proposed Development as a result of electromagnetic fields are considered to be not significant.

5.4.6.2 Shadow flicker

Chapter 15: Shadow Flicker provides an effect assessment of the potential for shadow flicker from the Proposed Development incorporating pre and post mitigation assessment conclusions.

The Proposed Development has been assessed as having the potential to result in neutral, imperceptible, long-term effects overall with regards to shadow flicker. There are no predicted cumulative effects.

5.4.6.3 Noise

There is likely to be some noise and vibration from traffic within the vicinity of the TDR and the Construction Haul Route which may cause disturbance to residents. However, the effects are not predicted to be significant. This is detailed in EIAR **Chapter 11: Noise.**

Operational noise, designed to meet the limits in the 2006 Wind Energy Development Guidelines will have a residual effect within the guideline limits and can be described as Not Significant. This is detailed in EIAR **Chapter 11: Noise.**

Noise effects during decommissioning of the Proposed Development are likely to be of a similar nature to that during construction but of shorter duration. Existing Site Access Tracks and Turbine Foundations (excluding plinths) will be left in place and naturally vegetated over. Any legislation, guidance or best practice relevant at the time of decommissioning will be complied with.

In light of the assessments carried out in **Chapter 11: Noise**, there will be no likely significant residual effects on population and human health in terms of noise and vibration.

5.4.6.4 Air Quality

Chapter 10: Air and Climate provides an assessment of air quality and climate related effects resulting from the Proposed Development. The assessment concluded that the Proposed Development has 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 effect. In light of the assessment in **Chapter 10: Air and Climate**, the potential effects of the Proposed Development on population and human health in terms of air quality are considered not significant.

5.4.6.5 Water Contamination

Chapter 9: Hydrology and Hydrogeology provides an assessment of the hydrological effects in relation to the Proposed Development, including the potential for water contamination. The conclusion is referenced at **Section 9.6** and states that no significant effects to surface water (quality and flows) and groundwater (quality and quantity, and any local groundwater wells) will occur as a result of the Proposed Development provided the proposed mitigation measures are implemented. The Proposed Development has been found to be fully compliant with the Water Framework Directive (WFD) and will not prevent any waterbody from achieving its WFD objectives.

Chapter 8: Hydrology and Hydrogeology provides an assessment of potential cumulative effects associated with the Proposed Development and other developments on the hydrological and hydrogeological environment. With the implementation of the mitigation measures detailed in this EIAR, the cumulative assessment found that there will be no significant effects on the hydrological and hydrogeological environments.

It is concluded that the potential effects of the Proposed Development on population and human health in terms of water contamination are considered not significant.

5.4.6.6 Traffic

Chapter 17: Traffic and Transportation provides an assessment of the traffic effects in relation to the Proposed Development. The conclusion is referenced at **Section 17.12** and states that:

This assessment has identified that the potential effects of the Proposed Development on traffic and transport are considered to be not significant, given the mitigations measures embed in the design of the Proposed Development.

5.4.6.7 Accidents/Disasters (incorporating Health & Safety)

As with any project of this type, there is the potential for accidents to occur. In the context of human health and safety, these will be addressed under two main headings, accidents to personnel and accidents to plant and equipment ('infrastructure').

Accidents to Personnel

Risks present during the construction, operation and decommissioning phases of the Project, which have potential to cause injury to personnel, may include but are not limited to:

- Burial under earthfalls / falling into excavations or bog holes or soft peat areas (at enhancement areas).
- Falling from height
- Work which puts personnel at work at risk from chemical or biological substance
- Work which involves energies – utilities such as electricity, gas, water, pressurised equipment
- Work exposing personnel to the risk drowning
- Work involving the assembly or dismantling of heavy prefabricated components
- Construction activities which have the potential to cause accidents/incidents
- Use of vehicles or mobile plant / machinery / equipment

Accidents to Infrastructure

Potential risk to infrastructure, again for the construction, operational and decommissioning phases include but are not limited to:

- Burial under earthfalls / falling into excavations which effect the ground conditions of nearby structures, collapse of structures
- Falling from height causing damage to property
- Work which puts personnel at work at risk from chemical or biological substances
- Work which involves energies – utilities such as electricity, gas, water, pressurised equipment which have potential to cause damage through fire, explosion, pressure release etc
- Work involving the assembly or dismantling of heavy prefabricated components
- Construction activities which have potential to cause accidents/incidents

- Use of vehicles or mobile plant / machinery / equipment – failure of plant/machinery/equipment, loss of control

5.4.7 Property Value

The effects to Property values have been reviewed and assessed within **Section 5.3.7**. Based on the evidence from a number of these published studies, the operation of a wind farm at the Site is considered to not significantly affect property values in the area. The Proposed Development will have a medium-long-term, imperceptible effect on property values.

5.4.8 'Do Nothing' Scenario

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

The local economy would not experience the direct and indirect positive effects of the construction phase of the Proposed Development, 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.

5.5 MITIGATION MEASURES AND RESIDUAL EFFECTS

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

5.5.1 Embedded Mitigation

The Proposed Development, as described in **Chapter 2: Development 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 & Regional Roads, local primary roads and access roads by the general public. Measures are set out in **Chapter 11: Noise** and **Chapter 17: Traffic**

and Transportation relating to how construction work and materials, good and services will be managed to minimise effects. Embedded mitigation measures have also been developed for both the operational and decommissioning stages of the Proposed Developments are outlined in referenced chapters. The proposed mitigation measures have been further developed in the CEMP (**Appendix 2.1**).

A summary of all mitigation measures has been included as **Appendix 18.1**.

5.5.2 Population and Settlement Patterns

Given that no likely adverse effects 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 Proposed Development and therefore no mitigation measures are required to reduce or remedy any adverse effect.

5.5.4 Employment

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

5.5.5 Land Use and Topography

Providing the mitigation measures proposed in **Chapter 8: Soils and Geology** are fully implemented and best practice, as described, is followed onsite, it is expected that effects associated with the development of the Tirawley Wind Farm will not be significant. Suitable monitoring programmes will be implemented to see that there is rigid adherence to the mitigation measures outlined in this EIAR for the construction, operation and decommissioning of the Proposed Development.

5.5.6 Tourism

Based on the landscape, visual and cumulative assessment (**Chapter 12: Landscape and Visual Amenity**) it is considered that there will not be any significant effects from the proposed Tirawley Wind Farm. Overall effects of the Proposed Development with regards

to tourism are considered to be slight, negative during the construction, operational and decommissioning phases.

5.5.7 Human Health

5.5.7.1 Electromagnetic Interference

Electromagnetic fields from wind farm infrastructure, including the Grid Connection and Electrical Substation, are very localised and are considered to be an imperceptible, long-term effects. Residual effects are not expected.

5.5.7.2 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 wind farm projects.

The construction, operation and decommissioning of the Proposed Development 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, the Developer 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.

A CEMP and accompanying management plans have been developed and are contained in **Appendix 2.1**. The PSCS will further develop those documents during the pre-construction stage of the Project, to take account of planning conditions and in consultation with Mayo County Council, for implementation during the construction stage:

- Construction and Environmental Management Plan (updated from the CEMP in **Appendix 2.1**)
- Emergency Response Plan
- Detailed Traffic Management Plan

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 Proposed Development.

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

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

5.5.7.3 Operation

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

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

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

All onsite electrical connections are carried by underground cable and will be marked out above ground where they extend beyond the Site Access Track or Turbine Hardstand surface extents. Details of cables installed in the public road will be available from ESBN.

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

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

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

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

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

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

The design of the Proposed Development has considered the susceptibility to natural disasters. The proposed site drainage (detailed in **Appendix 2.1**) 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 Proposed Development through to decommissioning.

The Contractor's fire prevention/management 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 onsite at all times.

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

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

5.5.7.4 Residual Risk

Once the above mitigations for the construction, operation and decommissioning stages of the Proposed Development, as detailed in EIAR, are taken into account, the residual risk on population and human health is assessed to be likely imperceptible, long-term effect. No likely adverse significant effects are predicted.

5.5.8 Cumulative Effects

A List of projects for Cumulative Assessment has been included as **Appendix 1.2** and **Appendix 1.5.**

The nearest operational wind farm to the Proposed Development is the Killala Community Wind Farm comprising of 6 no. wind turbines, located approximately 5.2 km to the southeast of the Wind Farm Site. The next nearest operational wind farm to the Proposed Development is Lackan Wind Farm comprising of 3 no. turbines located approximately 13.6 km to the east of the Wind Farm Site.

The Proposed Development, along with Killala & Lackan Wind Farms 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 Directive and will contribute to Ireland's legally binding CO_2 emission reduction targets. The Proposed Development will contribute to the offset of burning of fossil fuels which has the potential to positively affect human health.

The Landscape and Visual Impact Assessment contained in **Chapter 12: Landscape and Visual Amenity** (**Section 12.5.1**) confirms that the cumulative effect in relation to existing and consented wind farms within the 20 km study area is deemed low. This is principally due to the fact that no other existing or consented developments are located within the study area.

Chapter 11: Noise, Chapter 10: Air & Climate, Chapter 15: Shadow Flicker, Chapter 13: Material Assets & Other Issues and **Chapter 17: Traffic & Transport** include specific assessments which include the assessment of cumulative effects. These EIAR chapters also conclude the cumulative effects of the Proposed Development is considered to be not significant.

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

It is not predicted that the cumulative effect of this Proposed Development will have an effect on population or settlement patterns, nor will it have a significant effect on industry sectors in the four study areas.

5.6 SUMMARY OF SIGNIFICANT EFFECTS

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

5.7 STATEMENT OF SIGNIFICANCE

This chapter has assessed the significance of potential effects of the Proposed Development on population and human health. The Proposed Development has been assessed as having the potential to result in effects of a slight positive, long-term effect overall. Cumulative effects are predicted as unlikely.