



Bracklyn Wind Farm

Chapter 4: Population and Human Health

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4.1 Introduction

This chapter presents an assessment of the likely effects of the proposed development on population and human health. Human beings comprise a significant element of the environment and any likely effects on the status of population and human health must be comprehensively addressed. This includes the existence, activities and wellbeing of people. Whilst most developments will affect other people, the EIAR concentrates on those topics which are manifested in the environment, such as new land uses, more buildings or greater emissions.

This EIAR also addresses the likely impact on population and human health in specific chapters, including, for example, in respect of Air Quality & Climate (**Chapter 8**), Landscape (**Chapter 9**), Noise and Vibration (**Chapter 11**), Shadow Flicker (**Chapter 12**) and Interactions between these environmental issues and population and human health (**Chapter 14**).

Specific issues which are examined under this chapter include *inter alia*:-

- Economic Activity - will the development stimulate additional development and/or reduce economic activity, and if either, what type, how much and where?;
- Social Consideration - will the development change patterns and types of activity and land use?;
- Land-uses - will there be severance, loss of rights of way or amenities, conflicts, or other changes likely to ultimately to alter the character and use of the surroundings?; and
- Health and Safety - will there be risks of death, risks to public health, disease, discomfort or nuisance?

Likely significant effects may occur as a result of direct interaction between the proposed development and population and human health receptors (e.g. farming operations affected as a result of construction activities) or indirectly such as employment created as a result of the local spending of wages earned by the construction workforce during the construction phase of the proposed development.

4.1.1 Statement of Authority

The assessment of likely significant effects on population and human health, and preparation of this EIAR chapter, has been undertaken by various members of the Galetech Energy Services (GES) Environment & Planning Team. GES has substantial socio-economic/population & human health assessment experience having prepared Population & Human Health (Human Beings) chapters for multiple permitted and proposed developments which have been subject to EIA.

4.1.2 Summary of the Proposed Development

In summary, the proposed development comprises the following main components:-

- 9 no. wind turbines with an overall tip height of 185m, and all associated ancillary infrastructure;
- Upgrades to the turbine component haul route;
- Construction of a 110kV electricity substation and installation of 6.3km of underground electricity line between the proposed substation and the existing Mullingar-Corduff 110kV overhead electricity line; and
- All associated and ancillary site development, excavation, construction, landscaping and reinstatement works, including provision of site drainage infrastructure.

The majority of the proposed development is located within the administrative area of County Westmeath; while 2.5km of underground electricity line and the proposed end masts will be located within County Meath. Additionally, candidate quarries which may supply construction materials are also located within County Meath.

The proposed turbine component haul route is also located within the counties of Waterford, Kilkenny, Carlow, Kildare and Dublin.

A full description of the proposed development is presented in **Chapter 3**.

4.2 Policy and Guidance

The following section sets out the policy and guidance which is considered to be of relevance to an assessment of effects on population and human health for a proposed development of this type.

4.2.1 National Policy

4.2.1.1 Wind Energy Development Guidelines for Planning Authorities 2006

The *Wind Energy Development Guidelines for Planning Authorities 2006* offer advice to planning authorities in determining planning applications for wind farm developments, including the likely significant effects on human health and population.

4.2.1.2 Draft Revised Wind Energy Development Guidelines (December 2019)

The *Draft Revised Wind Energy Development Guidelines* were published in December 2019. The Draft Guidelines include updates to several key aspects of the *Wind Energy Development Guidelines for Planning Authorities 2006*, including in respect of matters which interrelate with population and human health effects; namely noise, visual amenity and shadow flicker.

4.2.2 Local Policy

Relevant local planning policies¹ are derived from the following:-

- *Westmeath County Development Plan 2014-2020*;
- *Draft Westmeath County Development Plan 2021-2027*;
- *Meath County Development Plan 2013-2019*; and
- *Draft Meath County Development Plan 2021-2027*.

4.2.2.1 Westmeath County Development Plan 2014-2020

The *Westmeath County Development Plan (WCDP) 2014-2020* has been prepared in order to provide a strategic land-use planning framework for the county. The WCDP places increased emphasis on environmental matters including flooding, climate change and the protection of environmental resources; and sets out a number of strategic aims over the plan period, some of which are considered to be relevant to the consideration of the proposed development and effects on population and human health in this EIAR, namely:-

- Facilitating, supporting and protecting national public investment in infrastructure (including transport, water services, housing, environment and community services) to achieve the sustainable development of Westmeath in accordance with the agreed planning framework;

¹ Notwithstanding the advanced stage of the respective draft county development plans, the chapter focuses predominately on the respective adopted development plans; however, due consideration has been given to the draft plans as relevant to this assessment.

- Supporting the role of rural areas and the countryside in sustaining the rural economy and its role as a key resource for agriculture and agri-food, forestry, energy production and reduction, tourism, recreation, mineral extraction and/or other new and emerging rural based enterprises; and
- Protecting the county's natural assets by maintaining and/or improving the quality of the lakes, water and groundwater, landscape, parks, open spaces, architectural, archaeological and cultural heritage and material assets.

4.2.2.2 Draft Westmeath County Development Plan 2021-2027

The *Draft WCDP 2021-2027*, which is currently under preparation, outlines a set of strategic aims for the incoming county development plan which also relate to the proposed development and population & human health, as follows:-

- To develop and support vibrant sustainable communities in Westmeath where people can live, work and enjoy access to a wide range of community, health and educational facilities and amenities, suitable for all ages and needs, in both urban and rural areas, thereby supporting a high quality of life for all to enjoy;
- To support the role of rural areas and the countryside in sustaining the rural economy and improved connectivity, broadband and rural economic development opportunities through the development of the agricultural and agri-food sector, agricultural related developments and enterprises, including diversification of the rural economy, forestry, energy production, tourism, recreation, mineral extraction and/or other new and emerging rural based enterprises, all within the context of the sustainable management of land and resources, thereby increasing the competitiveness of the rural economy, which will sustain and strengthen rural communities; and
- To transition to a low carbon and climate resilient County, with an emphasis on reduction in energy demand and greenhouse gas emissions, through a combination of effective mitigation and adaptation responses to climate change.

4.2.2.3 Meath County Development Plan 2013-2019

As set out above, the proposed grid connection will be partially located within County Meath while construction materials may be sourced within the county or transported to site via the road network within the jurisdiction of Meath County Council. The *Meath County Development Plan (MCDP) 2013-2019* sets out a number of core principles for the county over the plan period, some of which are relevant to the proposed development and the assessment of effects on population and human health namely:-

- To facilitate the development of sustainable and socially inclusive communities which generate pride, a sense of place, and a healthy lifestyle; are safe, well connected, well served, environmentally sensitive, thriving and well designed;
- To promote sustainable economic development to support the population of County Meath in accordance with the guidance and recommendations set out in the Economic Development Strategy for County Meath 2014-2022;
- To protect and support rural areas through careful management of physical and environmental resources and appropriate, sustainable development; and
- To integrate climate change considerations into the policies and objectives of Meath County Council and its key stakeholders.

4.2.2.4 Draft Meath County Development Plan 2021-2027

The *Draft MCDP 2021-2027* sets out key principles and objectives regarding the delivery of development in an appropriate and sustainable manner. The principles highlighted above in the adopted MCDP are once again reflected in the Draft MCDP 2021-2027.

4.2.2.5 Draft EPA Guidelines on the Information to be contained in Environmental Impact Assessment Reports (2017)

The EPA Guidelines state that an EIAR does not generally require assessment of land-use planning, demographic issues or detailed socio-economic analysis unless the proposed development gives rise to likely significant effects in respect of new developments and infrastructure which affect on economic or settlement patterns.

Whilst the proposed development will not result in any associated development, such as a housing or commercial development, it will lead to the generation of employment during both the construction and operational phases as well as inward investment which may affect the local supply chain. On this basis, the EIAR baseline contains a brief summary of key socio-economic baseline data relating to the wider study area (WSA; see **Section 4.3.2** below) and the likely effects on this baseline environment are considered.

In relation to likely effects on human health, the Guidelines state that the EIAR should refer to the assessments of those factors under which human health effects might occur (e.g. under the relevant environmental factors of air, water and soil). The importance of avoiding duplication of the assessment of likely effects is highlighted (i.e. care should be taken to avoid 'double-counting' effects that are identified elsewhere in the corresponding chapter of the EIAR, for example noise or air quality effects). As a result, likely effects which may arise from these specific environmental topics are addressed in their respective chapters. The likely interactions of these effects, if any, are addressed in **Chapter 14**.

The Guidelines state that assessments of other health and safety issues are carried out under other EU Directives, as relevant e.g. reports prepared under the Integrated Pollution Prevention and Control frameworks. In keeping with the requirement of the EIA Directive, an EIAR should take account of the results of such assessments without duplicating them. This EIAR contains a detailed consideration of effects related to population and human health, most notably in relation to Air Quality and Climate (**Chapter 8**), Landscape (**Chapter 9**), Noise & Vibration (**Chapter 11**), Shadow Flicker (**Chapter 12**) and Material Assets (**Chapter 13**).

As the 2017 Guidelines have not been adopted and remain in draft format, consideration has also been given to the EPA *Guidelines on Information to be Contained in Environmental Impact Statements (EIS)*' (2002) and accompanying Advice Note, insofar as they relate to population and human health, and the proposed development.

4.2.2.6 EIAR Guidelines for the Consideration of Tourism and Tourism Related Projects (Failte Ireland)

These Guidelines recognise that the impact and interaction of tourism with the environment is complex and the assessment of environmental impacts is crucial to creating a sustainable tourism economy and protecting natural resources. It is also acknowledged that tourism can be affected both by direct and indirect effects of new developments as well as by interactions between new activities and tourism activities; for example, the effects of high volumes of heavy goods vehicles passing

through hitherto quiet, scenic, rural areas.

The Guidelines set out that the EIAR should indicate the location of sensitive neighbouring tourism resources that are likely to be directly affected, and other premises which may be the subject of secondary impacts such as alteration of traffic flows or increased urban development. The EIAR should indicate the numbers of premises and visitors likely to be affected directly and indirectly.

4.2.2.7 *EMF & You: Information about Electric & Magnetic Fields and the electricity network in Ireland (ESB, 2017)*

The provision of electrical apparatus is common practice throughout Ireland and their installation does not give rise to any specific health concerns. The extremely low frequency (ELF) and electrical magnetic fields (EMF) associated with the operation of the electrical equipment will comply fully with the international guidelines for ELF and EMF set by the International Commission on Non-Ionizing Radiation Protection (ICNIRP), a formal advisory agency to the World Health Organisation, as well as the EU guidelines for human exposure to EMF.

The ESB document 'EMF & You' (ESB, 2017)² provides further practical information on EMF.

4.2.2.8 *Supplementary Guidance & Information Sources*

Other advice and guidance, reviewed as part of the baseline assessment and in developing the assessment methodology include:-

- *Code of Practice for Wind Energy Development in Ireland* (Department of Communications, Climate Action and Environment, 2017);
- *Best Practice Guidelines for the Irish Wind Energy Industry* (Irish Wind Energy Association, 2012);
- *Best Practice Principles in Community Engagement and Community Commitment* (Irish Wind Energy Association, 2013);
- *An Enterprising Wind: An economic analysis of the job creation potential of the wind sector in Ireland* (Irish Wind Energy Association, 2014);
- *Wind Turbine Experiences – 2012 Survey Results* (British Horse Society, 2013); and
- *Wind Turbines and Horses - Guidance for Planners and Developers* (British Horse Society, 2015);

Key socio-economic data for the baseline has been derived from:-

- Central Statistics Office (CSO);
- *Westmeath County Development Plan 2014-2020*;
- *Meath County Development Plan 2013-2019*;
- Pobal Profiling GIS Data (<https://maps.pobal.ie/>);
- Fáilte Ireland data in conjunction with websites of relevant tourism sites and amenities in the area;
- *Westmeath Tourism Strategy 2016-2020*;
- *Westmeath Local Economic & Community Plan 2016-2021*;
- *Meath Economic Development Strategy 2014-2022*; and
- OSI mapping and aerial photography.

² https://esb.ie/docs/default-source/default-document-library/emf-public-information_booklet_v9.pdf?sfvrsn=0

4.3 Methodology

4.3.1 Desk Based Research

The majority of effects on population and human health receptors are likely to be experienced during the construction phase. These are likely to include beneficial effects on the local economy, including employment opportunities and increased spend on local services as well as possible adverse effects such as restrictions on farming operations, neighbouring businesses or general disruption to the amenity of the local area, including in respect of road traffic, which may indirectly impact on its recreation or tourism value. Once operational, effects are likely to be primarily related to the visual impact and possible noise effects from the wind farm.

In respect of human health, the chapter takes into consideration the results of other assessments in the EIAR which have relevance to health, namely: soils; water; air quality; noise; shadow flicker; and landscape. The findings of these assessments are cross referenced in this chapter but the effects will not be repeated to avoid duplication of coverage or 'double counting' in the EIAR.

Employment effects and direct expenditure are quantified using data provided by the Applicant and, where necessary, using standard industry data. Opportunities for local businesses and the local labour market to be involved in supply chain activities will be identified and where possible quantified. The likely effects of the proposed community ownership model are assessed also.

4.3.2 Study Area

The spatial focus of the assessment is undertaken at two levels. Firstly, effects on specific community, recreation and tourism receptors are assessed at a local level which is defined as 5km from the boundary of the proposed wind farm and 500m from the proposed grid connection, and is referred to as the 'Local Study Area' (LSA).

Economic effects are considered with regard to a wider study area that takes account of a likely 'catchment' for provision of domestically sourced goods and services relating to the construction and operation of the wind farm. This part of the study also takes into consideration the likely benefits which may arise from part community ownership of the wind farm. This study area comprises the counties of Westmeath and Meath and is referred to as the 'Wider Study Area' (WSA). Given the scale of the proposed development it is not intended to measure effects at a national or international level.

Study Areas	Spatial Extent
Wider Study Area	Counties of Westmeath and Meath
Local Study Area	5km from the boundary of the proposed wind farm and 500m from the proposed grid connection

Table 4.1: Study Area Details

A desk-based review of existing conditions in the area has been undertaken, covering the following themes:-

- Wider Study Area
 - Population;
 - Labour Market/Education and Skills;
 - Business Diversity and Supply Chain; and

- Visitor Economy.
- Local Study Area
 - Recreational assets;
 - Visitor attractions; and
 - Visitor accommodation and other businesses/services serving the tourism economy.

4.3.3 Consultation

A range of statutory and non-statutory organisations have been consulted as part of the EIAR scoping process. The responses which are relevant to likely effects on population and human health are identified in **Table 4.2**.

Consultee	Date of Correspondence	Comments	Reference within EIAR
Environmental Health Service (HSE)	23 June 2020	The EIA should assess the wider determinants of health; and examine whether the proposed development could be used for recreational purposes.	Health effects of improved access considered in this chapter. Effects arising from noise, shadow flicker, water and dust are considered in other chapters.
Failte Ireland	20 April 2020	Supplied copy of EIAR Guidelines for the Consideration of Tourism and Tourism Related Projects.	Incorporated into methodology.

Table 4.2: Scoping feedback relating to Population and Human Health

Separately, the Applicant has also engaged in an extensive public consultation process during the design phase of the proposed development. This process involved 3 no. separate approaches in which the Applicant consulted with the local community by seeking the input of local residents, landowners, business owners and all relevant stakeholders. The various approaches were implemented to ensure that consultation and engagement was continued with local residents while fully accordance with the relevant public health guidelines in place at the time (COVID-19).

Firstly, an appointed Community Liaison Officer (CLO) provided an information pack to all dwellings located within 2km of a proposed wind turbine. Residents were advised of the details of the proposed development and advised of means of contacting the CLO where comments were invited and welcomed.

Secondly, a series of Information Clinics were held at Bracklyn Estate and Delvin Community Centre. These clinics allowed members of the public, by appointment only (in accordance with public health guidance), including those who may have resided beyond 2km from a turbine and were not initially contacted by the CLO, to discuss the project with members of the project team.

Finally, door-to-door consultation was commenced in September 2020, once public health advice allowed for same but was further disrupted by further health guidelines. A comprehensive overview of the Applicant's approach to public consultation is provided at **Annex 1.7**.

4.3.4 Approach to Assessment of Effects

The chapter assesses the likely construction, operational and decommissioning effects on:-

- the local economy (employment and economic output);
- the local population;
- opportunities for local involvement in the business supply chain and employment, i.e. how the key construction and operational activities will translate into investment;
- jobs;
- recreation and tourism assets; and
- land use – through possible effects arising from improved access to the countryside.

Decommissioning effects are assessed as being largely similar to construction effects.

4.3.5 Sensitivity Criteria, Magnitude and Significance Thresholds

Likely effects will be assessed in line with the following parameters:-

- beneficial or adverse (or neutral);
- extent (the area over which the effect occurs);
- duration (the time for which the effect is expected to last prior to recovery or replacement of the resource or feature);
- reversibility (permanent or temporary); and
- timing and frequency.

4.3.6 Sensitivity Criteria

There are no published standards that define receptor sensitivity relating to population and human health assessments. As a general rule, the sensitivity of each receptor or receptor group is based on its importance or scale and the ability of the baseline to absorb or be influenced by the identified effects. In assigning receptor sensitivity, consideration is given to the following:-

- importance of the receptor e.g. local, regional, national, international;
- availability of comparable alternatives;
- ease at which the resource could be replaced;
- capacity of the resource to recover or adapt to identified impacts over a period of time; and
- level of usage and nature of users (e.g. sensitive groups such as people with disabilities).

Based upon expert judgement, four levels of sensitivity are used: High; Medium, Low and Negligible. Proposed sensitivity criteria are set out in **Table 4.3** below.

4.3.7 Magnitude Criteria

The magnitude of impact is evaluated based on the change that occurs with respect to the baseline conditions. Four degrees of magnitude are used: High; Medium; Low and Negligible.

4.3.8 Defining Significant Effects

The level of an effect is assessed by combining the magnitude of the impact and the sensitivity of the receptor as shown in **Table 4.3**. Four levels of effect are used: Negligible, Minor, Moderate or Major.

Where an effect is classified as Major, this is considered to represent a 'significant

effect' in terms of the EIA Directive. Where an effect is classified as Moderate, this may be considered to represent a 'significant effect' but is subject to expert judgement and interpretation, particularly where the sensitivity or impact magnitude levels are not clear or are borderline between categories or the impact is intermittent.

Sensitivity or Value of Resource or Receptor	Magnitude of Impact			
	High	Medium	Low	Negligible
High	Major	Major	Moderate	Minor
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible
Negligible	Minor	Negligible	Negligible	Negligible

Table 4.3: Level of Effect Matrix

4.3.9 Approach to Mitigation

Mitigation measures, additional to those environmental measures incorporated into the project design, are considered in order to mitigate any significant adverse effects that are identified through the assessment process.

4.3.10 Cumulative Effects

Consideration will be given to the likely cumulative effect of the proposed development in combination with other existing, permitted and proposed developments, including those set out at **Chapter 1**.

4.3.11 Limitations of Assessment

Certain information, in particular information regarding capital expenditure and construction employment, will not be available until the normal procurement process has been completed. The following chapter provides estimates, based on experience on other projects, of likely spend and employment during construction sufficient to allow assessment in this EIAR.

Information on inter-related effects is informed by the assessments undertaken on other topics, which are set out in those topic chapters. Any limitations are set out in those chapters.

The status of certain individual receptors, for example, accommodation businesses, may be subject to change. Information reported in this document is based on the baseline survey work described in **Section 4.4**.

4.4 Description of Existing Environment

4.4.1 Wider Study Area

4.4.1.1 Population

The most recent estimates show that the current population of County Westmeath stands at 88,396, which is less than 1.9% of Ireland's total population (CSO, 2018); while County Meath's population is estimated at 194,942, which is c. 4.1% of Ireland's population as a whole of 4.76 million.

4.4.1.2 Labour Market/Education and Skills

2016 Census data for County Westmeath indicates that there were 35,289 persons

aged 15 years and over whose principal economic status was 'at work', whilst 700 were looking for their first job and 5,966 were unemployed having lost or given up their previous job. The overall unemployment rate stood at 8.6%.

2016 Census data for County Meath indicates that there were 83,259 persons aged 15 years and over whose principal economic status was 'at work', whilst 1,092 were looking for their first job and 9,431 were unemployed having lost or given up their previous job. The overall unemployment rate stood at 6.5%

4.4.1.3 Business Diversity and Supply Chain

Data on an area's business population can be obtained from the CSO census data. This data source can be used to identify the structure of the local business base by sector. This is potentially useful in assessing the capacity of the local area to host supply chain activity for infrastructure and other large-scale construction projects such as the proposed development. **Table 4.4** provides the latest (2016) data on the structure of the local business base, both in absolute and relative terms.

Industry	Westmeath 2016		Meath 2016	
	Count	Percentage	Count	Percentage
Managers, Directors and Senior Officials	2,872	7.0%	8,003	8.6%
Professional Occupations	6,551	15.9%	14,306	15.4%
Associate Professional and Technical Occupations	3,985	9.66%	10,350	11.2%
Administrative and Secretarial Occupations	3,652	8.9%	10,362	11.2%
Skilled Trades Occupations	6,386	15.5%	14,161	15.3%
Caring, Leisure and Other Service Occupations	3,244	7.9%	7,003	7.6%
Sales and Customer Service Occupations	2,835	6.9%	5,964	6.4%
Process, Plant and Machine Operatives	3,141	7.6%	7,366	7.9%
Elementary Occupations	3,635	8.8%	7,857	8.5%
Not stated	4,954	12%	7,318	7.9%
Total	41,255		92,690	

Table 4.2: Persons at work or unemployed by occupation

Source: CSO Census Data 2016 (CSO, 2017)

The data in **Table 4.4** shows that professional and technical services, skilled trade occupations and administrative occupations have the highest percentage of the work force.

4.4.1.4 Visitor Economy

Fáilte Ireland combines counties together to form eight different regions across Ireland for which tourism statistics are produced. County Westmeath is part of the 'Midlands' region along with Longford, Offaly and Laois. County Meath forms part of the 'Mid East' region with Kildare and Wicklow.

The latest data for the Midlands region was published in 2017 and indicates that:-

- there was a total of 218,000 overseas visitor trips to the region, generating approximately €85million;
- there was a total of 422,000 trips by Irish residents to the region generating approximately €71million; and
- there was a total of 15,000 trips by residents from Northern Ireland to the region generating approximately €4million.

Within the Midlands region, County Westmeath attracts 103,000 overseas visitors and 159,000 domestic visitors generating a total revenue of €64million.

The latest data for the Mid East region was published in 2017 and indicates that:-

- there was a total of 633,000 overseas visitor trips to the region, generating approximately €207million;
- there was a total of 747,000 trips by Irish residents to the region generating approximately €125million; and
- there was a total of 57,000 trips by residents from Northern Ireland to the region generating approximately €13million.

Within the Mid East region, County Meath attracts 162,000 overseas visitors and 223,000 domestic visitors generating a total revenue of €73million.

The Draft WCDP sets out that the County has a wide range of historical, cultural and landscape interests that have the potential to raise the County's profile as a significant tourist destination. In particular, the Draft WCDP notes that the county's appeal is recognised and benefits from the dual promotion of Fáilte Ireland's 'Ancient East' and 'Ireland's Hidden Heartlands'.

The policies contained within the WCDP, Draft WCDP, MCDP and Draft MCDP are also focussed on developing the counties as tourism destinations with some policies relate to development of tourism events and attractions. Targeted investment in these projects in future years is likely to form an important part of this overall strategy.

Within County Westmeath, a total of 89km of greenways have been developed for the enjoyment of walkers and cyclists including the Old Rail Trail Greenway and Royal Canal Greenway. The Draft WCDP refers to a number of off-road looped walkways including Mullaghmeen Forest, Portlick Millennium Forest, the Shannon Banks Walk, Belvedere House Gardens and Park and St. Feichin's Way. Reference is also made to a National Waymarked Way between Mullingar and Kilbeggan; however, it is noted that the route is fragmented and requires upgrade works.

In County Meath, the Draft MCDP endeavours to assist in the delivery of greenway walking and cycling infrastructure with a particular focus on the Royal Canal Greenway, Boyne Valley Greenway and the Boyne Valley-Lakelands Greenway.

Other visitor economy receptors located within the WSA comprise *inter alia*:-

- The Hill of Uisneach;
- Athlone Castle;
- Fore Abbey;

- Tullyally Castle Gardens;
- Kilbeggan Distillery;
- Dún na Sí Amenity & Heritage Park;
- Newgrange;
- Hill of Tara;
- Hill of Slane;
- Trim Castle; and
- Loughcrew Cairns.

4.4.2 Local Study Area

The following section describes the baseline environment for the LSA i.e. within 5km of the boundary for the proposed wind farm and 500m of the proposed grid connection. As set out at **Section 4.3.2**, this component of the baseline covers:-

- Community;
- Recreation;
- Visitor economy assets; and
- Land use.

4.4.2.1 Community

The wind farm is located c. 4km south of the town of Delvin and 5km north of the village of Raharney.

The settlement of Delvin comprises a range of shops and services and is identified as a 'Tier 5 Rural Centre' in the WCDP. The WCDP sets out that the population of Delvin has substantially increased between 2006 (416) and 2011 (697). The WCDP considers that the Core Strategy and Housing Strategy have made sufficient provision for the continuation of this increasing population trend. Delvin also contains a number of historical assets, including the ruins of Delvin Castle and St. Mary's Church, which are likely to play a role in the visitor economy of the LSA.

Raharney is also identified as a Tier 5 Rural Centre in the WCDP and contains a small number of shops and services. The WCDP proposes, in relation to the smaller Tier 5 settlements, to:-

"...develop rural centres capable of providing a range of services and employment to their local populations."

4.4.2.2 Recreation

A large portion of the LSA comprises peatland associated with Bord na Móna milling operations which, in combination with the relative remoteness of the proposed development site, limits the level of recreational facilities in the LSA.

Delvin Sports & Leisure Centre

The Delvin Sports & Leisure Centre is a community managed multi-use sports and leisure centre. The facilities provided include a playing pitch, a fully lit walking track, toilet facilities and parking. The receptor is considered to be of local value and therefore sensitivity is low for the purposes of this assessment.

Royal County Aeromodellers Club

The Royal County Aeromodellers Club (RCAC) is located within 1km of the proposed wind farm. The RCAC members, currently comprising 29 no., construct, assemble and fly a wide range of models, mainly radio controlled model planes. The receptor is

considered to be of local value and therefore sensitivity is low for the purposes of this assessment.

National Exotic Animal Sanctuary

The National Exotic Animal Sanctuary based provides expert care for unwanted and neglected exotic animals and emergency rescue facilities for a variety of animals and wildlife. The receptor is considered to be of local value and therefore sensitivity is low for the purposes of this assessment.

Coolronan Raceway Club

The Coolronan Raceway Club is located c. 4km south-east of the proposed wind farm and within 200m of the proposed grid connection. The Club operates an oval racetrack which is open to motoring enthusiasts. The receptor is considered to be of local value and therefore sensitivity is low for the purposes of this assessment.

Fishing

There are no lakes that fall within the LSA that are identified on the fishing website MyFishMaps (accessed in June 2021).

Based on a review of the background materials identified in the methodology section of this chapter and anecdotal evidence, it is recognised that recreational fishing is likely to take place on watercourses in the LSA, most notably the River Deel.

Walking Paths, Trails and Cycling

The National Trails Office (NTO) of Sport Ireland is responsible for all waymarked trails. There are no national waymarked trails which pass through the LSA, however as noted earlier there are a number of walking routes in the WSA.

It is also noted that existing access tracks within the proposed wind farm site are, on occasion, used by members of the public as walking routes. Similarly, public roads which will be utilised in the delivery of materials to the proposed development site may also be used for recreational purposes.

4.4.2.3 Tourism

Accommodation

No tourism accommodation businesses have been identified in the LSA. There are, however, a small number of self-catering properties rental properties within the LSA which are marketed via third party marketing sites such as Airbnb. The accommodation businesses identified are considered to be of local value and their sensitivity is therefore low.

Land Use

The proposed development site, and the LSA, is predominately used for agricultural purposes and does not provide notable recreational uses.

4.5 Description of Likely Effects

The following sections assess the effects which are likely to arise during the construction, operational and decommissioning phases.

4.5.1 Construction Phase

4.5.1.1 Effects on the WSA

Employment and Local Investment

During the 15-18 month construction phase of the proposed development, there will be economic effects resulting from expenditure on items such as site preparation, access roads, purchase and delivery of materials, plant, equipment and components. Information provided by the Applicant, based on experience at other wind farms in Ireland, indicates that there is expected to be a peak on-site workforce in excess of 120 workers. It is highly likely that a significant percentage of these workers will be sourced from the local labour market within the WSA, with the remainder being sourced from Ireland as a whole.

The most substantial elements of the proposed development are the 9 no. wind turbines and 110kV electricity substation. The indicative investment sums have been set out in **Table 4.5** providing the breakdown of the total development and capital expenditure required to develop and construct the proposed development. Expenditure comprises approximately €53million for the wind farm element, including turbines, civil engineering works, electrical plant and grid connection.

Item	Description	Cost
Development Expenditure	The processes up to the point of financial close or placing firm orders to proceed with wind farm construction, and project management costs incurred by the Applicant.	€2.3 million
Turbines/Plant	The activity by wind turbine manufacturers and their suppliers, including nacelle/hub component manufacture and assembly and blade and tower manufacture. It includes transport, installation and commissioning but excludes the turbine service agreement	€36 million
Civil Works	The activity by civil contractors and their suppliers; including access tracks and drainage, crane hardstands, turbine foundations, meteorological mast foundations, cable trenches and buildings for electrical switch gear, SCADA equipment and its installation, and a maintenance and spare part facility.	€7 million
Electrical Works	The activity by electrical contractors and their suppliers, including cables, electrical switch gear, protection and control system, and grid connection.	€7 million
Total		€53 million

Table 4.3: Breakdown of Estimated Capital Investment

Procurement of goods and services are likely to have a significant positive effect on the local economy. Of the level of expenditure calculated above, local contract spend (within the WSA) could be in the region of €13 million (c. 25%) over the development and construction period.

The types of supply chain companies that could benefit from this expenditure are wide ranging, and are likely to include, but not limited to, the following:-

- haulage and transport services;
- traffic management;
- materials supply, e.g. aggregates;
- plant and equipment hire;
- vehicle servicing/tyres;
- fencing;
- fuel;
- security;
- waste management;
- building construction, electrical, plumbing, roofing, flooring, plastering and joinery services;
- signing and lighting;
- telecommunications;
- drainage;
- planting and seeding;
- catering;
- professional services; and
- accommodation.

The appointed contractors will be actively encouraged to develop local supply chains throughout the area, and work with local subcontractors and service providers.

In addition, local businesses and services are likely to experience indirect benefits during the construction phase works as the workforce spend locally on living costs whilst they are based in the area. These effects are further explored in the following section.

Effects on Tourism Economy

The construction period is anticipated to last for 15-18 months and, as stated, is likely to benefit the local economy through expenditure on purchases of accommodation, food, drink, fuel, etc. which will be required to sustain the construction workforce. These beneficial effects would be experienced mainly by businesses already operating within the tourism sector, or those that are partly dependent on tourism for their income, for example the retail sector.

Anecdotal evidence, based on other wind farm construction projects, demonstrates that local businesses such as accommodation providers welcome the enhanced level of occupancy that is achieved due to 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. Where construction staff or personnel are making use of local accommodation, all relevant public health guidelines will be fully adhered to.

The positive effects arising during the construction period are assessed to more than offset any likely temporary negative effects to the tourism economy that may occur in the event that tourist visitors were deterred from visiting the local area (for example, if accommodation was in use by construction workers) during this phase.

Whilst overall effects on the tourism economy are considered to be negligible and not significant (beneficial or adverse), the benefits to individual businesses is likely to be substantial and may indeed be significant. However, until such time as contracts are agreed, it is not possible to quantify the precise level of benefit to individual businesses.

4.5.1.2 Effects on the LSA

Land Use

The proposed development site forms part of operational farm holdings and is owned by a number of private land owners. The Applicant is in regular dialogue with each landowner (and where relevant with tenant farmers also) and each one has entered into a legal agreement to allow the developer to utilise the land. The legal agreements include a suite of measures designed to minimise any likely land use effects including the clear identification of lands which may be subject to development, measures to ensure that disturbed lands are reinstated appropriately and returned to agricultural use insofar as possible, and provision for the use of proposed access tracks by landowners during the operational phase of the proposed development. Measures to facilitate the safe continuation of agricultural operations during the construction phase have been developed.

Tourism and Recreation Assets

As the sensitivity of all tourism/recreational receptors within the LSA is low, and the magnitude of adverse effects would also be low, the level of effect on receptors in the LSA would be negligible (adverse) and not likely to be significant. This effect would be further reduced, or may become beneficial overall, if businesses in this area generate additional revenue areas as a result of the proposed development.

The impact on businesses within the LSA unaffected by construction traffic would be beneficial although as the sensitivity is low the level of beneficial effect is not expected to be more than negligible. Effects on individual businesses may be higher particularly where they are regularly used by construction staff, as this affords them regular income that is not seasonally dependent. However, until contracts are agreed and construction commences, it is not known which businesses would benefit.

The detailed CEMP, to be prepared prior to the commencement of development, will set out measures to ensure that local residents are informed of the construction work including the location and duration of temporary road closures and the identification of alternative routes during the construction works. Given the temporary nature of the construction works, the measures to be implemented and the low sensitivity of the receptors, the effect would be negligible and not likely to be significant.

Accidents or Natural Disasters

As set out within **Chapter 6** and **Chapter 7** of this EIAR, the proposed development is not recognised to be a likely source of pollution during either the construction or operational phases, predominately due to the limited volume of hydrocarbons stored on site and the bunding arrangements to ensure that spillages do not occur. In the event of an accident on-site, mitigation measures set out in the above chapters will ensure that significant environmental effects do not occur.

There is limited likelihood for significant natural disasters to occur at the proposed development site. Ireland is a geologically stable country with a mild temperate climate. The potential natural disasters that may occur are therefore limited to flooding and fire. The risk of flooding is addressed in **Chapter 7**. It is considered that the risk of significant fire occurring, affecting the proposed development and causing it to have significant environmental effects is limited. There are no habitat types located within the site which are particularly susceptible to fire and no tracts of forestry are present. As discussed above, there are no significant sources of pollution in the proposed wind farm development with the potential to cause environmental or health effects. Furthermore, one of the core mitigation by design features of the

proposed development, maximising the distance to residential dwellings, further limits any likelihood of significant human health effects as a result of accidents or natural disasters.

Major industrial accidents involving dangerous substances pose a significant threat to human health and the environment. Such incidents can give rise to serious injury to local residents or result in damage to the environment, both within proposed developments sites and in the vicinity. However, the proposed development site is not regulated by, connected or proximate to any site regulated under the Control of Major Accident Hazards Involving Dangerous Substances Regulations (i.e. sites regulated in accordance with the SEVESO Directives) and so there is no likelihood for cumulative effects or interactions with any such site.

4.5.1.3 Cumulative Effects

This assessment has taken into account the cumulative impact of the proposed development including all elements i.e. wind farm and associated ancillary infrastructure, grid connection and upgrade works to the proposed turbine component haul route.

However, there is potential for cumulative effects to arise in relation to the construction of other permitted or proposed developments, including the proposed Ballivor Wind Farm, should the construction phases overlap with the proposed development. While there are a number of developments permitted or currently proposed within the WSA, it is assessed that none of these projects are of a sufficient scale or nature to be likely to result in cumulative socio-economic or population and human health effects.

4.5.2 Operational Phase

4.5.2.1 Effects on the WSA

Employment and Investment

When the proposed development is operational, the project will require a team of personnel to provide servicing, maintenance, repairs and other operational support. It is estimated that up to 4 no. engineers and technicians (full time equivalent) will be needed to provide operational support to the project. All of these staff are expected to be based within the WSA (i.e. County Westmeath or Meath).

Further employment is anticipated to be supported directly and indirectly elsewhere in Ireland during the operational phase. Additional to the direct impacts on employment during the construction and operational phases, there would also be indirect effects generated throughout the operational phase. Indirect effects arise from the placing of contracts with other businesses, both in the local area and elsewhere in Ireland, supplying services and materials to the project during its operational phase. Examples of such supply chain activity would include the procurement of:-

- site and building maintenance;
- waste management;
- civil engineering contractors for road maintenance, ditching, crane pad repairs, grass cutting, weed control, road furniture and gate repair etc;
- supply of consumable items (e.g. lubricants and oils, spare parts, office supplies, etc.);
- turbine inspections;

- in addition, local shops, cafes, accommodation providers and hotels often experience an increase in business during the operational phase (e.g. extra technicians onsite for during wind farm maintenance and servicing).

The Applicant will seek to secure positive benefits for the local economy by encouraging the use of local labour, manufacturers and suppliers where possible during the operational phase.

Visitor Economy

As identified in the baseline section, landscape quality is an important part of the visitor appeal of the WSA and is one of the reasons why visitors come to the area. The landscape qualities are appreciated from several scenic roads and viewpoints which are set out in **Chapter 9**. Local planning policies refer to managing the landscape sympathetically in order to, amongst other reasons, protect this visitor appeal.

Chapter 9 of the EIAR assesses in detail the landscape and visual effects of the proposed development. The chapter concludes that visual impacts in the WSA ranged from High-medium to medium-low, with the highest impacts related to the clearest and nearest views of the proposed turbines. However, **Chapter 9** notes visual impacts are typically contained within the central portions of the study area, beyond which, the proposed turbines are often heavily screened by dense layers of hedgerow vegetation and mature tree-lines. This is further reinforced by the fact that out of the 29 no. representative viewpoints within the wider study area only, two have an impact significance of 'Slight' with the remainder ranging between 'Slight-imperceptible' and 'Imperceptible'. **Chapter 9** concludes that the proposed development will not give rise to significant landscape and visual effects in EIA terms.

Evidently, whilst the proposed development will be visible from around the WSA, significant visual impacts (as assessed in **Chapter 9**) will not occur in this wider area. The more prominent views of the wind farm will occur much closer to the site in areas where there is no evidence of significant visitor economy activity. Therefore, a negligible impact resulting in a negligible effect on tourism is likely to occur.

Notwithstanding these considerations, it is noted that there is no evidence to suggest that an occasional view of the proposed development from the WSA might adversely affect the visitor appeal of the area. Based on the evidence gathered from previous studies, the occasional views of the proposed development are not expected to act as a deterrent to visitors or discourage repeat visits to the area.

4.5.2.2 Effects on the LSA

Community Benefit Funds and Community Investment

The operation of the proposed wind farm will bring about a number of financial benefits to both the WSA and LSA. These include investment opportunities, community benefit funds, contributions to local resident energy costs, payment of business rates to Westmeath County Council and rental income accrued by involved landowners. Each of these benefits is discussed below.

The Applicant is committed to operating a community benefit fund in accordance with the Wind Energy Ireland (WEI) best practice and it will be available to the community at a rate of €2 euro per megawatt hour (MWh) produced, should RESS be awarded. An investment of approximately €16,000 per turbine per year for up to 15 years, is committed. There will also be a community investment element available where there will be an opportunity for all local residents to participate, should they wish to do so. The structure for the investment scheme will form part of the Renewable

Energy Support Scheme (RESS) design; however, the precise arrangements for the RESS have not yet been published.

The fund will be administered by a committee set up by the operations department of the Applicant. Members of the local community are also likely to be appointed to the committee, thus allowing the local community to prioritise the fund for the projects which matter most. Local community groups will be invited to submit funding requests to the committee and preference will be given to local projects, thereby contributing to the vitality of the local population, and to projects which are considered to represent an environmental benefit or incorporate a renewable energy element into the project. This fund will be made available, and distributed annually, for up to 15 years.

Based on current rates, the proposed development would make an annual business rates payment of €800,000 to Westmeath County Council. This annual payment to the Local Authority would have far reaching benefits across the entirety of County Westmeath.

The Applicant has also committed to introducing a Neighbour Scheme which will offer electricity bill payers living within 1km of a wind turbine an annual contribution of €1,000 towards their electricity usage.

Additionally, it should also be noted that, over the lifetime of the development, a substantial investment will have been made by the Applicant to involved landowners. It is highly likely that these landowners will reinvest a significant proportion of this sum into the local economy and supply chains through various means which will, in turn, result in further community gains.

Benefits would accrue from this income stream and, depending on the choices made, could have a positive effect on the physical and mental well-being of local residents as well as economic benefits.

The long term nature of the income would allow the community to plan ahead, to draw in other sources of match funding to maximise the benefits and investment projects could be designed to match local priorities. Given the annual contributions which will be made for up to 15 years, the magnitude of impact is assessed to be 'High'. This would result in a positive effect of moderate or major importance on the study area.

Other effects within the LSA

Based on a review of the findings of the assessment in **Chapter 13**, no significant effects are likely as a result of maintenance vehicles accessing the site as this would be on an occasional basis only and would not significantly increase vehicular movements in the local area.

There would also be some minor beneficial effects on local businesses within the LSA, probably most likely around Delvin and Raharney arising from expenditure on goods and services by staff and suppliers employed at the proposed development site. This is expected to benefit local shops and food & drink businesses. Although the expenditure would be intermittent and is difficult to quantify, the benefit would be enhanced by the fact that workers visiting the proposed development would do so all year round, unlike tourism expenditure which tends to be seasonal.

Visual effects on recreational receptors are assessed in **Chapter 9** and the findings have been taken into account in the assessment below, although it is important to note that a significant landscape and visual effect does not necessarily result in a

significant effect on Population & Human Health. In assessing effects, there is not a straightforward relationship between users experiencing views of turbines from a point or along a route (for example a passing cyclist) and impacts on usage. Some people may be discouraged from using the receptor due to the presence of turbines, but for others there may be no impact.

Studies undertaken in respect of other wind farm developments where users have been asked if the presence of turbines would discourage them from using a route have found that the majority would not be deterred.

The assessment of landscape and visual effects finds that the greater effects of the proposed development would be contained within a relatively limited area around the site (local community views only), and the magnitude of effects would diminish with distance. These visual effects would not result in any significant adverse effects any of the receptors identified in the baseline description.

The Applicant is also committed to ensure the continued availability of the proposed development site for use as a recreational facility. As referred to earlier, existing access tracks are, on occasion, used by local residents for walking/cycling and the upgrade of existing access tracks and construction of new tracks will improve the amenity value of the site; thus resulting in a beneficial effect on the LSA.

4.5.2.3 Human Health

Noise

During the construction and operational phases of the proposed development, noise levels sufficient to cause noise induced hearing damage or sleep disturbance are not likely to occur. The full results of this assessment are presented in **Chapter 11**, Noise and Vibration.

Lighting protection

Appropriate lightning protection measures are incorporated in modern wind turbines to ensure that lightning is conducted harmlessly past the sensitive parts of the nacelle and down into the earth. The rotor blades of the proposed turbine model are equipped with lightning receptors mounted in the blade. The turbine is grounded and shielded to protect against lightning. In the event of a lightning strike or an abnormal increase in voltage (overvoltage), the entire electrical and electronic equipment is protected by built-in energy absorbing components with surge protection in the electrical components.

Lightning protection is also incorporated into the design of the proposed electricity substation.

Ice fall

In extremely cold climates or at high altitude ice can potentially build up on blades or other parts of the turbines. Ice can potential fall off and cause injury although there is no experience of any such incident in Ireland. Most modern turbines are fitted with anti-vibration sensors, which will detect any imbalance caused by the icing of the blades. The sensors will cause the turbine to wait until the blades have been de-iced prior to beginning operation. All occupied/habitable properties in the vicinity of the proposed wind farm are located well in excess of 500m from a proposed turbine and therefore there is no likely impact in respect of ice throw.

Electromagnetic (EMF) Interference

All electricity, both natural and man-made, produces two types of fields: electric fields

and magnetic fields. The proposed grid connection electricity lines will comply with the international guidelines for ELF-EMF set by the International Commission on Non-Ionizing Radiation Protection (ICNRP), which is an advisory agency to the World Health Organisation. The cables will also comply with EU guidelines for human exposure to EMF.

The proposed substation is located well away from any residence with no possible EMF impact. The substation when operational will also comply with ICNIRP and EU guidelines relating to exposure to EMF.

Shadow Flicker

Shadow Flicker is assessed in detail in **Chapter 12**. The chapter concludes that there will be no significant residual shadow flicker impacts arising from the proposed development. Mitigation measures will ensure that any residual effects are within the acceptable limits.

4.5.2.4 Cumulative Effects

While there are a number of developments permitted or currently proposed within the WSA, it is assessed that none of these projects are of a sufficient scale or nature to have the likelihood to result in in-combination socio-economic or population and human health effects during the operational phase of the proposed development.

The proposed Ballivor Wind Farm is assessed as likely to result in similar effects on population and human health as the subject proposed development; however, due to its increased scale, is likely to result in a greater contribution to socio-economic benefits. Similarly; adverse effects, such as cumulative noise and shadow flicker effects, will also be of an increased magnitude; however, cumulative assessments of these matters are addressed elsewhere in this EAIR and it is assessed that likely significant cumulative effects are not likely to occur.

4.5.3 Decommissioning Phase

These effects are anticipated to be the same as the construction phase effects described earlier in this chapter.

4.6 Mitigation & Monitoring

4.6.1 Construction Phase

Allowing for the implementation of embedded mitigation set out elsewhere within this EAIR, no likely significant adverse effects have been identified in respect of socio-economic receptors arising from construction of the proposed development and therefore no mitigation measures are required to reduce or remedy any adverse effect. In terms of beneficial effects, individual businesses or receptors may experience substantial effects accruing from the construction phase; however, it is assessed that the overall effect on socio-economic receptors will not be significant.

As identified above, a suite of measures has been agreed with involved landowners regarding the management of agricultural activities during the construction phase. These measures have been incorporated into signed legal agreements and will be implemented in full.

4.6.2 Operational Phase

No likely significant adverse effects have been identified in respect of socio-economic receptors arising from the operation of the proposed development and therefore no mitigation measures are required to reduce or remedy any adverse effect.

4.6.3 Decommissioning Phase

No likely significant adverse effects have been identified in respect of socio-economic receptors arising from the decommissioning of the proposed development and therefore no mitigation measures are required to reduce or remedy any adverse effect.

4.7 Residual Effects

4.7.1 Construction Phase

No residual adverse construction effects are assessed as likely to occur.

4.7.2 Operational Phase

No residual adverse operational effects are assessed as likely to occur.

4.7.3 Decommissioning Phase

No residual adverse decommissioning effects are assessed as likely to occur.

4.8 Summary

The assessment presented in this chapter has evaluated data from a range of sources, including the findings and conclusions of other assessments within this EIAR, to determine the likely effects of the proposed development on population and human health. In order to avoid 'double-counting', the assessment focuses on those factors which might result in economic, social, and health and safety effects. Other specific assessments on population and human health, including, for example, in respect of noise, visual impact and air quality, are assessed separately elsewhere in the respective chapters of this EIAR

The overall conclusion of this chapter is that any adverse effects of the proposed development on population and human health are assessed as unlikely to be significant. No specific mitigation measures, other than full adherence to all health and safety and public health guidance, have therefore been identified as being required.

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