

5. POPULATION AND HUMAN HEALTH

5.1 INTRODUCTION

This chapter examines the existing environment and addresses the likely significant effects on population and human health arising from the proposed project, as described in Chapter 2 of this EIAR (Description of the Proposed Project). The two environmental factors of population and human health are addressed under separate headings throughout this chapter.

The assessment on population and human health primarily considers the proposed wind farm site and the surrounding area as the main source of any potential effects. The assessment considered property receptors and residential amenity, as well as current land use and activities, occurring within and in the vicinity of the proposed wind farm site, as this is where any likely effects on population and human health receptors will mainly occur. The assessment on human health includes a detailed literature review of studies and research carried out on the potential effects of wind farm developments on human health. The study area for the chapter is discussed further in Section 5.2.3 below.

In order to establish a baseline and understanding of population and human health status of the local area, where available, data has been gathered at a spatial level in terms of local, county, regional and national level statistics, and local property receptors have been identified within a 2-kilometre (km) radius of the proposed wind farm site; this distance is typical best practice when undertaking population and human health environmental impact assessment (EIA). In terms of census data, a temporal period of 11-years has been reviewed, i.e., 2011 to 2022, to review local, regional and national change, this is discussed further in Section 5.3.1 below.

The potential effects of the proposed project on other environmental factors which may also have an effect on human beings, as set out in Chapter 8 (Land, Soils and Geology); Chapter 9 (Hydrology and Hydrogeology); Chapter 10 (Air Quality); Chapter 11 (Noise and Vibration); Chapter 12 (Landscape and Visual Impact Assessment (LVIA)); Chapter 14 (Traffic and Transport); Chapter 15 (Material Assets); Chapter 16 (Shadow Flicker) and Chapter 17 (Climate) are addressed in this chapter and discussed in more detail in the relevant chapters of this EIAR. A separate section setting out the likely interactions between this assessment and other technical assessments is presented in Chapter 19 (Interaction of the Foregoing).

Where likely significant effects have been identified, mitigation measures have been proposed. Residual effects are then considered which details potential effects following implementation of mitigation measures.

A do-nothing scenario (as described in Chapter 3 - Reasonable Alternatives) is outlined, in line with requirements of the EIA Directive 2014 (As Amended) which states:

“The environmental impact assessment report to be provided by the developer for a project should include a description of an outline of the likely evolution thereof without implementation of the project as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge”.

The assessment details the likely evolution of the receiving environment in the future should the proposed project not be carried out.



5.1.1 Statement of Authority

This chapter was prepared by Oonagh Fleming and Serena Byrne of TOBIN. Oonagh Fleming is an Assistant Project Manager / Environmental Scientist in TOBIN. Oonagh holds a B.A. in Geography and Sociology. She has over three years of experience as an environmental consultant in wind energy developments and carrying out associated impact assessments including in preparing assessments in relation to population and human health (human beings).

Serena Byrne is a Project Manager / Project Scientist at TOBIN Consulting Engineers, with over 12 years' multidisciplinary experience in engineering and environmental consulting, including EIA co-ordination assistance and preparation of EIAR deliverables. She holds a MSc in Environmental Sustainability from University College Dublin. She has a number of years' experience preparing EIAR chapters, including for population and human health, on renewable energy projects.

This chapter has been reviewed by Orla Fitzpatrick, Technical Director in TOBIN. Orla has over 20 years' experience working in the delivery of EIA projects in environmental consultancy. She holds a BSc in Geophysics and MSc in Environmental Consultancy and is a Chartered Environmentalist. She has considerable experience as technical approver of environmental deliverables for major infrastructure projects.

5.1.2 Legislation, Policy and Guidance

This assessment has been carried out in accordance with the following guidelines:

- Department of Housing, Planning and Local Government (DoHPLG), Guidelines for Planning Authorities and An Bord Pleanála [now An Coimisiún Pleanála] on carrying out Environmental Impact Assessment (2018);
- Environmental Protection Agency (EPA), Guidelines on the Information to be contained in Environmental Impact Assessment Reports (2022) (hereafter referred to as the 'EPA EIAR Guidelines (2022)');
- European Commission (EC), Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (2017);
- Department of Housing, Local Government and Heritage Wind Energy Development Guidelines (WEDGs) (2006) (hereafter referred to as the '2006 WEDGs'); DoHPLG, Draft Revised Wind Energy Development Guidelines (WEDGs) (2019) (hereafter referred to as the 'Draft Revised 2019 WEDGs').

The following key information sources and guidance have been used in the completion of this chapter:

- Central Statistics Office (CSO) –2011-2022 Census and associated data;
- CSO Health Survey Data¹
- Department of Health (Government of Ireland), Health in Ireland: Key Trends 2023 Surveys (February 2024)²;

¹ <https://www.cso.ie/en/statistics/health/irishhealthsurvey/>

² <https://www.gov.ie/en/publication/cc4b-health-in-ireland-key-trends-2023/>



- Discover Ireland Website³;
- Eastern and Midlands Regional Assembly, Regional Spatial and Economic Strategy (RSES) (2019 -2031)⁴;
- EPA Geoportal Site Data and Maps⁵;
- Fáilte Ireland website⁶;
- Fáilte Ireland, *EIAR Guidelines for the Consideration of Tourism and Tourism Related Projects* (as provided by Fáilte Ireland);
- Fáilte Ireland website information regarding the Ireland’s Hidden Heartlands⁷;
- Fáilte Ireland website information regarding the Ireland’s Ancient East⁸;
- HSE Health Surveys;
- Health Service Executive (HSE) Website;
- Healthy Ireland Survey 2024⁹
- Institute of Public Health Ireland, *Health Impact Assessment* (2009);
- Institute of Environmental Management and Assessment (IEMA), *Health in Environmental Impact Assessment - A Primer for a Proportionate Approach* (2017);
- IEMA Guide - *Effective Scoping of Human Health in Environmental Impact Assessment* (2022);
- IEMA Guide - *Determining Significance for Human Health in Environmental Impact Assessment* (2022);
- Offaly County Council, Offaly County Development Plan 2021 – 2027
- Ordnance Survey Ireland (OSI) – Mapping and aerial photography;
- Sports Ireland Walking trails information¹⁰;
- Tipperary County Council, Tipperary County Development Plan 2022-2028;
- World Health Organisation (WHO), *Environmental Noise Guidelines for the European Region* (2018);
- WHO, *Night-time Noise Guidelines for Europe* (2009); and
- WHO, *Global Air Quality Guidelines* (2021).

The effects of the proposed project on the population and human health are assessed in accordance with the EIA Directive (2014/52/EU) and the EPA EIAR Guidelines (2022) as outlined in Chapter 1 (Introduction) of this EIAR and described in the following sections. The EPA EIAR Guidelines (2022) are primarily intended to be an authoritative reference to those preparing EIARs for projects covered under the EIA Directive (2014/52/EU). The Guidelines are a statutory document that should be regarded by those preparing EIARs and the decision makers considering the EIARs (EPA, 2022). The assessment criteria as outlined in the EPA EIAR Guidelines (2022) set out in Section 1.7.2, Chapter 1 (Introduction) of this EIAR. Regard has been given to other guidance and key information sources in relation to the assessment, however, as a statutory document, the EPA EIAR Guidelines (2022) are considered the most relevant and suitable for EIA in the Irish context.

³ <https://www.discoverireland.ie/>

⁴ <https://www.emra.ie/rses>

⁵ <https://gis.epa.ie/EPAMaps>

⁶ <https://www.failteireland.ie/>

⁷ <https://www.failteireland.ie/IrelandsHiddenHeartlands.aspx>

⁸ <https://www.failteireland.ie/Regional-experience-brands/Ireland-s-Ancient-East.aspx>

⁹ <https://www.gov.ie/en/healthy-ireland/publications/healthy-ireland-survey-2024/>

¹⁰ Available at: <https://www.sportireland.ie/outdoors/find-your-trails> and <http://trails.ie/index.php>



EIA Directive

The 2014 amendment to the 2011 EIA Directive (2014/52/EU) directs that population and human health factors be assessed in an EIAR. The EIA Directive does not define the term 'human health', however the 2017 EC Guidance on the preparation of the EIAR states that –

“human health is a very broad factor that would be highly project dependent. The notion of human health should be considered in the context of the other factors in Article 3(1) of the EIA Directive and thus environmentally related health issues (such as health effects caused by the release of toxic substances to the environment, health risks arising from major hazards associated with the Project, effects caused by changes in disease vectors caused by the Project, changes in living conditions, effects on vulnerable groups, exposure to traffic noise or air pollutants) are obvious aspects to study. In addition, these would concern the commissioning, operation and decommissioning of a Project in relation to workers on the Project and surrounding population”.

EPA EIAR Guidelines (2022)

The EPA EIAR Guidelines (2022) set out the following headings and/or topics, generally identified during the scoping process, relevant to population and human health:

- *Employment;*
- *Settlement patterns;*
- *Land use patterns;*
- *Baseline population;*
- *Demographic trends;*
- *Human health (considered with reference to other headings, such as water and air);*
- *Amenity (e.g. effects on amenity uses of a site or of other areas in the vicinity may be addressed under the factor of Landscape).*

The EPA EIAR Guidelines (2022)¹¹ published by the EPA state that *“while no specific guidance on the meaning of the term Human Health has been issued in the context of Directive 2014/52/EU, the same term was used in the SEA Directive (2001/42/EC). The Commission’s SEA Implementation Guidance states ‘The notion of human health should be considered in the context of the other issues mentioned in paragraph (f)’”*. Paragraph (f) of Annex I of the SEA Directive lists the environmental factors including soils, water, landscape, air etc.)¹².

The EPA EIAR Guidelines (2022) also state that the above health assessment approach is *“consistent with the approach set out in the 2002 EPA EIS Guidelines where health was considered through assessment of the environmental pathways through which it could be affected, such as air, water or soil”*.

The EPA EIAR Guidelines (2022) state *“The evaluation of effects on these pathways is carried out by reference to accepted standards (usually international) of safety in dose, exposure or risk. These standards are in turn based upon medical and scientific investigation of the direct effects on health of the individual substance, effect or risk. This practice of reliance upon limits, doses and thresholds for environmental pathways, such as air, water or soil, provides robust and reliable health protectors [protection criteria] for analysis relating to the environment”*.

The EPA EIAR Guidelines (2022) also note that in an EIAR, *“the assessment of impacts on population & human health should refer to the assessments of those factors under which human health effects might occur, as addressed elsewhere in the EIAR e.g. under the environmental factors of air, water, soil, etc.”* and that *“assessment of other health & safety issues are carried*

¹¹ EPA guidelines

¹² Implementation of Directive 2001/42 on the assessment of the effects of certain plans and programmes on the Environment - https://ec.europa.eu/environment/archives/eia/pdf/030923_sea_guidance.pdf



out under other EU Directives, as relevant. These may include reports prepared under the Integrated Pollution Prevention and Control, Industrial Emissions, Waste Framework, Landfill, Strategic Environmental Assessment, Seveso III, Floods or Nuclear Safety Directives. In keeping with the requirement of the amended Directive, an EIAR should take account of the results of such assessments without duplicating them”.

The classification and description of effects in this EIAR chapter follows the terms provided in Table 3-4 of the EPA EIAR Guidelines (2022) and are duplicated in Table 1-1 of Chapter 1 (Introduction) in this EIAR for reference.

IEMA Discussion Document (2017)

The Institute for Environmental Management and Assessment (IEMA) in the UK issued a discussion document in 2017, titled *“Health in Environmental Impact Assessment”* (IEMA, 2017), which it describes as a primer for discussion on what a proportionate assessment of the impacts on health within the EIA process and suggests what should be assessed in this context.

The IEMA Primer notes with reference to ‘proportionate’ that ‘the scoping of population and human health issues into EIA should focus on whether the potential impacts are likely to be significant. Where they are found likely to be significant, effort should focus on identifying and gaining commitment to avoiding or reducing any adverse effects and to enhancing beneficial effects.

The discussion document notes that Health Impact Assessment (HIA) and EIA are separate processes and that while a HIA can inform EIA practice in relation to human health, a HIA alone will not necessarily meet the EIA human health requirement. The discussion document also notes that the WHO provides an overview of health in different types of impact assessment and presents the WHO perspective on the relationship of HIA to other types of impact assessment as follows:

“The health sector, by crafting and promoting HIA, can be regarded as contributing to fragmentation among impact assessments. Given the value of impact assessments from a societal perspective, this is a risk not to be taken lightly...The need...and justification for separate HIA cannot automatically be derived from the universally accepted significance of health; rather, it should be demonstrated whether and how HIA offers a comparative advantage in terms of societal benefits...Health issues can, and need to, be included [in impact assessment] irrespective of levels of integration. At the same time, from a civic society perspective, it would be unacceptable for HIA to weaken other impact assessments. A prudent attitude suggests optimizing the coverage of health along all three avenues:

- *Better consideration of health in existing impact assessments other than HIA;*
- *Dedicated HIA; and*
- *Integrated forms of impact assessment.”*(IEMA, 2007).

This indicates that the WHO does not support a stand-alone HIA unless it could be demonstrated to be of advantage over an EIAR. Furthermore, HIA is not routinely carried out for major infrastructure schemes in Ireland. It is for these reasons that this health assessment is part of the EIAR and there is no stand-alone HIA.

One of the messages in the IEMA document in terms of assessing health in EIA, is that there should be a greater emphasis on health outcomes (i.e., the potential effects on human health), rather than simply the health determinants (i.e., the agents or emissions which could have the potential to have health effects). The IEMA document noted that in EIA, there has previously been a strong focus on just the agents or emission levels (e.g., dust) rather than focusing on the



effects of these agents/emission levels on human health. This change in emphasis does not mean a complete change in practice.

The IEMA document notes that “*public health is defined as the science and art of promoting and protecting health and well-being, preventing ill-health and prolonging life through the organised efforts of society and has three domains of practice: health protection, health improvement and improving services*”. The IEMA document suggests that these three domains should be considered in the assessment of health in EIA. Examples of health protection issues to be considered could include issues such as chemicals, radiation, health hazards, emergency response and infectious diseases whilst health improvement issues could include lifestyles, inequalities, housing, community and employment. Examples of improving services issues could include service planning, equity and efficiencies.

The WHO defined health, in its broader sense, in its 1948 constitution as “*a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity*”. Therefore, whilst the 2022 EPA EIAR Guidance is useful in terms of health protection, for a more holistic assessment, as per the IEMA document, it is also worthwhile to look at broader health effects in terms of opportunities for improvement of health and for improvement of access to services. While it is important to do this, it is also important not to attribute every conceivable event as being a health effect. To further rely on the WHO definition, a health effect would be something that would have a material impact on somebody’s physical, mental and social well-being, be that positive or negative.

The IEMA 2017 discussion document is a useful document when considering what can and should be assessed in the context of EIA. Regard has been given to the general approach put forward in this discussion document when preparing this chapter.

IEMA Guide on Effective Scoping of Human Health in Environmental Impact Assessment (2022)

In November 2022, IEMA published a guide to the ‘*Effective Scoping of Human Health in Environmental Impact Assessment*’ for use by EIA practitioners. The guide covers the consideration of health as a topic in EIA. The guide states ‘legislation for EIA has left the definition of “human health” to competent experts. This guidance updates and provides further detail on the position from the aforementioned 2017 IEMA Primer on health in EIA.

The guide is focused on the scoping phase of the EIA process – including input to Scoping Reports and responses within Scoping Opinions. The aim of this guide is to enable those responsible for commissioning, conducting, or reviewing an EIA determine the scope of the human health chapter in EIA. The guide is focused on the scoping phase of the EIA process, including input to scoping reports and responses within scoping opinions. The relationship with standalone HIA is clarified. Where an EIA is undertaken and there is also a requirement for HIA, projects should normally meet the HIA requirement through the EIAR health chapter. Regard has been given to the general approach put forward in this IEMA guidance when preparing this chapter.

IEMA Guide on Determining Significance for Human Health in Environmental Impact Assessment (2022)

In November 2022, IEMA published a guide to the ‘*Determining Significance for Human Health in Environmental Impact Assessment*’. The aim of the guide is to enable those responsible for commissioning, conducting or reviewing an EIA to determine significance in terms of human health in EIA. The guide focuses on and discusses what ‘significance’ means for ‘human health’ in terms of EIA. The guide was produced in order to inform current practice and in anticipation of potential changes to the way that EIA is undertaken. Regard has been given to the general approach put forward in this IEMA guidance when preparing this chapter.



HSE Position Paper on Wind Turbines and Public Health (2017)¹³

The Public Health Medicine, Environment and Health Group of the HSE were tasked with investigating the potential public health issues involved with wind farm development, given the increase in wind farm development in Ireland in recent years. The issues often cited in terms of health impacts are considered, including noise, shadow flicker and electromagnetic frequency.

The paper has reviewed the scientific basis for reports on negative health impacts resulting from wind farms. Its findings conclude that the evidence is weak, where present, and in many cases, is lacking. The paper states that *“Published scientific evidence is inconsistent and does not support adverse effects of wind turbines on health”* and that *“adequate setback distances and meaningful engagement with local communities are recommended in order to address public concern”*. In respect of the proposed project, there is a minimum setback distance of 720m from the proposed turbine locations to the nearest sensitive receptor which is in excess of the minimum setback requirements in the 2006 and Draft 2019 WEDGs (discussed further in Section 5.3.1.3).

The position paper states that *“Further research is required to investigate the effects of wind farms on public health. Large-scale prospective cohort studies would be most informative for identifying potential health effects of exposure to wind turbine noise; further cross-sectional studies are unlikely to contribute meaningfully to the current limited evidence base.”*

The paper recommends the use of relevant national planning guidelines (which would include the 2006 WEDGs) in order to determine applicable limits for noise, shadow flicker and setback distances from sensitive properties.

Therefore, health protection and health improvement are considered in this chapter. The methodology for assessing health protection is considered further below.

5.1.2.1 Health Protection

The assessment of human health for the proposed project, in terms of health protection, follows the approach set out in the EPA EIAR Guidelines (2022) and in the EC’s (2017) Guidance on the preparation of the EIAR. Human health protection is considered through the assessment of the environmental factors (pathways) through which health could be affected such as air, noise, water and soils. Potential noise, air, soils and water impacts which could affect human health are identified, the scale of these potential impacts and their duration are assessed, and the significance of the potential impact on human health is determined.

It should be noted that the identification of individual environmental impacts and the associated potential effects and duration are undertaken in other chapters of this EIAR namely, Chapter 8 (Land, Soils and Geology), Chapter 9 (Hydrology and Hydrogeology), Chapter 10 (Air Quality), Chapter 11 (Noise and Vibration), Chapter 12 (LVIA), Chapter 14 (Traffic and Transport), Chapter 15 (Material Assets), and Chapter 16 (Shadow Flicker), Chapter 17 (Climate), and Chapter 18 (Major Accidents and Natural Disasters).

The associated significance in terms of the potential impact on human health is then considered in this chapter. In the assessment of cumulative effects, any other existing, permitted or proposed projects in the surrounding area (see Chapter 4 (Policy, Planning and Development Context)) have been considered where they have the potential to generate in-combination or cumulative effects with the proposed project. The potential for cumulative effects on the local

¹³ It should be noted by the Planning Authority that the following 'The HSE 'Position paper on wind turbines and public health' has been withdrawn by the HSE and is under review.



population and human health is considered below (see Section 5.7), while elements such as noise, shadow flicker, traffic and visual impacts are discussed in their respective chapters.

5.2 METHODOLOGY

A desktop study was carried out in order to examine relevant information relating to this population and human health impact assessment, including a review of published information, and site visit reports, to assemble information on the local receiving environment.

Population and human health, in this chapter of the EIAR, is therefore considered in relation to the potential effects arising from the activities primarily associated with the study area (described below) and environmental factors impacting the population and human health receptors (hereafter referred to as 'sensitive receptors') within the study area (see Sections 5.2.2 and 5.2.3 for more information on the scope of the assessment and study area).

5.2.1 Consultation

As part of the EIA scoping process, an Environmental Scoping Report was prepared and submitted to relevant statutory and non-statutory bodies in April 2024 for review and comment (Appendix 1-2). The Environmental Scoping Report was accompanied by a cover email introducing the proposed project and inviting comments or observations within a period of six weeks from the date of the email. Table 1-4, Section 1.9 of Chapter 1 (Introduction) provides a summary of the consultees and responses received (or not received).

Responses primarily relevant to the Population and Human Health were received from Fáilte Ireland. Both responses can be found in Appendix 1-3 of this EIAR, which compiles the responses received from consultees, which have been considered in the preparation of this chapter and elsewhere in the EIAR.

Fáilte Ireland provided a copy of Fáilte Ireland's "Guidelines for the Treatment of Tourism in EIA". Other relevant bodies scoped (with no response) were Mountaineering Ireland, Waterways Ireland.

The RWE Project Team engaged with the community through a number of different initiatives since 24th July 2023, as set out below. Feedback was passed on to the project design team and EIAR team on an ongoing basis, in order to allow the consultation process to inform the design and impact assessment process. Further details regarding Public Consultation are in Section 1.9.5 of Chapter 1 and Appendix 1-4.

5.2.2 Scope of the Assessment

Aspects which the EPA EIAR Guidelines (2022) state should be examined as part of the environmental assessment of population and human health include; *"employment, settlement patterns, land-use patterns, baseline population, human health (considered with reference to other headings, such as water and air), and amenity (e.g. effects on amenity uses of a site or of other areas in the vicinity may be addressed under the factor of landscape)"*.

The primary potential sources of effects of the proposed project on sensitive receptors have been identified as follows:

- Dust emissions from construction activities (construction phase);
- Noise and vibration emissions (construction and operational phases);
- Traffic emissions and disruption (construction phase); and



- Installed infrastructure (operational phase).

Potential effects on sensitive receptors in relation to the above sources are assessed in this EIAR in terms of land use, population trends, property receptors, property value, employment/economy, tourism and amenity, and human health.

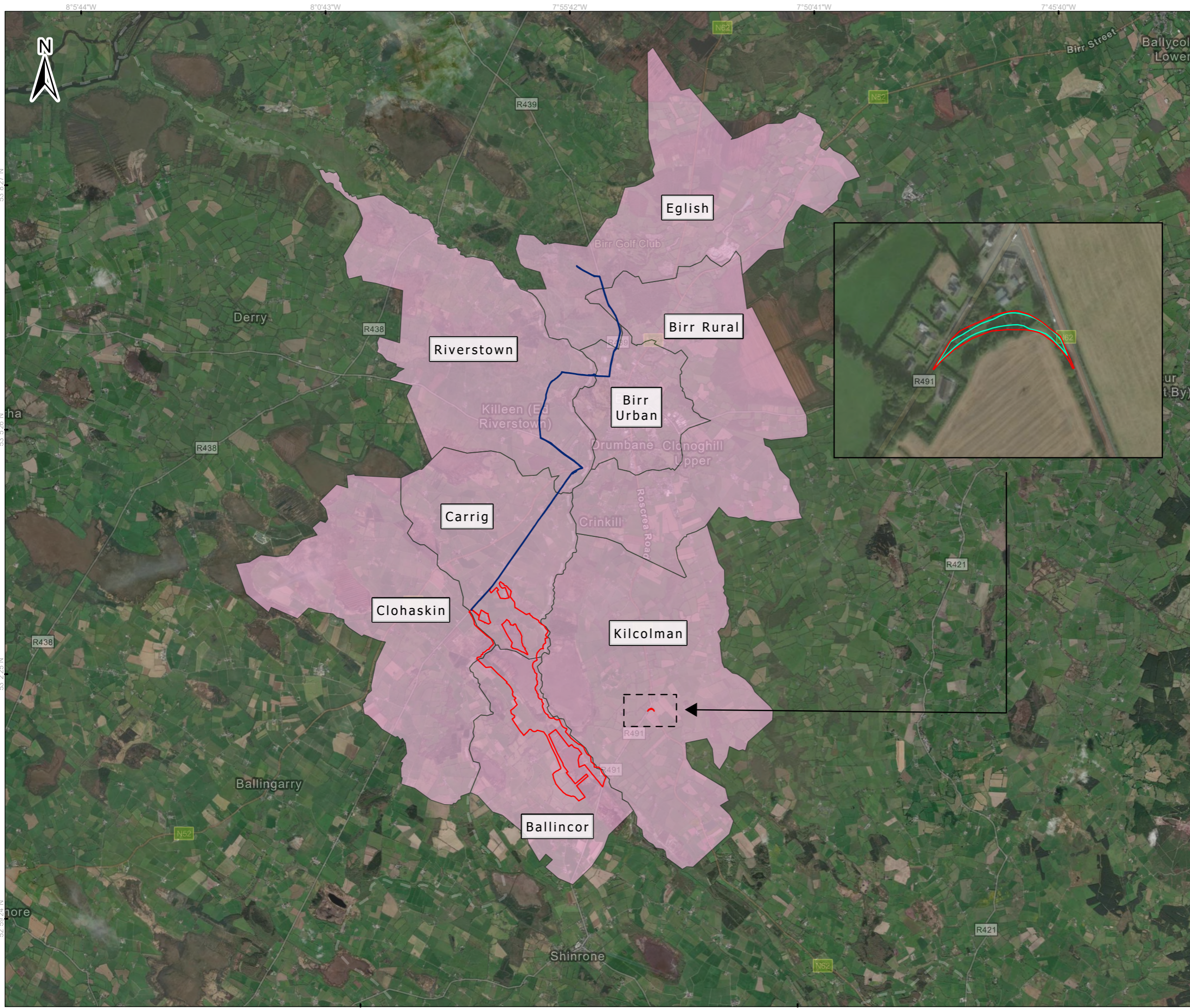
5.2.3 Study Area

For the purposes of establishing a baseline for the population and human health assessment, the study area focuses on the Electoral Districts (EDs) surrounding and encompassing the proposed wind farm site, the proposed grid connection route (GCR) and proposed works area along the TDR at the N62/R492 junction. Further detail regarding these areas are detailed below in Section 5.3.1. This is considered the most relevant area for assessing potential effects on population and human health receptors, as any likely impacts are expected to occur primarily within this vicinity.

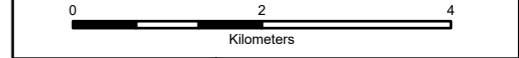
While the remaining temporary works areas along the proposed turbine delivery route (TDR) are included in the overall impact assessment, the scale and nature of works which range from hedgerow trimming/clearing to facilitate oversail of turbine blades to the temporary placement of hardcore to allow the oversize vehicles to pass are significantly smaller and more transient. Therefore, they are not considered central to the baseline environment for this assessment (see Chapter 2 for further details).

Where available, CSO data has been reviewed at the smallest available level for the local area, including at Electoral Division (ED) level, which are the smallest legally defined administrative areas within which Small Area Population Statistics (SAPS) are gathered by the CSO. This is considered the most appropriate scale for collated census data and is commonly used for defining the existing population profile.

Therefore, in order to discuss the receiving human environment and other statistics in the vicinity of the proposed wind farm site and permanent works areas, the study area for this assessment includes the following EDs; Ballincor (12047), Carrig (22009), Clohaskin (22012) and Kilcolman (12019), Riverstown (22021), Birr Urban (12001), Birr Rural (12005) and Eglisk (12014) see Figure 5-1 below.



- Legend**
- Wind Farm Site Boundary
 - Electoral Division
 - Proposed Grid Connection Route
 - Proposed Permanent Works Area (TDR)



Spatial Reference
 Datum: IRENET95
 EPSG: 2157

Copyrights:
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Rev	Date	Description	By	Chkd
D01	23/09/2025	Draft issue	K.K	J.D

Client:

Project: **Ballincor Wind Farm**

Title: **Figure 5-1:
Population and Human Healthy
Study Area**

Scale @ A3: 1:80,000

Prepared by: K.Kale Checked by: J.Dillon Date: September 2025

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Map Ref: 11333-016-PPH..St.A-P.App.BO-TOB-A Draft: **D01**

5.2.4 Population

For the population assessment, a desktop study was carried out in order to examine relevant information relating to this population and human health impact assessment. A local population and socio-economic profile has been established and described in terms of available relevant census data obtained primarily from the CSO. Information on population statistics, land use, employment and socio-economic data for the study area have been obtained predominantly from the 2011 to 2022 Census of Ireland records.

In summary, the desk study with respect to population included the following activities:

- A review of GeoDirectory and ground-truthing data in order to identify property receptors within and surrounding the proposed wind farm site (a 2 km radius was used, discussed further in Section 5.3.1.3);
- A review of Ordnance Survey Ireland (OSI) Mapping, EPA Maps (including CORINE 2018 and aerial photography to establish current land use and settlement patterns, as well as relevant amenity facilities, within and surrounding the study area;
- A review of the most recent information available regarding population statistics, employment and social data for the study area have been obtained primarily from the CSO. Information to establish a population profile, settlement demographics and the economic context of the study area on population statistics, land use, employment, and socio-economic data for the areas surrounding the proposed wind farm site have been obtained predominantly from the 2011 to 2022 Census record period. The 2020 Census of Agriculture records were also reviewed.;
- Fáilte Ireland tourist literature for County Offaly and Tipperary were examined in relation to tourism amenity in conjunction with the websites of relevant tourism assets, locations and amenities in the area. County Offaly is located in Ireland's Hidden Heartlands and Tipperary is located in Ireland's Ancient East, tourism branding initiatives developed by Fáilte Ireland. Information on other tourist attractions and initiatives in the area have been sourced from relevant websites, such as Fáilte Ireland, Discover Ireland, and Tourism Ireland, those hosted by the Offaly and Tipperary Tourism Boards, and published literature;
- A review of local and regional development plans (e.g., Offaly and Tipperary County Development Plan and the Eastern and Midlands Regional Assembly, Regional Spatial and Economic Strategy and planning policy to identify future development objectives and any planning allocations in the vicinity of the study area;
- A planning application search has been undertaken to identify proposed and consented, but as yet not built, developments, and is discussed in Chapter 4 (Policy Planning and Development Context);
- A review of information sources identifying walking and cycling routes and other Rights of Ways in the vicinity of the study area (e.g., Trails.ie And Sports Ireland).

5.2.5 Human Health

For the human health assessment, available census data and surveys from the CSO and HSE were reviewed; information has been presented on a county, regional or national scale depending on the availability.



In summary, the desk study with respect to human health included the following activities:

- A review of published literature on the effects of wind energy developments on human health has been undertaken. Aspects examined under human health primarily relate to impacts from the proposed wind farm on socio-economic activities and on local community health. These two themes are discussed in this chapter but may be further addressed in other technical chapters, where relevant;
- A review of published surveys on public perception of wind energy developments on has been undertaken;
- A review of recent available health surveys published by the HSE and CSO;
- A review of other relevant chapter assessments within this EIAR.

Aspects examined in this assessment primarily relate to potential impacts from the proposed wind farm on local population, properties, socio-economic activities and local community health. These themes are discussed primarily in this chapter but may be further addressed in other technical chapters, where relevant. Where possible, published surveys and statistics used in this assessment have been presented at the Electoral Division (ED) level, in line with the study area. In cases where ED-level data is unavailable, the next smallest available scale has been used, and this is noted where relevant throughout the assessment.

The effects of the proposed project on the human environment are assessed in accordance with the EPA EIAR Guidelines (2022) as outlined in Chapter 1 (Introduction) of this EIAR.

5.3 EXISTING ENVIRONMENT

5.3.1 Population

The proposed wind farm site is located within the functional boundaries of Offaly and Tipperary County Council within a peatland, agricultural and forested landscape.

The site of the proposed wind farm (Figure 1-2 of this EIAR) has an area of approximately 355 ha and comprises a single, slightly elongated land parcel; the site is approximately 5 km long in the northeast-southwest direction and is approximately 1.5 km wide at the widest point.

The proposed wind farm lies between the N52 that runs from Birr to Borrisokane and the N62 that runs from Birr to Roscrea. The proposed wind farm is adjacent to the L1071 to the north, and the R492 to the south.

In terms of settlements, the proposed wind farm lies between Sharavogue Co. Offaly and Carrig Co. Tipperary approximately 5 km southwest of Birr Co Offaly. Sharavogue and Carrig are located approximately 1 km and 1.2 km respectively from the proposed wind farm site. Birr represents the larger settlement town in the vicinity of the proposed wind farm.

The proposed GCR will run for approximately 12.23 km from the northern end of the proposed wind farm site, beyond Birr, to the Dallow 110kV substation.

Works required along the proposed TDR include the construction of a new offline track at the N62/R492 junction and further temporary works along the proposed TDR which include vegetation trimming, removal of street furniture and placement of hardcore (see Chapter 2 for further details). As mentioned, for the purposes of gathering data and establishing a baseline in terms of the local population and human health statistics, the EDs surrounding and within which



the proposed wind farm site is located comprise the study area for this assessment. EDs are the smallest legally defined administrative areas within which Small Area Population Statistics (SAPS) are gathered by the CSO. This is considered the most appropriate scale for collated census data and is commonly used for defining the existing population profile. The EDs identified within the study area are Ballincor (12047), Carrig (22009), Clohaskin (22012), Kilcolman (12019), Riverstown (22021), Birr Urban (12001), Birr Rural (12005) and Eglisk (12014) (shown in Figure 5-1).

5.3.1.1 Land Use

The land use activities on the proposed wind farm site are primarily peat bog, commercial forestry, with some areas of open peatland that is extensively grazed.

Corine Land Cover within the study area is made up of arable land, pastures, forest and semi-natural areas and wetlands including peat bogs. The majority of the land cover where turbines are proposed to be situated is coniferous forest (CORINE, 2018 (Source: EPA, 2023)).

Table 5-1 Land Cover of the Proposed wind farm site as per CORINE 2018 (EPA Maps, 2023)

Code	Level 1 Description	Level 2 Description	Level 3 Description
211	Agricultural Areas	Arable land	Non-irrigated arable land
231	Agricultural Areas	Pastures	Pastures
242	Agricultural Areas	Heterogeneous agricultural areas	Complex cultivation patterns
243	Agricultural Areas	Heterogeneous agricultural areas	Land principally occupied by agriculture with significant areas of natural vegetation
311	Forest and semi-natural areas	Forest	Broad-leaved forest
313	Forest and semi-natural areas	Forest	Mixed forests
412	Wetlands	Inland wetlands	Peat bogs

The proposed wind farm site is situated west of the Little Brosna River. The landscape is predominately flat agricultural divided with sections of hedgerow throughout the wider area, with the proposed wind farm site being located on an area of peatland and farmland with a topography of between 45 m and 65 m Ordnance Datum. The surrounding landscape is predominantly low-lying, except for Knockshigowna Hill to the southwest. To the east of the Little Brosna River lies the Sharavogue Bog Special Area of Conservation (SAC), which is characterised by peatland habitats. The topography of the proposed windfarm site comprises mostly cutover bog, wet grassland, mixed broadleaved woodland, coniferous woodland and scrub. The area surrounding the proposed wind farm site features electrical infrastructure. An



electricity transmission line travels through the centre of the site, from east to west (see Chapter 15, Material Assets).

The majority of the proposed GCR is located on public roads, (transport use) with short section within forestry and agriculture areas. The proposed TDR works area at the N62/R492 is located within the road corridor and within private lands. Population Trends

An examination of the existing population in the study area has been carried out to identify population trends, density and to define the properties/receptors surrounding the proposed wind farm site. Census data from the period 2011-2022 available from the CSO¹⁴ has been summarised in Table 5-2.

As discussed above, the study area for this assessment includes the following EDs; the proposed wind farm site is located in Ballincor (12047), Carrig (22009), Clohaskin (22012) and Kilcolman (12019).

¹⁴ <https://www.cso.ie/en/census/> (Accessed March 2025)



Table 5-2 Population Trends 2011 – 2022 (Proposed Project Study Area)

Area	Population 2011	Population 2016	Population 2022	% Change from 2011 - 2016	% Change from 2016 - 2022	% Change from 2011- 2022
State	4588252	4761865	5149139	3.80%	8.10%	12.20%
Offaly County	76687	77961	83150	1.60%	6.70%	8.40%
Tipperary County	158,754	159,553	167,895	+0.5%	+5%	5.76%
Electoral Divisions (EDs)						
Ballincor (12047)	158	156	185	-1.20%	18.60%	17%
Kilcolman (12019)	385	377	398	-2.00%	5.60%	3.37%
Carrig (22009)	174	177	186	1.70%	5.00%	6.89%
Clohaskin (22012)	242	230	249	-4.95%	8.26%	2.89%
Riverstown (22021)	566	555	609	-1.95%	9.70%	7.60%
Birr Urban (12001)	4428	4415	4726	-0.30%	7.00%	6.70%
Birr Rural (12005)	1288	1227	1300	-4.70%	6.00%	0.90%
Eglisk (12014)	145	147	153	1.38%	4.00%	5.50%
EDs (total)	7386	7284	7806	Average -1.5%	Average +8%	Average +6%

Between 2011 and 2022, population growth was observed at all geographic levels. The state population grew by 12.2%, with Offaly County increasing by 8.4% and Tipperary County by 5.76%. At the ED level, the overall population saw a modest increase of around 6%, despite some EDs experiencing slight declines between 2011 and 2016. From 2016 to 2022, most EDs showed notable recovery and growth, with Ballincor showing the highest percentage increase (18.6%) over that period.

Population density is a useful indicator of the settlement patterns in the area surrounding the proposed wind farm site. Table 5-3 shows population density for the study area, as well as the State. The 2022 census identified that the average population density in Ireland was 73.3 persons/km².



Table 5-3 Population density of Electoral Divisions (EDs) within the study area (CSO Census 2022)

Area	Population density (persons/km ²)
State	73.3
Offaly	41.6
Tipperary	39
Ballincor (12047)	17
Kilcolman (12019)	16
Carrig (22009)	15
Clohaskin (22012)	13
Riverstown (22021)	16
Birr Urban (12001)	738
Birr Rural (12005)	66
EGLISH (12014)	8

The table shows a clear contrast in population density between urban and rural areas in and around County Offaly. While the national average population density is 73.3 persons per square kilometre, and Offaly and Tipperary have lower averages of 41.6 and 39 respectively, most of the smaller local areas fall well below these figures. Birr Urban stands out significantly with a high density of 738 persons/km², highlighting its role as a population centre. In contrast, surrounding rural areas such as EGLISH (8), Clohaskin (13), and Carrig (15) have very low densities, illustrating the sparsely populated nature of the countryside. Birr Rural, with a density of 66, is somewhat more populated but still below the national average. Overall, the data reflects a pattern of concentrated urban population amidst predominantly low-density rural surroundings.

5.3.1.2 Property and Buildings

The locations of properties and buildings in within 2km of the proposed wind farm site have been identified using address data from the GeoDirectory database which is used to populate Eircodes.

Those most likely to experience effects are typically those residing in proximity to the proposed wind farm. To identify a baseline in terms of local sensitive receptors, a distance of 2 km from the wind farm site boundary is best practice and typically considered for identifying sensitive receptors (i.e. through identifying properties where sensitive receptors may reside) for the population and human health assessment.

It should be noted, there are no statutory guidelines in respect of how far from the site boundary or proposed turbines this assessment should extend for the purpose of population and human health impacts and assessment, however the distances identified as part of the assessment of other environmental factors (e.g., air quality, noise, landscape and visual and shadow flicker) are useful references.

Furthermore, the Draft Revised 2019 WEDGs recommend a minimum setback distance of four times the tip height from a proposed turbine to the curtilage of any residential property and the proposed project complies with this recommendation.



As such, the proposed wind farm has achieved a separation distance of 720 m, which is 4 times the tip height (with the exception of an involved landowner). One residential property, located approximately 550 m from Turbine T4, is associated with a landowner who is involved in the proposed project. A letter of consent from this landowner has been appended to the planning application, confirming their acknowledgment of the dwelling’s proximity to the proposed turbine and acceptance of this.

The validity of the GeoDirectory data within 2 km of the site boundary has been confirmed by way of desk top review, including publicly available mapping, aerial imagery, street-level imagery, and a ground-truthing exercise (undertaken September 2024). Ground-truthing allows for verification of the location and type of properties identified from the desk study and to include additional properties where arising. The ground-truthing exercise also notes sites where planning application notices may be currently present (i.e., potential future property receptor).

Approximately 312 properties have been identified within a 2 km buffer of the proposed wind farm site. A breakdown of the properties identified, along with their property type, is outlined in Table 5-4 below (further detail provided in Appendix 5-1). The locations of these receptors in relation to the proposed project are shown in Figure 5-2.

During the verification process, properties/buildings that would not be considered sensitive receptors (i.e. farm sheds, garages, commercial buildings, etc.) or that were not deemed habitable without requiring major works (e.g. no roof) to remedy (i.e. derelict) were identified. Regardless of the condition of a receptor, (i.e. derelict or not) they are all assessed through the EIAR. Commercial buildings include shops, pubs, offices, etc. both derelict and commercial buildings are assessed on a case-by-case basis. Any developments submitted for planning or consented (but as yet unbuilt) developments were included, but any such properties that would not be considered sensitive as described above were omitted. From the planning search, any invalidated planning applications or consented (but unbuilt) developments where the expiry period for development had elapsed were excluded.

Table 5-4 Summary of Receptors Within 2 km of Proposed Wind Farm Site Boundary

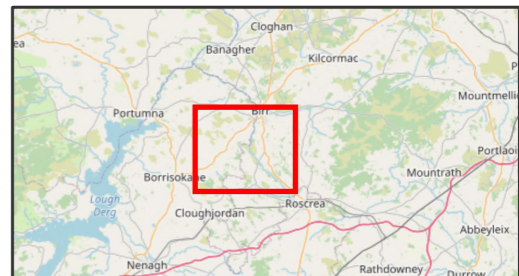
Receptor Type	No. Within 2 km of Wind Farm Site
Residential	237
Commercial	18
Residential and Commercial	52
Derelict	3
Planning application	2
Total	312

Sensitive receptors along the proposed GCR and in the vicinity of the proposed TDR works areas have also been considered in the assessments of this EIAR where appropriate (i.e. they are not considered for shadow flicker as that is not a concern at these locations). The study area is defined as required for other assessments such as, Air Quality, Noise and Vibration, Traffic and Transport and Climate, (See chapters 10, 11 and 14, 17 of this EIAR respectively). Any works that are required for these elements of the project are transient in nature and substantially



smaller than those at the proposed wind farm site. It should be noted that the works are located in rural areas with a sparse population. It is considered that the study area that is assessed for this chapter provides sufficient context and detail on these locations.





- Legend**
- Wind Farm Site Boundary
- Receptor**
- Sensitive
 - Non Sensitive



Spatial Reference
Datum: IRENET95
EPSG: 2157

Copyrights:
Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community,

Rev	Date	Description	By	Chkd.
A	30/03/2026	First issue	K.K	J.D

Client:

Project: **Ballincor Wind Farm**

Title: **Figure 5-2:
Receptors within 2km of the
Proposed Wind Farm Site Boundary**

Scale @ A3: 1:50,000

Prepared by: K.Kale Checked by: J.Dillon Date: March 2026

TOBIN

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Map Ref: 11333-017-SENS.R-BUFF2-TOB-A Draft: **A**

5.3.1.3 Property Values

Data available from the CSO on property values is presented in terms of Eircode Routing Key areas. The proposed wind farm site is located within one Eircode Routing Key boundary, namely R42: Birr but close to the boundary with E53: Roscrea. The CSO published the Residential Property Price Index (RPPI) data for the 12-months to May 2025.

The CSO stated that: “In the 12 months to May 2025, house prices in Dublin rose by 6.8% while apartment prices increased by 7.2%. The highest house price growth in Dublin was in Fingal at 9.3% while Dún Laoghaire-Rathdown saw a rise of 5.1%.

Outside Dublin, house prices were up by 8.9% and apartment prices rose by 6.7%. The region outside of Dublin that saw the largest growth in house prices was the Border (Cavan, Donegal, Leitrim, Monaghan, and Sligo) at 11.1%, while at the other end of the scale, the South-East (Carlow, Kilkenny, Waterford, and Wexford) saw a 7.7% rise.

Households paid a median or mid-point price of €370,000 for a residential property in the 12 months to May 2025. The highest median price paid for a dwelling was €670,000 in Dún Laoghaire-Rathdown, while the lowest was €186,000 in Leitrim.

The most expensive Eircode area over the 12 months to May 2025 was A94 (Blackrock, Dublin) with a median price of €770,000, while F45 (Castlerea, Roscommon) had the least expensive price of €150,000”.

The RPPI shows that the median price of residential properties sold in the R42 Eircode area in Birr County Offaly was €213,750 in May 2025. The national median was €370,000 in May 2025.

5.3.1.3.1 Wind Farms and Property Values

A UK study, entitled *The effect of wind farms on house prices*, was carried out by the Centre of Economics and Business Research (CEBR) in March 2014. The key findings of the study were:

- Overall, 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.

However, a similar study published in April 2014 by the London School of Economics (LSE) Spatial Economic Research Centre found 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 wind farms (Gibbons, 2014). These contradicting studies led to further research in Scotland in 2016 (ClimateXChange, 2016) which was based on analysis of over 500,000 property sales in Scotland between 1990 and 2014. This study, again, found no evidence of a negative impact from wind turbines on house prices and suggests that “*generally speaking the effect is either positive...or not distinguishable from zero*”.

The authors of the report tried to explain why the research carried out in Scotland found a very different result to that carried out in England even though the approach was very similar to that used in the LSE study. They suggested a number of possibilities including:

- Attitudes towards wind farms may be different in Scotland than in other parts of the UK;



- In Scotland, a much higher proportion of turbines are likely to be located on moors and mountains and in more remote areas than in England and Wales; and
- Some wind farms, especially in Scotland, enhance the local area by providing tracks for walkers, cyclists, horse riders and other members of the community, as well as community benefit funds.

Large scale studies in United States have indicated that there is no conclusive evidence of any effect on property values located in close proximity to wind farms. A study entitled *A Spatial Hedonic Analysis of the Effects of Wind Energy Facilities on Surrounding Property Values in the United States* by Lawrence Berkley National Laboratory in 2013, carried out sampling in over 51,000 homes across nine US states. The range of distances examined accounted for as far as 10 miles away (approximately 16 km) but also took into account 1,198 homes within 1 mile (approximately 1.6 km) of turbines.

Presently, there is one Irish based study that has looked at the effect of wind farms on property values within the Irish context. This working paper entitled '*Wind Turbines and House Prices Along the West of Ireland: A Hedonic Pricing Approach*' (Gillespie & McHale, 2023) was published by the Centre for Economic Research on Inclusivity and Sustainable (CERIS) in 2023. This paper reviewed wind turbine developments in the west of Ireland covering counties Cork, Donegal, Galway, Kerry, Leitrim, Mayo, and Sligo and associated property values. The study used satellite imagery to identify individual turbines and sourced local housing data from Irish property website 'daft.ie'. Although prices published on daft.ie are not necessarily equivalent to the price agreed on final sale of a property, the assumption was made that property listing and sale agreed prices correspond. The findings of the study indicated a potential decrease in property values of approximately -14.7% within a radius of 0-1 km of a wind turbine. It should be noted that the sample size considered within this range was small, approximately 225 houses, which does not fully represent the distribution of wind turbines and broader landscape of Irish rural residential properties. Furthermore, the paper states that there are "*no significant reduction in house prices beyond 1 km*" and that the effects seen within the 0-1 km radius were not persistent and were seen to diminish over the operational lifetime of the wind turbines (Gillespie & McHale, 2023).

5.3.1.3.2 Public Perception of Wind Farms

Sustainable Energy Authority of Ireland (SEAI) National Survey 2023

In May 2023, the SEAI published their latest survey findings regarding attitudes towards wind and solar energy farms, which builds upon SEAI surveys undertaken in 2003 and 2017. The objective of the survey was to provide insight on public attitudes to commercial wind and solar energy farms in Ireland, and to understand the impacts of these projects on those who live in surrounding areas, to help inform an "*equitable and socially sustainable energy transition*" (SEAI, 2023).

The SEAI's survey is an initial step to track the impact of projects developed under the government's Renewable Electricity Support Scheme (RESS). Key findings from the research are:

- "*Most households close to new wind or solar power projects have positive attitudes to the project close to them;*



- *Across rural Ireland, general levels of support for wind and solar energy projects remain very high, regardless of whether people live close to new projects or far away;*
- *A large majority of the public living in rural areas supports government policies that secure financial benefits for households and communities close to new renewable energy infrastructure projects through 'Community Benefit Funds';*
- *Most people feel like they and their communities can have a say in the planning process. However, many still feel that the planning process is unfair, and that more effort should be made with community engagement and careful siting of projects;*
- *The national survey of attitudes is an early step in a long-term research programme to understand the socio-economic impacts of the RESS policy. To date, SEAI has commissioned studies to understand the ways in which community engagement in wind energy can be improved through public participation in decision-making, direct investment, co-ownership in projects and by enhancing developers' practices in establishing community benefits schemes;*
- *SEAI are planning further studies on the socio-economic impacts of the government's RESS policy" (SEAI, 2023).*

5.3.1.4 Amenities and Services

The nearest primary school to the proposed wind farm site is Carrig National School, located approximately 1 km away. The next closest is Shinrone Mixed National School, situated about 3 km from the proposed wind farm site. The closest secondary school, St. Brendan's Community School, is also approximately 3 km from the proposed wind farm site.

The nearest school to the proposed works at the N62/R492 junction along the TDR is Coolderry Central National School, located approximately 4.5km south east.

Two schools are located along the proposed GCR; Scoil Náisiúnta Cillín Liath located at the junction between the R489 and L5045 and St. Brendan's Community School located off the Banagher Road. The nearest large third level institution is Gurteen College in Co Tipperary, while Mary Immaculate College is located in Thurles and the Technological University of the Shannon is located in Athlone which represent third level institutions in the broader area.

A number of community facilities and amenities are available in the locality, Wraymount Stud with providing those nearest the proposed wind farm site.

Carrig is home to an active GAA club (Carrig Riverstown GAA Club), a service station, public houses, accommodation, a community hall and a church. Carrig lies approximately 2 km west of the T1.

Shinrone is a larger town in the wider area, approximately 3.6 km southwest of the proposed wind farm site. The town contains several pubs, a petrol station, shops, a GAA club, a primary school, a church, a credit union, a community centre, and a nursing home. The town has a number of retail services including a number of small shops and services and there are a number of public houses, bars/restaurants.

Birr, approximately 5 km north of the proposed wind farm site, is the nearest large town, and serves as the main administrative and retail centre in the area.

Within the town there are a number of facilities and services including a number of banks, a public services centre, a business park, a recycling centre, a credit union, a health centre



Community Hospital, a GAA Club, primary and secondary schools, a fire station, and a Garda station. The town has a number of retail services including a number of large supermarkets, smaller shops, and local retail businesses and services. Furthermore, there are outdoor amenities (parks/walks), public houses, cafes, restaurants and accommodation (B&B's / hotels / holiday homes) within Birr.

5.3.1.5 Transport Links

The nearest National Roads are the N52 and N62 to the west and east of the proposed wind farm site respectively, the proposed GCR crosses the N52 at Riverstown and proposed works along the TDR at the N62/R492 junction. Both national roads connect to Birr north of the proposed wind farm site and with the N62 connecting to Roscrea to the southeast while the N52 connects to Borrisokane to the southwest.

The N62 and N52 provides access to the area around the proposed wind farm site and is an important route within the Counties of both Offaly and Tipperary linking several significant towns.

The proposed wind farm site will be accessed via the R492 to the south and the L1071 to the North. The R492 provides connectivity to the N62 and the L1072. The L1071 provides connectivity to the L1072 and ultimately the N52.

Public transportation is available in the wider area around the proposed wind farm site but is limited to services provided by road.

A number of bus services operate in Offaly and the local area operated by Transport for Ireland (TFI) and a number of private operators which provide a link to national routes through Birr.

TFI operate the Offaly TFI Local Link Bus Services¹⁵. The TFI 850 route runs along the N62 providing enhanced connectivity to villages and areas such as Clonmacnoise, Shannonbridge, Belmont, Cloghan, Banagher, Birr, Crinkill and Shinrone. The TFI 823 route also runs within and close to the study area Birr, Mountmellick and Portlaoise along with Crinkill, Kinnitty, Cadamstown, Clonaslee, and Rosenallis.

Inter-city bus services connecting Offaly to a number of destinations across Ireland are available including ¹⁶ Bus Eireann services 72 Limerick to Athlone, 73 Waterford to Athlone and 323X Limerick to Birr.

The available train services provided by Irish Rail to County Offaly include the Tullamore station and Clara Station which both are on three Irish Rail services: Dublin Heuston – Galway, Dublin Heuston - Westport and Ballina and Galway-Limerick.

5.3.1.6 Employment/Economy

Employment is an important indicator of the economic standing of an area. This section examines employment status and unemployment levels in the region of the proposed project. The Labour Force Survey undertaken by the CSO provides details of unemployment on a regional level.

¹⁵<https://www.transportforireland.ie/plan-a-journey/network-maps/offaly-tfi-local-link-bus-services/> / <https://locallinklaoisoffaly.ie/> (Accessed June 2025)

¹⁶ <https://www.buseireann.ie/routes-and-timetables> (Accessed June 2025)



Offaly is located in the Eastern & Midland Region (NUTS 2 region IE06)¹⁷, which is broken down further, into three smaller regions (Dublin - Mid-East - Midland), with Offaly situated within the Midland Region (NUTS 3 region IE063 made up of counties Longford, Westmeath, Offaly, and Laois)¹⁸. Tipperary is located in the Southern Region (NUTS 2 region IE05), which also comprises three smaller regions (Mid-West – South East – South-West), with Tipperary situated within the Mid-West Region (NUTS 3 region IE051 made up of counties Clare, Tipperary, Limerick). Data for the Midland and Mid-West Regions have been used to illustrate unemployment in the area.

The key findings from the Q1 2025 Labour Force Survey (latest available data at the time of writing) published by the CSO¹⁹ are outlined in the following sections.

- *The employment rate for people aged 15-64 years was 74.7% in Quarter 1 2025, up from 73.8% a year earlier;*
- *The number of people aged 15-89 years in employment rose by 89,900 or 3.3% to 2,794,100 people in the 12 months to Q1 2025;*
- *There were 124,200 unemployed people aged 15-74 years in Q1 2025 using International Labour Organisation (ILO) criteria, with an associated unemployment rate for those aged 15-74 years of 4.3%, up from 4.1% in Q1 2024;*
- *The estimated Labour Force (i.e. the sum of all people aged 15-89 years who were either employed or unemployed) stood at 2,918,300 in Q1 2025, up 3.5% (+98,900) from Q1 2024;*
- *The estimated labour market participation rate in Q1 2025 was 65.8%, up from 65.0% in Q1 2024;*
- *The estimated total number of hours worked per week in Q1 2025 increased by 1.0 million hours or 1.2% on Q1 2024 figures to 86.5 million hours.*

In the Mid-West Region (which includes Tipperary, Clare, and Limerick) there were 277,000 persons in employment in Q1 2025, an increase of 19,300 persons or +7.5% over the year from Q1 2024 (257,700 persons); this indicates employment in the Mid-West Region has increased over the 2024-2025 period.

In the Midlands Region (which includes Offaly, Laois, Longford, and Westmeath) there were 159,300 persons in employment in Q1 2025, a decrease of 1,800 persons or -1.1% over the year from Q1 2024 (161,100 persons); this indicates employment in the Midlands Region has decreased over the 2024-2025 period.

The unemployment rate in Table 5-5 is the number of unemployed persons expressed as a percentage of the total labour force (aged 15-74). The unemployment rate for the State in Q1 2025 was 4.3%, the unemployment rate for the Midland Region was the same as the State at 4.3%, and slightly higher in the Mid-West Region at 4.5%.

¹⁷ <https://ec.europa.eu/eurostat/web/nuts/nuts-maps> - NUTS 3 – Nomenclature of Territorial Units for Statistics (NUTS) created by Eurostat (Accessed March 2025)

¹⁸ <https://www.cso.ie/en/methods/informationnotefordatausersrevisiontotheirishnuts2andnuts3regions/> (Accessed March 2025)

¹⁹ <https://www.cso.ie/en/releasesandpublications/ep/p-lfs/labourforcesurveyquarter42024/> (Accessed March 2025)



The participation rate is the number of persons available to the labour force (i.e. persons from 15-74 years old either working or looking for work) expressed as a percentage of the total population. In Q2 2024, the participation rate in the State was 65.8% compared with 61.9% in the Midland Region, and 65.3% in the Mid-West Region.

Table 5-5 Labour Force Survey (Q1, 2025)

Location	Unemployment Rate	Participation Rate
State	4.3%	65.8%
Midland Region (IE062)	4.3%	61.9%
Mid-west Region (IE051)	4.5%	65.3%

The CSO also publishes figures relating to the Live Register. These figures are not strictly a measure of unemployment as they include persons who are legitimately working part-time and signing on part-time. However, the Register can be used to provide an overall trend within an area.

Table 5-6 Live Register Figures (June 2024 – June 2025)²⁰

Location	June 2024	June 2025	% Change
State	171,500	168,500	-1.7%
County Offaly	3,316	3,218	-2.9%
County Tipperary	5,790	5,597	-3.3%

The data in Table 5-6 shows that over the 12-month period to June 2025, there was a -1.7% decrease in the number of persons on the Live Register in the State as a whole, and a -2.9% and -3.3% decrease in County Offaly and County Tipperary, respectively.

Overall, there is a decreasing trend in Live Register figures, the latest figures indicating an increase in employment in the Midland and Mid-West Regions, including Offaly and Tipperary.

Chapter 5 of the Offaly CDP 2021-2027 sets out the Economic Development strategic aim for Offaly County which is - “That Offaly County Council, within its capacity, will positively contribute towards the promotion of the maintenance and growth of employment across every sector in County Offaly that is sustainable, competitive, inclusive and resilient, so that the people of Offaly will have access to a range of quality employment opportunities enabling them to live and work in the county”.

At a strategic level within County Offaly, the CDP has identified a number of areas and opportunities for development under the Economic Development Strategy (see Table 5.2 of the CDP), the Council notes that “Offaly County Council recognises that it has an expanding role in

²⁰<https://www.cso.ie/en/releasesandpublications/br/b-ifs/labourmarketinsightbulletinseries11q12022/> (Accessed March 2025)



coordinating and facilitating a competitive environment that maintains existing employment and supports employment growth.”

Some of the relevant policy objectives identified in the Offaly CDP in support of the above are:

ENTP-02 It is Council policy to facilitate and work pro-actively with interest groups (both public and private sector) in the location of industry, business and enterprise in particular by zoning of lands for enterprise development and activity which can facilitate the provision of large-scale and small-scale development, as appropriate. This includes the identification and possible reservation of lands at suitable locations which will accommodate, where appropriate – for example, business / technology activity, industry, enterprise and retail having regard to proper planning and sustainable development. The Council will protect zoned lands from inappropriate development that would undermine future economic activity or the unsustainable development of such areas.

ENTP-05 It is Council policy to build a resilient economic base and promote innovation and entrepreneurship ecosystems that support smart specialisation, cluster development and sustained economic growth

ENTP-45 It is Council policy to support the creation of quality green jobs which are sustainable over the longer-term. ENTP-46 It is Council policy to support enterprise development of industries, agencies and communities that create and employ green technologies in the provision of their goods and services, while taking measures to accelerate the transition towards a sustainable, low carbon and circular economy. ENTP-47 It is Council policy to support and promote the development of economic and enterprise development and activity in a manner which contributes to the transition to a low carbon, climate resilient and environmentally sustainable county.

At a strategic level within County Tipperary, the CDP has identified a number of areas and opportunities under the Renewable Energy and Bioeconomy section of the CDP. The Council notes that *“Renewable energy and the bioeconomy are important aspects of our diverse and vibrant rural economy, with synergies between and across other areas such as climate action, job creation and amenity development. It is understood that by supporting a climate resilient, biodiversity-rich, environmentally-sustainable and climate-neutral economy we can make optimum use of our available renewable energy resources. The Council, with the support of the Tipperary Energy Agency and through the Core Strategy of this Plan, has strongly committed to the support of renewable energy as part of sustainable economic growth in line with the National Renewable Energy Action Plan of the Government”.*

Some of the relevant policy objectives identified in the Tipperary CDP in support of the above are:

10 - 1 Support and facilitate new development that will produce energy from local renewable sources such as hydro, bioenergy, wind, solar, geothermal and landfill gas, including renewable and non-renewable enabling plant, subject to compliance with normal planning and environmental criteria, in co-operation with statutory and other energy providers. The provisions of the Tipperary Renewable Energy Strategy (and any review thereof) as set out in Volume 3, will apply to new development.

10 - 2 Support and facilitate disruptive technologies and innovations, including natural carbon capture systems that will support the generation of energy from local renewable energy sources



and support energy storage and carbon capture, subject to compliance with normal planning and environmental criteria, in co-operation with statutory and other energy providers.

10 - 5 Support and facilitate the co-location of renewable energy development and technologies to ensure the most efficient use of land identified as suitable for renewable energy generation.

10 - A Support the Climate Action Plan (DECC, 2019) as it relates to renewable energy production, having consideration to the strategic importance and potential benefits of renewable energy investment to rural communities.

5.3.1.7 Tourism/Recreation

The National Tourism Development Authority (Fáilte Ireland) periodically collates statistics on overseas visitors to Ireland and regions within the country. Table 5-7 shows the most recent domestic tourism (tourism involving residents of one country traveling only within that country) and overseas tourism statistics from Failte Irelands ‘Key Tourism Facts 2023’ (published October 2024), for Ireland, and the tourism brand regions within which the proposed project is situated; Ireland’s Hidden Heartlands (incorporates County Offaly and North Tipperary) and Ireland’s Ancient East (incorporates County Tipperary).

Table 5-7 Ireland’s Hidden Heartlands and Ireland’s Ancient East Key Tourism Statistics 2023

Tourist Origin	No. of Trip’s	Revenue Generated
Ireland		
Domestic	14.3 million	€3,121 million
Overseas	6.56 million	€5,581 million
Northern Ireland (NI)	1,347,000	€399 million
Ireland’s Hidden Heartlands		
Domestic	1.3 million	€246 million
Overseas	357,000	€224 million
Northern Ireland (NI)	85,000	€22 million
Ireland’s Ancient East		
Domestic (inc. NI)	4.7 million	€928 million
Overseas	1.6 million	€1.0 billion
Northern Ireland (NI)	534,000	€204 million

In relation to domestic tourism, the Fáilte Ireland 2023 data reports 14.3 million domestic trips in Ireland in 2023; these trips generated €3,121 million in revenue for the period. The majority (37%) of these domestic trips were recorded as short (1-3 days) holiday trips, with trips to visit friends/relatives reported at 40% of all domestic trips. Most of these trips, occur in the late summer period (July – September). Key activities engaged in by domestic holidaymakers included hiking/walking, touring around by car, shopping, visiting historic houses or castles, swimming, visiting gardens and nature reserves and national parks.

Overseas tourism accounted for 6.56 million trips to Ireland in 2023, generating €5,581.3 million in revenue for the period. Overseas visitors spend in Ireland was primarily on accommodation, food and drink, entertainment, transport and shopping. Overseas visitors cite their main reasons for visiting were as holidaymakers (44%), visiting friends and family (33%), and business (17%). The majority of overseas visitors stayed in hotels (34%), guesthouses/B&Bs



(15%), and friends and relatives (17%). Key activities engaged in by overseas holidaymakers included hiking/walking, cycling, golf, angling and equestrian.

In County Offaly, the top attraction which is also fee-charging was Clonmacnoise (approximately 45 km from the proposed wind farm site) with 122, 718 visitors in 2023. Birr Castle Gardens and Science Centre sits at 2nd on the list of most popular attractions in County Offaly with 97,678 visitors in 2023.

In County Tipperary the Rock of Cashel (located approximately 50 km from the proposed wind farm site) was the most popular tourist attraction with 357,273 visitors in 2023. The closest attraction to the proposed wind farm site was Roscrea Heritage Centre Grounds (located approximately 10 km from the proposed wind farm site) which sits at 8th on the list with 7,596 visitors in 2023.

The top fee-charging attraction in Ireland in 2023 was the Guinness Store House in Dublin, with approximately 1,469,536 visits, and the top free attraction in Ireland was the Phoenix Park Visitor Centre in Dublin, with 1,965,555 visits in 2023.

5.3.1.7.1 Offaly and Tipperary CDP

The Offaly CDP states that the county tourism brand ‘Offaly - Ireland’s Hidden Gem’ represents Offaly as a “county steeped in treasures of culture, heritage, history and biodiversity. Offaly at the heart of Ireland welcomes the visitor to enormous tracts of wilderness, expanses of bogland, a vast mountain park, esker hills and deep wooded valleys with their streams and rivers. The majestic River Shannon defines its western boundary and the gently rolling hills of the Slieve Bloom Mountains, a national nature reserve, rise up in the east”.

The Tipperary CDP states that the Tipperary ‘Marketing, Experience & Destination Development Plan’ (2016 – 2021) sets out a development strategy for tourism in the county and is supported by ‘Tipperary Transforming – Tourism Product Development Plan 2020 – 2030’, a 10-year vision statement for tourism development. These plans promote the County as a national leader in ‘Responsible Tourism’ and recognise the County’s key strengths; “a richness of built heritage and culture, a wonder of mountains, hills and landscapes, and Lough Derg and the River Suir, including the waterscape, hinterlands and towns and villages”.

The Offaly CDP states its aim is “to promote County Offaly as a quality place to visit and stay with a wide variety of high-quality tourist attractions and visitor facilities and infrastructure”.

The Tipperary CDP states that “Tipperary Transforming’ is the overriding vision for tourism development in the county, however, it is supported by cross-county and collaborative tourism initiatives” and includes the following amongst its policy and objectives for tourism development:

- Policy 9-1: “Encourage and support tourism development, including accommodation and related facilities, to locate within existing settlements, subject to normal planning and environmental considerations, where they can support compact growth and regeneration, provision of services and the general economic vitality of settlements. New development will be required to relate sympathetically to the scale, capacity and level of development and facilities in the settlement”.
- Objective 9-A: “a) Continue to collaborate with Fáilte Ireland, OPW and other tourism stakeholders in the development and delivery of Regional Tourism Plans and DEDPs to ensure that Tipperary’s established and emerging attractions and activities are



continually developed to their maximum potential. b) Support tourism by collaborative product development and clustering, and proactive bidding for funding through schemes such as the 'Platforms for Growth' Investment Programme, the URDF and RRDF (and any review thereof)".

- Objective 9-B: "Support the development of Tipperary as a national leader in 'Responsible Tourism' in line with the actions of the Tipperary 'Marketing, Experience & Destination Development Plan', 2016-2021 and to encourage and promote the development of the Fáilte Ireland 'Irelands Ancient East' and 'Irelands Hidden Heartlands' regional brands through sustainable tourism".

5.3.1.7.2 Ireland's Hidden Heartland

Ireland's Hidden Heartlands which incorporates County Offaly²¹ and North Tipperary²² is a regional brand, developed as a branded visitor experience involving the "green heartlands of Ireland's natural beauty, where activity and relaxation are centred around rural communities". The Hidden Heartlands can be discovered across a "lattice work of land and water trails, showcased by the iconic River Shannon".

Fáilte Ireland (2025)²³ state the following- "Ireland's Hidden Heartlands offers unparalleled opportunities to get 'active in nature' and to get 'off the beaten track' with a latticework of vibrant waterways and myriad walking trails. It is a region full of intriguing hidden gems – places, people and experiences – to be uncovered at your own pace, in your own time, exploring the communities, tastes and textures as you go. Self-styled as Ireland's best kept secret, the Hidden Heartland's provides visitors with a unique, authentic, local and immersive visitor journey for those keen to get away from it all".

Some of the nearest attractions to the proposed project as indicated on the Ireland's Hidden Heartlands website include Birr, County Offaly, located approximately 5 km from the proposed wind farm site. Attractions include Birr Castle Demesne & Historic Science Centre which is a year-round attraction featuring guided castle tours, award-winning gardens, a family-friendly playground, and the world-famous 19th-century Great Telescope, all set within the historic home of the pioneering Parsons family and Birr Golf club, also known as The Glens, is a historic 18-hole par-70 parkland course in County Offaly, carved from natural woodland and post-glacial eskers on the former estate of the Earl of Rosse; established in 1893, it offers a challenging yet scenic experience for even the most accomplished golfers, with full bar and catering facilities, a warm Irish welcome, and convenient access from all major sea and air terminals.

5.3.1.7.3 Ireland's Ancient East

Fáilte Ireland launched a tourism initiative called Ireland's Ancient East, which incorporates County Tipperary, with a goal to make the region "*the most personally engaging cultural destination in Europe by harnessing the authentic character of the real Ireland, its living culture, lush landscapes and hidden history, opening it up for everyone*" (Fáilte Ireland, 2025)²⁴.

²¹ <https://www.discoverireland.ie/offaly/things-to-do> (Accessed June 2025)

²² <https://www.discoverireland.ie/tipperary> (Accessed June 2025)

²³ <https://www.failteireland.ie/IrelandsHiddenHeartlands.aspx> (Accessed June 2025)

²⁴ <https://www.failteireland.ie/Regional-experience-brands/Ireland-s-Ancient-East.aspx> (Accessed June 2025)



Some of the nearest attractions to the proposed project as indicated on the Ireland's Ancient East 'County Tipperary' website²⁵ are located in Roscrea, which are located approximately 15 km and 20 km from the proposed wind farm site, respectively. Attractions in Roscrea include Roscrea Castle and Damer House a 13th-century stone fortress in County Tipperary featuring towers, curtain walls, and later 17th-century additions, forms a historical complex with the elegant 18th-century Damer House and restored mill, offering gardens, exhibitions, and guided tours and Fiacri County Cookery School, located near Roscrea in North County Tipperary, Fiacri Country House offers award-winning seasonal dining and an interactive cookery school with five-week and one-day courses for all skill levels.

5.3.1.7.4 Walking, Hiking and Cycling Trails

In terms of trails and cycleways²⁶, the closest routes to the proposed wind farm site are the Birr Cycle Hub Loop, which is located approximately 2.5 km to the east of the proposed wind farm site at its nearest point. This Loop runs from Birr town, towards Shinrone and loops back to Birr, it is approximately 46 km long. The Ormond Way walking trail is located approximately 5 km south-west of the proposed wind farm site at its nearest point, this trail is approximately 75 km long.

5.3.1.8 Tourism and Wind Farms

Since onshore wind farms were first developed there have been some questions about their potential impact, positively or negatively on tourism, and if tourists may be discouraged from visiting areas in general, or, in particular, areas where wind farms can be seen. In terms of the perceived impact of wind farms on sightseeing, the Fáilte Ireland survey found that although almost half of tourists surveyed had seen at least one wind farm on their trip, the majority felt that their presence did not detract from the quality of their sightseeing. The following research has been conducted in Ireland and Scotland relating to the attitudes towards wind farms by tourists.

5.3.1.8.1 Fáilte Ireland - attitudes to wind farms surveys 2007 and 2012

In 2007, Fáilte Ireland put out a survey to domestic and overseas tourists to Ireland in order to determine their attitudes to wind farms. The survey's purpose was to investigate if the development of wind farms impacts on the enjoyment of the Irish scenery by tourists. The survey involved face-to-face interviews with 1,300 tourists, 25% domestic and 75% overseas, (1,000 in the Republic, 300 in Northern Ireland) (Fáilte Ireland, 2007)²⁷.

The survey looked at the following; visitor awareness of wind farms, perceived impact on sightseeing, perceived impact on beauty of the landscape, and perceived impact on future visits to the area. The results of the survey indicate that most visitors are broadly positive towards the development of more wind farms in Ireland, although there is a minority (1 in 7 surveyed) that indicated a negative response towards wind farms in any context (Fáilte Ireland, 2007). Regarding the awareness of wind farms, findings of the survey include:

²⁵ <https://www.discoverireland.ie/tipperary/things-to-do> (Accessed June 2025)

²⁶ <https://www.sportireland.ie/outdoors/find-your-trails> (Accessed June 2025)

²⁷ The results of the survey are presented in the Fáilte Ireland Newsletter 2008/No.3 entitled 'Visitor Attitudes on the Environment: Wind Farms'.



- *Almost half of tourists surveyed claimed to have seen at least one wind farm on their holiday, and of those who had seen a wind farm, two thirds claimed to have seen up to two during the holiday;*
- *Typically, wind farms are encountered in the landscape while driving or being driven (74%), while few experienced a wind farm up close;*
- *For more than three in ten, the wind farm observed was seen on the horizon and for a further one in four it was viewed from a distance of 1-2 km;*
- *Around half of the wind farms observed were located in mountain moorland, and a further 37% viewed were in a coastal landscape;*
- *Of the wind farms seen most were made up of less than ten turbines, and 15% had fewer than five turbines (Fáilte Ireland, 2007).*

In terms of the perceived impact of wind farms on sightseeing, the Fáilte Ireland survey found that although almost half of tourists surveyed had seen at least one wind farm on their trip, the majority felt that their presence did not detract from the quality of their sightseeing, with the highest proportion of those surveyed (45%) saying that the presence of the wind farm seen had a positive impact on their enjoyment of sightseeing, with a lower proportion (15%) claiming they had a negative impact on sightseeing in general (Fáilte Ireland, 2007). Fáilte Ireland (2007) noted that *“Compared with other types of development in the Irish landscape, wind farms elicited a positive response when compared to telecommunication masts and steel electricity pylons”*.

In terms of the perceived impact of wind farms on beauty of the landscape, the Fáilte Ireland survey report states that visitors were asked to rate the beauty of five different landscape types²⁸, and then rate the potential impact of a wind farm being sited in each landscape. The results indicate that each potential wind farm site must be assessed on its own merits, as rating proportions varied depending on the perceived beauty of the location. However, it was noted when looking across all sites, the numbers claiming a positive impact on the landscape are greater than those claiming a negative impact, in all cases (Fáilte Ireland, 2007).

With regard to the perceived impact of wind farms on future visits, the survey states that *“Almost three quarters of respondents claim that potentially greater numbers of wind farms would either have no impact on their likelihood to visit or have a strong or fairly strong positive impact on future visits to the island of Ireland”*. Furthermore, the results indicate that *“Of those who feel that a potentially greater number of wind farms would positively impact on their likelihood to visit, the key driver is their support for renewable energy and potential decreased carbon emissions”* (Fáilte Ireland, 2007). Following the outcomes of the survey, Fáilte Ireland (2007) state that *“while there is a generally positive disposition among tourists towards wind development in Ireland, it is important also to take account of the views of the one in seven tourists who are negatively disposed towards wind farms. This requires good planning on the part of the wind farm developer as well as the Local Authority”*.

In 2012, Fáilte Ireland undertook an update on their 2007 survey; this updated research was published in the *‘Fáilte Ireland Newsletter 2012/No.1 entitled ‘Visitor Attitudes on the Environment: Wind Farms – Update on 2007 Research’*. The updated research found that over half of tourists (56%) surveyed (1,000 domestic and foreign tourists) who visited Ireland during

²⁸ Coastal, Mountain, Farmland, Bogland and Urban Industrial.



2012, said that they had seen a wind turbine while travelling in Ireland. Of these tourists, 48% said that wind turbines had no impact on their sightseeing experience, 32% said that they have a positive impact, and 21% claimed they have a negative impact. In terms of future visits to Ireland, 71% of tourists claimed that potentially greater numbers of wind farms in Ireland over the coming years would have either no impact or a positive impact on their likelihood to visit the country. Of those who feel that the potentially greater number of wind farms would impact positively on future visits, this was predominately associated with support for renewable energy, and potential decreased carbon emissions (Fáilte Ireland, 2012).

5.3.1.8.2 Scotland – Wind farms and tourism trends survey 2017 and 2021

In 2017, BiGGAR Economics published an independent research study on *‘Wind Farms and Tourism Trends in Scotland’*²⁹. The aim of the research was to understand the relationship, if any exists, between wind farm developments and the tourism industry in Scotland.

Since 2009, onshore wind development has expanded significantly in Scotland. Between 2009 and 2015 employment in the sustainable tourism sector in Scotland also grew, by 15%. Looking at the Scottish economy as a whole, this suggests that both the onshore wind sector and the sustainable tourism sector can coexist and grow (BiGGAR, 2017). However, the study noted – *“it could be argued that if there were any relationship between the growth of onshore wind energy and tourism, it would be at a more local level”* – therefore the study looked at 28 wind farms constructed between 2009 and 2015 and considered evidence at a local authority level and within the immediate vicinity of operational wind farms (i.e., analysis of local tourism trends within a 15 km radius from onshore wind energy sites) (BiGGAR, 2017). Results indicate that there was growth in employment in the sustainable tourism sector in the majority of local authority areas in Scotland during this period (2009-2015). It was noted that the growth in onshore wind energy capacity was greater in some areas of Scotland than in others. Nine of the local authorities considered had greater increase in wind energy deployment than the Scottish average. Of these, four saw a larger increase in sustainable tourism employment than the Scottish average, while five saw less growth than the Scottish average (BiGGAR, 2017). The analysis undertaken suggests that, at the local authority level, onshore wind development does not have a detrimental impact on tourism.

With regard to analysis of local tourism trends within the immediate vicinity of operational wind farms (radius -15 km), it was found that, in most cases, sustainable tourism employment performed better in the areas in the vicinity of wind farms compared to the wider local authority area. BiGGAR (2017) noted that – *“There was no pattern, which emerged that would suggest that onshore wind farm development has had a detrimental impact on the tourism sector, even at a very local level”*. Overall, the conclusion of the study was that *“published national statistics on employment in sustainable tourism demonstrates that there is no relationship between the development of onshore wind farms and tourism employment at the level of the Scottish economy, at local authority level nor in the areas immediately surrounding wind farm development”*(BiGGAR, 2017).

²⁹<https://biggareconomics.co.uk/wp-content/uploads/2020/01/Wind-farms-and-tourism-trends-in-Scotland.pdf> (Accessed June 2025)



5.3.1.8.2.1 Updated survey and report (2021)

In 2021, BiGGAR published an updated report³⁰ on wind farms and tourism trends in Scotland. The updated survey and research looked to further investigate if wind farms have discouraged tourism activity, and if there is evidence of such effects given the time that has passed since the first commercial scale wind farms were established in Scotland over 25 years ago. Since 2009, the number of onshore wind turbines in Scotland has grown from 1,082 to 3,772 in 2019. Evidence shows that employment in tourism-related sectors also grew during the decade (increase of 20%) (BiGGAR, 2021).

Employment growth in tourism-related sectors has not been consistent across all areas of Scotland. The highest levels of growth in tourism employment have been seen primarily in rural local authority areas, while in some central belt local authorities there have been decreases in tourism-related employment. An analysis of the rates of change in tourism-related employment and the number of onshore wind turbines in local authority areas found that there is no correlation between the two factors (BiGGAR, 2021).

Like the 2017 research, this update also considered trends in tourism employment in the immediate vicinity of wind farm developments. This included an additional 16 wind farms that became operational since the previous study (2015-2019). Analysis of trends in tourism employment in the locality of these windfarms (based on a 15 km radius) found that 11 of the 16 areas experienced more growth in tourism employment compared to Scotland as a whole. Furthermore, tourism employment trends in the locality of 12 out of the 16 wind farms outperformed the local authority area in which they were based (BiGGAR, 2021). The updated study also re-examined the 28 wind farms analysed in the 2017 report and found that the localities in which they were based had outperformed Scotland and their local authority areas in most cases. Additionally, the analysis found that where seven areas that had underperformed in the 2017 study, four had done better than their local authorities in the period since. In total, the study analysed trends in the localities of 44 wind farms developed in recent years, providing a large evidence base. Overall, the latest study found no relationship between tourism employment and wind farm development, be it at the level of the national economy, local authority areas or in the locality of wind farm sites (BiGGAR, 2021).

5.3.2 Human Health

Whilst specific health data for individuals in the vicinity of the proposed project is confidential and difficult to establish, as has been detailed in Section 5.2.2, a community profile has been identified to establish the baseline health profile of the area and compare this profile to the rest of the country.

The Health Services Executive (HSE) and the Central Statistics Office (CSO), in collaboration with Cork Healthy Cities, have published updated health profiles based on data from the 2022 Census. These profiles now cover the newly established HSE Health Regions, Integrated Healthcare Areas (IHAs), and Community Healthcare Networks (CHNs), and are available on the CSO website³¹. Data for County Offaly and North Tipperary is detailed below.

The key facts in the CHN Health Profile for County Offaly are:

³⁰<https://biggareconomics.co.uk/wp-content/uploads/2021/11/BiGGAR-Economics-Wind-Farms-and-Tourism-2021.pdf> (Accessed June 2025)

³¹<https://edprofiles.cso.ie/2022/health/> (Accessed June 2025)



- The Age Dependency Ratio of this CHN is 57.6. This compares to 53.2 nationally. The Age Dependency Ratio is the amount of people outside of working age (0-14 and 65+) per 100 people of working age (15-64).
- There are a total of 12,026 persons aged 0-14 in this CHN and 9,305 persons aged over 65.
- There are a total of 13,270 persons living with a disability in this CHN, representing 22.7 percent of the population. This compares with 21.5 percent nationally
- 1,182 people in this CHN have bad or very bad general health. This represents 2.1 percent of the population. 1.7 percent of the population have bad or very bad general health nationally.
- There are a total of 3,759 carers in this CHN, representing 6.4 percent of the population. This compares with 5.8 percent of the population that are carers nationally.
- 24.5 percent of families with children in this CHN have lone parents. This stands at 24.8 nationally.
- 14 percent of this CHN were born outside Ireland (20 percent nationally).
- Households rented from a Local Authority comprise 8.3 percent of households in this CHN. This stands at 8.3 percent nationally.

The key facts in the CHN Health Profile for North Tipperary are:

- The Age Dependency Ratio of this CHN is 60.9. This compares to 53.2 nationally. The Age Dependency Ratio is the amount of people outside of working age (0-14 and 65+) per 100 people of working age (15-64).
- There are a total of 12,759 persons aged 0-14 in this CHN and 11,465 persons aged over 65.
- There are a total of 14,711 persons living with a disability in this CHN, representing 23.0 percent of the population. This compares with 21.5 percent nationally
- 1,201 people in this CHN have bad or very bad general health. This represents 1.9 percent of the population. 1.7 percent of the population have bad or very bad general health nationally.
- There are a total of 3,992 carers in this CHN, representing 6.2 percent of the population. This compares with 5.8 percent of the population that are carers nationally.
- 24.5 percent of families with children in this CHN have lone parents. This stands at 24.8 nationally.
- 14.1 percent of this CHN were born outside Ireland (20 percent nationally).
- Households rented from a Local Authority comprise 8.7 percent of households in this CHN. This stands at 8.3 percent nationally



A review of latest available deprivation indices (2022) by ED from Pobal³², shows that the EDs in which the proposed project is situated ranges from marginally below average to marginally above average. It can be inferred that the area is neither particularly affluent nor particularly deprived. There are likely to be localised areas of deprivation where the county-level statistics simply do not apply.

It is not possible or necessary to identify every vulnerable individual. However, every human community contains vulnerable individuals; be those the old, the very young or because they have conditions which may make them more susceptible. Examples are as diverse as humans themselves but can include asthma, autism, and those with psychological illness. It is important to note that Health Standards are set for the vulnerable and not for the robust.

5.3.2.1 CSO Health Statistics

5.3.2.1.1 CSO Census 2022

The Census 2022 responses regarding general health found that approximately 83% of the Ireland's population felt they had 'Very Good' or 'Good' health, down slightly from 2016 when it was 87%. Approximately 53.5% of men felt their health was 'Very Good', compared with 52.9% of women. The census results also clearly show the decline in general health with age, with 73.5% of 15–19-year-olds in 'Very Good' health, compared with those aged 40-44 (49.8%) and 65 to 69 (30.1%).

Census 2022 responses for Offaly indicated the percentage of persons with 'Very Good' and 'Good' health was 83% (68,982 respondents), while 9.36% (7,786 respondents) indicated they were in 'Fair' health, and 2.07% (1,722 respondents) indicated they were in 'Bad' to 'Very Bad' health.

The 2022 census also indicated that there are 18,813 (9,219 Males / 9,594 Females) with disabilities (to any extent) living in Offaly, and that 6.4% of the population are carers in the County.

Census 2022 responses for Tipperary indicated the percentage of persons with 'Very Good' and 'Good' health was 83% (68,982 respondents), while 9.36% (7,786 respondents) indicated they were in 'Fair' health, and 2.07% (1,722 respondents) indicated they were in 'Bad' to 'Very Bad' health.

The 2022 census also indicated that there are 18,813 (9,219 Males / 9,594 Females) with disabilities (to any extent) living in Tipperary, and that 6.3% of the population are carers in the County.

5.3.2.1.2 Irish Health Survey

In 2020, the Central Statistics Office (CSO) published its second "Irish Health Survey"³³, the data for which was collected in 2019 and early 2020. The first survey was collected for reference year 2015. This publication is part of an EU wide health survey and as other EU countries report on their data, it will be possible to compare how the Irish health experience compares to that of our EU neighbours. Some key findings of the survey included:

³² <https://maps.pobal.ie/WebApps/DeprivationIndices/index.html> - Pobal administers and manages Government and EU funding to address disadvantage and support social inclusion (Accessed July 2025)

³³ <https://www.cso.ie/en/releasesandpublications/ep/p-ihsmr/irishhealthsurvey2019-mainresults/introductionandkeyfindings/> (Accessed July 2025)



- “Affluent people are more likely to feel their health status is Very good or good than people who are disadvantaged - 92% of Very affluent persons compared to 78% of persons who are Very disadvantaged;
- Over a quarter of persons aged 15 years and over report having a long lasting condition, with older persons reporting higher levels;
- Majority of persons (82%) report no limitations in everyday activities due to a health problem;
- Over a fifth (21%) of Unemployed persons report some form of mental ill-health compared to 9% of those In employment;
- Prevalence of hospital in-patient admissions rises with age and disadvantage level;
- In general, females and older people more likely to use a preventive health service;
- Physical activity declines with age and relative disadvantage level;
- Younger persons more likely to drink 6 or more units of alcohol in one sitting; and
- Over half of persons aged 15 years and over in the State are overweight or obese” (CSO 2020).

CSO Irish Health Survey 2024 (Published July 2025)

In 2025, the Central Statistics Office (CSO) published its latest (third) “Irish Health Survey”³⁴. The CSO note that *“the statistics contained in this release are selected from a comprehensive survey that was completed in 2024 analysing the health of people in Ireland. People aged 18 years and over were asked more than 100 questions, via an online questionnaire, about their health status, access to health care, and their health determinants such as smoking and alcohol use”*. Some key findings of the survey included:

- *“Over three-quarters (75.8%) of people aged 18 years and over considered their general health to be ‘good or very good’ in 2024;*
- *Approximately half (50.8%) of those aged 18 to 24 years of age considered their mental health to be ‘good or very good’;*
- *Approximately 18.7% of people aged 18 years and over had been diagnosed with a specific neurodiverse condition, or suspected they were neurodiverse;*
- *Those aged 75 years and over, at 92.0%, were almost three times more likely to have used prescription medicines in the two weeks prior to the interview compared to those aged 18 to 24 years of age, at 30.7%;*
- *Almost a quarter (23.6%) of those aged 18 to 34 years of age vaped daily or occasionally; and*
- *Almost one in five (18.2%) people aged 18 years and over provided care or assistance to one or more people suffering from some age-related problem, chronic health condition, or infirmity, at least once a week”*(CSO 2025).

For 2024, an additional survey module was also asked about children's health. Key findings included:

- *“In 2024, the general health of over nine in ten (92.4%) children aged 2 to 17 years was considered to be ‘good or very good’;*
- *The percentage for children aged 2 to 17 years with a long-standing illness or health problem was higher for males (19.9%) than females (16.8%); and*

³⁴ <https://www.cso.ie/en/statistics/health/irishhealthsurvey/> (Accessed July 2025)



- *The percentage of children aged 2 to 17 years who were considered to be in 'good or very good' health was highest in HSE South West at 95.2% and lowest in HSE Dublin and Midlands at 90.8%”(CSO 2025).*

Healthy Ireland Survey 2024

In December 2024, the Government released its Healthy Ireland Survey Summary Report³⁵. This is an interviewer-administered survey, commissioned by the Department of Health and carried out by Ipsos, of the health and health behaviours of people living in Ireland. This is the latest set of findings and adds to the data collected in previous Healthy Ireland Surveys, published from 2015–2019 and 2021–2023; due to the COVID-19 pandemic it was not possible to complete the 2020 survey.

The Survey is a key component of the 'Healthy Ireland Framework' and informs the Healthy Ireland Strategic Action Plan, by contributing to the research, monitoring and evaluation required to assess the impact of policy implementation. Approximately 7,500 individuals representative of the population aged 15 and older are surveyed. The Survey covers a variety of health-related topics, including; general health, alcohol, smoking, weight, dental, female health, skin protection, and mental health.

In terms of General Health, respondents were asked to rate their health on a 5-point scale ranging from 'very good' to 'very bad'. Overall, 81% of respondents perceived their health as 'good' or 'very good', which has remained broadly unchanged since 2023 (80%). 81% of men and 81% of women rated their health as 'good' or 'very good'. Reports of good or very good health had been declining steadily since 2019 (85%). The survey results note that 2024 is the first year since 2019 that the proportion of people reporting overall good health has remained stable compared to the previous year (Gov.ie, 2024). Results indicate that general 'good' health decreases with age, with 89% of 15–24-year-olds rating their health as 'good' or 'very good', in contrast to 69% of respondents aged 65 and older.

The Survey notes that those with Leaving Certificate education or higher are considerably more likely to report themselves as being in good health than those who did not attain a Leaving Certificate (85% and 68% respectively). Employment status is also stated as indicative of self-reported health, with those who are employed (88%) or students (90%) significantly more likely to report good health than those who are unemployed (78%); however, reported good or very good health among those who are unemployed (78%) has increased since 2023 (71%).

With regard to the occurrence of health conditions, the Survey results indicated that 41% (2 in 5 people) have a long-standing illness or health problem confirmed by medical diagnosis, remaining broadly unchanged since 2023 (40%). A higher proportion of women (44%) than men (39%) report having a long-term health condition. Survey results indicated that females are more likely than males to report that health conditions are limiting or severely limiting their day-to-day activities (28% and 23% respectively). The prevalence of long-lasting conditions or difficulties increases with age as respondents aged 65 and older (56%) are considerably more likely to report a long-standing condition or difficulty than those aged 15-24 (25%).

Overall, of the conditions reported, high blood pressure (8%), arthritis (6%), and asthma and diabetes (both 5%), and high cholesterol (4%), and mental health conditions (4%) are the most

³⁵<https://www.gov.ie/en/healthy-ireland/publications/healthy-ireland-survey-2024/> (Accessed July 2025)



prevalent long-term health conditions confirmed by a medical diagnosis reported by respondents (Gov.ie, 2024).

5.3.2.2 Environmental Factors

5.3.2.2.1 Air

In terms of air monitoring, the proposed project is located within Zone D (Rural Ireland).

Continuous PM₁₀ monitoring was carried out by the EPA at two representative Zone D rural background locations from 2020 – 2024; Kilkitt and Claremorris. Annual average PM₁₀ concentrations across the sites ranged from 7 – 10 µg/m³ over the 2020 – 2024 period (see Table 10-6 of Chapter 10 (Air Quality) of this EIAR). There were no exceedances of the daily limit of 50 µg/m³ in the five-year period (35 exceedances are permitted per year) (EPA, 2024). The overall average PM₁₀ concentration at the rural background Zone D sites over the 2020 – 2024 period is 8 µg/m³. Based on the EPA data, a conservative estimate of the current background PM₁₀ concentration in the region of the proposed project is 8 µg/m³.

The results of EPA PM_{2.5} monitoring at Claremorris, Co. Mayo, over the period 2020 – 2024 ranged from 5 – 8 µg/m³ (EPA, 2024). Long-term average PM_{2.5} concentrations measured at this location were significantly lower than the annual average limit value of 25 µg/m³. Based on this information, a background PM_{2.5} concentration of 8 µg/m³ was used in the assessment.

The selected monitoring sites are rural background monitoring locations which are not heavily influenced by traffic or other major air emission sources and can provide an indicative estimate of the background NO₂ concentrations in the vicinity of the proposed project. See Chapter 10 for further details.

5.3.2.2.2 Water

Chapter 9 (Hydrology and Hydrogeology) outlines the baseline environment in terms of the water environment. The proposed wind farm site is located in the Lower Shannon 25B catchment (Hydrometric area). The proposed works areas on the TDR do not cross any rivers or streams. The proposed GCR crosses 3 streams and 4 culverted drains.

Water sampling was undertaken. The results are discussed within Chapter 9 Hydrology and hydrogeology.

The proposed wind farm site is located in the Little Brosna Sub-catchment. The Little Brosna flows adjacent to the eastern boundary of the proposed wind farm site, in a south to north direction before entering the River Shannon approximately 20 km northwest of the proposed wind farm site.

The Wingfield 25 and the Faddan Beg streams merge at the western boundary of the proposed wind farm site and join the Holy Well Clohaskin to the west of T3. The Holy Well Clohaskin, merges with the Little Brosna at the northeast corner of the site. A number of small streams including the Pallas Kyleneamuck stream (First order stream), runs through the north east of the proposed wind farm site in a southerly direction, before merging with the Little Brosna River.

The proposed work areas on the TDR do not cross any rivers or streams. The proposed GCR crosses the Little Brosna River (EPA Code:25L02) at Croghan Bridge, The Ross 25 stream (EPA Code: 25R43) and Woodfield_25 stream (EPA Code 25W29).



5.3.2.2.3 Noise

Chapter 11 (Noise and Vibration) outlines the baseline environment in terms of noise in the area of the proposed wind farm. The study area for the noise and vibration impact assessment is focused on the areas potentially to be affected by the construction, operational and decommissioning phases of the proposed project.

Background noise levels are measured in the vicinity of Noise Sensitive Locations (NSLs) identified in closest proximity to the proposed wind farm site. Locations for noise monitoring equipment were selected to represent the noise environment at the nearest NSLs and to determine the baseline noise levels associated with all wind farm site infrastructure (including the BESS and on-site substation).

The noise environment has been observed during noise monitoring equipment installations, site visits to maintain the equipment, and equipment collections, and the background noise survey.

5.3.2.2.4 Land and Soils

The topography of the proposed windfarm site comprises mostly cutover bog, wet grassland, mixed broadleaved woodland, coniferous woodland and scrub. General elevation in the area ranges from 45 m AOD (Above Ordinance Datum) to 65 m AOD.

The proposed wind farm site, to the east comprises fertile alluvial soils formed from clay, silt, and sand deposits along the river's floodplain and a section in the northeast and approximately 0.4 km to the east of Turbine 2, comprises glaciofluvial sands and gravels and esker sands and gravels.

In terms of polluted/contaminated soils, research, undertaken as part of the Chapter 8 (Land, Soils and Geology), the assessment indicated no evidence of potential contamination sources or contaminating activities within the proposed project area. Given that the site is predominantly covered in peatland with some forestry, the potential for contamination is very low. Current land management practices include fertiliser application and scrub clearance.

Chapter 8 (Land, Soils and Geology) outlines the baseline environment in terms of land and soils, including soil mapping and site-specific information.

5.3.2.2.5 Traffic

Transport and access play an important social role in urban and rural communities, linking rural areas with settlements and essential services, such as schools and healthcare facilities. In terms of local access, the wider road network, and the road network surrounding the proposed project, includes the following national, regional and local roads; M7, N69, N18, N62, N52, R492, R433, R435, R445, R439, L3246, L1071, L-70152. Chapter 14 (Traffic and Transport) provides a detailed description of each of these routes in relation to the proposed wind farm site.

Public transportation is available in the wider area around the proposed wind farm site but are predominately limited to services provided by road as described above in Section 5.3.1.5.

Chapter 14 (Traffic and Transport) provides a detailed description of the existing environment in relation to traffic and transport.

5.3.2.3 Wind Turbine Health Effects

The term *Wind Turbine Syndrome* first appeared in 2009, when a New York Paediatrician, Dr Nina Pierpont (Pierpont, 2009), published "*Wind Turbine Syndrome: A Report on a Natural*



Experiment". The experiment comprised speaking on the telephone with 23 people who answered her advertisement asking if they lived near a wind turbine and if they ever felt sick. Fifteen of them said they had family members who would probably answer the question posed in the affirmative. Based on these personal assessments, Dr Pierpont claimed science proved her belief that wind turbines cause a vast array of maladies. This pamphlet was not published in a peer-reviewed journal and would be considered to more closely resemble a relatively unscientific opinion poll.

In terms of research on the health effects of wind turbines generally, a review of the existing literature was performed in 2011 by Knopper and Ollson in *'Health effects and wind turbines: a review of the literature'*. The results of this study were stated as follows: *"Conclusions of the peer reviewed literature differ in some ways from those in the popular literature. In peer reviewed studies wind turbine annoyance has been statistically associated with noise but found to be more strongly related to visual impact, attitude to wind turbines and sensitivity to noise. To date, no peer reviewed articles demonstrate a direct causal link between people living in proximity to modern wind turbines, the noise they emit and resulting physiological health effects. If anything, reported health effects are likely attributed to a number of environmental stressors that result in an annoyed/stressed state in a segment of the population. In the popular literature, self-reported health outcomes are related to distance from turbines and the claim is made that infrasound³⁶ is the causative factor for the reported effects, even though sound pressure levels are not measured."*(Knopper and Ollson, 2011).

A further study was carried out by Knopper *et al.* in 2014 which provides a *"bibliographic-like summary and analysis of the science around the issue [of wind turbines and human health] specifically in terms of noise (including audible, LFN [low frequency noise] and infrasound), EMF and shadow flicker"*. The study states that *"There is also a growing body of research that suggests that nocebo³⁷ effects may play a role in a number of self-reported health impacts related to the presence of wind turbines. Negative attitudes and worries of individuals about perceived environmental risks have been shown to be associated with adverse health-related symptoms such as headache, nausea, dizziness, agitation, and depression, even in the absence of an identifiable cause"* and *"Based on the findings and scientific merit of the available studies, the weight of evidence suggests that when sited properly, wind turbines are not related to adverse health."*(Knopper *et al.*, 2014).

In 2010, The National Health and Medical Research Council (NHMRC) of Australia published *'Wind Turbines and Health: A Rapid Review of the Evidence'*, which concluded that *"This review of the available evidence, including journal articles, surveys, literature reviews and government reports, supports the statement that: There are no direct pathological effects from wind farms and that any potential impact on humans can be minimised by following existing planning guidelines."*(NHMRC, 2010). In 2015, the NHMRC in Australia published a systemic review of the health effects of wind farms (Merlin *et al.*, 2015). This was a thorough follow up to the 2010 *'Rapid Review'* and was independent research (i.e., no relationship to either wind farm developers, anti-wind groups or objectors). Which looked extensively at all the reported effects and systematically looked at all available evidence. The review concluded that *"The evidence*

³⁶ Infrasound is sound below the audible human frequency which is normally taken as being 20 Hz or less. However, it can be associated with vibration and is sometimes an issue discussed with, for example, large tunnelling projects. Infrasound is also an everyday occurrence with everyday sources. Many of the people who cite human health problems with wind turbines relate these to infrasound and reported symptoms can include nausea, disturbance of sleep, and tinnitus (ringing in the ear).

³⁷ Nocebo is defined as *"A non-existent or inactive substance or factor that causes symptoms of disease in people who believe that they have been exposed to it"* (Source: Collins English Dictionary: Accessed March 2025).



considered does not support the conclusion that wind turbines have direct adverse effects on human health, as the criteria for causation have not been fulfilled”(Merlin et al., 2015).

Professor Simon Chapman of the School of Public Health and Sydney University Medical School, Australia writing in the New Scientist Magazine in October 2012 pointed out that if wind turbines did cause medical problems, we would expect to find a relationship between prevalence of the syndrome and populations living near wind farms, however this is not the case. He stated, in fact, that it is almost the case that the opposite is true. The people who should be most affected are those who live on the land where the wind turbines are actually located but this is not described in the literature. In September 2015, a further 25 reviews of the scientific evidence that universally conclude that exposure to wind farms and the sound emanating from wind farms does not trigger adverse health effects were compiled by Professor Simon Chapman and Tessa Simonetti (of Sydney University Medical School). Another recent publication by Professor Chapman and Fiona Crichton, published in 2017 entitled ‘Wind turbine syndrome: A communicated disease’ provides a detailed examination of scientific evidence and critically discusses why certain health effects might often be incorrectly attributed to wind turbines.

A 2021 publication, ‘*Health Effects Related to Wind Turbine Sound: An Update*’(van Kamp and van den Berg, 2021), looked at literature published between 2017 and mid 2020 on the health impacts of wind turbine sound on local residents. This covered a range of topics such as annoyance, sleep disturbance, cardiovascular disease, and metabolic effects, as well as mental and cognitive impacts. The study indicated there may be a link between annoyance and the sound level of a wind turbine (though low frequency sound did not appear to affect this). There were no consistent results for the other topics (or data was not available). The study also showed evidence that annoyance is lower when people participate in the turbine siting process.

Another more recent UK study, ‘*Perceptions of Wind Turbine Noise and Self-Reported Health in Suburban Residential Areas*’(Qu and Tsuchiya, 2021) researching potential suburban health impacts associated with wind turbines found that questionnaire results were heavily influenced by whether the person knew the research aims or not. Those that were aware that the research aimed to assess wind farm impacts reported higher levels of health complaints than those that had the aim masked. This highlights the importance of considering good scientific data and studies.

Wind Turbine Noise and Infrasound

A comprehensive synthesis was published by the World Health Organisation (WHO) ‘*Environmental Noise Guidelines for the European Region*’ (2018). These Guidelines provide an evidence-based assessment of the health effects of environmental noise, based on systematic reviews of the international scientific literature. The WHO concluded that, while wind turbine noise may be associated with annoyance at higher exposure levels, the evidence linking wind turbine noise to other adverse health outcomes (including cardiovascular disease, sleep disturbance, or other physiological effects) is limited, inconsistent, or of very low quality.

In particular, the WHO Guideline Development Group conditionally recommends that annual average wind turbine noise exposure be reduced below 45 dB Lden³⁸, noting that above this level annoyance may increase. However, the WHO also states that evidence for direct health effects beyond annoyance is either absent or of poor quality, and that observed effects may be influenced by non-acoustic factors such as attitudes towards wind farms.

³⁸ Annual average



Previous, earlier research that supports this include;

- Colby et al. (2009); An expert panel review concluded that there is *no evidence* that audible or sub-audible sound from wind turbines causes direct adverse physiological effects.
- RenewableUK (2010); an independent review on behalf of Renewable UK discussed Dr Pierpont's 2009 publication and found that noise from wind turbines cannot contribute to the symptoms reported by respondents by the mechanisms proposed, the scientific and audiological assumptions presented relating to infrasound are wrong, and the scientific and epidemiological methodology and conclusions drawn in the publication are fundamentally flawed (Renewable UK, 2010).
- Evans et al. (2013); Objective measurements of infrasound demonstrated that infrasound levels at dwellings near wind farms are no higher than levels measured at locations far from wind farms and are commonly lower than levels found in urban environments.
- Health Canada (2014); A large-scale field study found:
 - No association between wind turbine noise exposure and self-reported illnesses or chronic diseases;
 - No association with measured or self-reported stress indicators (including cortisol levels, blood pressure, or heart rate);
 - No association with measured or self-reported sleep quality;
 - An association between increasing noise levels and reported annoyance, but no associated reduction in overall quality of life or health satisfaction.
- McCunney et al. (2014); concluded that infrasound from wind turbines does not exceed audibility thresholds, does not present unique health risks, and that annoyance is more strongly related to individual and contextual characteristics than to turbine noise itself.
- Ratzel et al. (2016); A review by the German Ministry of the Environment concluded that infrasound and low-frequency noise from wind turbines are part of the normal technical and natural environment, that turbines contribute only minimally compared to other sources, and that levels are well below human perception thresholds at typical residential distances. Health effects below perception thresholds were found not to be scientifically proven.
- Bräuner et al. (2018; 2019) and Poulsen et al. (2018); Large cohort studies found no evidence of an association between long-term wind turbine noise exposure and myocardial infarction, stroke, or adverse birth outcomes.

In relation to infrasound specifically, multiple authoritative sources have concluded that infrasound generated by modern wind turbines is well below levels capable of causing physiological or psychological effects:

- The WHO (1995) stated that there is no reliable evidence that infrasound below the hearing threshold produces adverse health effects.
- The EPA Guidance Note NG3 (2011) confirms that significant infrasound was associated with older downwind turbine designs and is not a characteristic of modern upwind, actively yawed turbines.



The current Irish 2006 WEDGs state that *“A fixed limit of 43dB(A) will protect sleep inside properties during the night”*. The Draft Revised 2019 WEDGs (Ireland) propose a change to the approach in applying limits on noise from wind turbines, including during night-time, this is currently the subject of consultation within government and is discussed in further detail in Chapter 11 (Noise and Vibration).

In 2018, the WHO also carried out a review of the available evidence on wind turbine noise and sleep disturbance (Basner and McGuire, 2018) and found that the overall evidence base was limited, with methodological constraints and potential reporting bias in several studies. While some studies suggested an association between higher wind turbine noise levels and increased self-reported sleep disturbance, the authors concluded that the evidence was insufficient to draw firm conclusions, particularly at higher exposure levels where data were sparse.

The referenced studies indicate that wind turbines produce noise and low-frequency sound, but at levels not considered harmful and often lower than everyday sources like traffic.

Further discussion on noise and infrasound is presented in Chapter 11 (Noise and Vibration).

Electromagnetic Interference

When electric current flows, both electric and magnetic fields are produced. The electromagnetic fields (EMF) from electricity are in the extremely low frequency end of the electro-magnetic spectrum. EMF occurs in the home, in the workplace or anywhere that electricity is used. EMF is also naturally generated from earth’s geomagnetic field and electric fields from storm clouds.

Guidance from the WHO states that EMF is sometimes cited for potential health effects (WHO, 2007). Concerns expressed in the past include childhood leukaemia, brain tumours and other cancers. Laboratory experiments have provided no reliable evidence that EMF are capable of producing cancer, nor do human epidemiological studies suggest that they cause cancer in general. Furthermore, the Health Promotion Agency in the UK stated, in November 2007, that *“there is little scientific evidence to support these claims and the current body of evidence does not show that exposure to EMF below guideline levels presents a human health hazard”*.

The aforementioned Australian NHMRC study (Merlin et al., 2015) concluded in relation to EMF that *“There is no direct evidence on whether there is an association between electromagnetic radiation produced by wind farms and health outcomes. Extremely low-frequency electromagnetic radiation is the only potentially important electromagnetic emission from wind turbines. Limited evidence suggests that the level of extremely low-frequency electromagnetic radiation close to wind farms is less than average levels measured inside and outside Australian suburban homes. There is no consistent evidence of human health effects from exposure to extremely low-frequency electromagnetic radiation at much higher levels than is present near wind farms.”*

EirGrid have produced a number of publications on EMF and health, most recently “Your guide to understanding electric and magnetic fields (EMFs)” (2024)³⁹ which explains the science behind extremely low frequency fields associated with electricity transmission in Ireland. his document explains the nature of extremely low frequency (ELF) electric and magnetic fields associated with electricity transmission and distribution infrastructure in Ireland. The 2024

³⁹ <https://cms.eirgrid.ie/sites/default/files/publications/EMF-Information-Brochure-2024.pdf> (Accessed July 2025)



guidance reflects the current scientific consensus that exposure to ELF EMFs, at levels typically encountered from electricity infrastructure and within internationally accepted guideline limits, does not give rise to adverse effects on human health.

Shadow Flicker

'Shadow flicker' is an effect that occurs when the rotating blades of a wind turbine cast a moving shadow over an observer or a building. The effect is predominantly experienced indoors where a moving shadow passes over a window in a nearby property and results in a rapid change or flicker in the incoming sunlight. Shadow flicker is predominantly an annoyance, but concerns have been raised that the flicker can trigger seizures in persons with photosensitive epilepsy.

The Wind Energy Guidance Note prepared in the UK for the Renewables Advisory Board and Department for Business, Enterprise and Regulatory Reform (BERR) in 2007 states that *"The operating frequency of a wind turbine will be relevant in determining whether or not shadow flicker can cause health effects in human beings. The National Society for Epilepsy advises that only 3.5 % of the 1 in 200 people in the UK who have epilepsy suffer from photosensitive epilepsy. The frequency at which photosensitive epilepsy may be triggered varies from person to person but generally it is between 2.5 and 30 flashes per second (hertz). Most commercial wind turbines in the UK rotate much more slowly than this, at between 0.3 and 1.0 hertz. Therefore, health effects arising from shadow flicker will not have the potential to occur unless the operating frequency of a particular turbine is between 2.5 and 30 hertz and all other pre-conditions for shadow flicker effects to occur exist."* The note also states that *"Shadow flicker is therefore more likely to be relevant in considering the potential effects on residential amenity [than human health]"*.

Similarly, the aforementioned Australian NHMRC study (Merlin et al., 2015) discusses shadow flicker and states that *"The Environment Protection and Heritage Council of Australia (EPHC; 2010) notes that the risk of seizures from modern wind turbines is negligible, given that less than 0.5% of the population are subject to epilepsy at any point in time and, of this proportion, 5% are vulnerable to strobe lighting (light flashes). In the majority of circumstances (>95% of the time), the frequency threshold for individuals susceptible to strobe lighting is >8 Hz, with the remainder affected by frequencies >2.5 Hz. The EPHC estimates that the probability of conventional horizontal-axis wind turbines causing an epileptic seizure for an individual experiencing shadow flicker is <1 in 10 million in the general population."*

The 2006 WEDGs state that *"At distances greater than 10 rotor diameters from a turbine, the potential for shadow flicker is very low"* (DHLGH, 2006), The Draft Revised 2019 WEDGs state *"Generally only properties within 130 degrees either side of north, relative to the turbines, can be affected at these latitudes in the UK and Ireland- turbines do not cast long shadows on their southern side"*. Additionally, the Draft Revised 2019 WEDGs state *"the time period in which a neighbouring property may be affected by shadow flicker is completely predictable from the relative locations of the wind turbine and the property. Modern wind turbines have the facility to measure sunlight levels and to reduce or stop turbine rotation if the conditions that would lead to shadow flicker at any neighbouring property occur. With careful site design and appropriate mitigation, and most critically the use of appropriate equipment and computer software, no existing dwelling or other affected property (e.g. existing work places or schools) should experience shadow flicker"*.

Modelling can be used to predict the strength and duration of potential shadow flicker during daylight hours for every day of the year (DHLGH, 2019). A Shadow Flicker Study detailing the



outcome of modelling for the potential for shadow flicker from the proposed wind farm has been undertaken. Further discussion on the modelling outcomes and assessment of Shadow Flicker effects is presented in Chapter 16 (Shadow Flicker).

Psychological Effects

The potential for adverse effects on psychological health, such as anxiety and stress, caused by concern in relation to visual appearance, noise emissions, shadow flicker and other issues, is often highlighted in relation to wind farms. A community may also experience annoyance arising from increased traffic or noise from the construction works. The potential effects on a person's overall psychological well-being is difficult to assess as there are no direct measurements that can be used. While it is possible to predict noise emissions and shadow flicker, for example, the same scientific certainty cannot be used in predicting psychological impacts. The aforementioned 2014 Health Canada report referenced above looked at a number of measures of stress and noted no association with exposure to wind turbine noise.

The potential degree of psychological impact can be both positive and negative. There can be a positive impact, whereby people may look forward to better employment opportunities generated by a major infrastructure development in a rural area or the benefits that may be gained from the Community Benefit Funds. In terms of negative impacts, this can be where somebody is annoyed by for example, the visual appearance of the wind turbines. This annoyance is not a medical health impact, as such. If a person were to develop a psychological illness, such as anxiety or depression, this would be a medical health impact.

In this case, it is useful to look at experience from other operational wind farms to determine if significant psychological effects are reported and published. If this was the case, it would be expected to find recorded evidence of increased levels of depression or anxiety in the vicinity of other wind farms, however, definitive findings on such were not evident in the peer-reviewed literature referenced above.

5.4 ASSESSMENT OF EFFECTS

5.4.1 Do-Nothing Scenario / Future Baseline

In the Do-Nothing Scenario, the existing lands will continue to be utilised for current/existing land uses, including agriculture and forestry, with little or no changes in the baseline at the proposed project.

Opportunities for local employment and additional economical spend associated with the proposed project will not occur.

National and local health benefits associated with replacing fossil fuels with renewable wind energy, as well as the provision of renewable electricity supply to the grid, from the proposed project will not be realised and alternative candidate sites will need to be identified, either onshore or offshore, to ensure Ireland meets its commitments to reducing carbon emissions.



5.4.2 Population

5.4.2.1 Potential Effects - Construction Phase

5.4.2.1.1 Land Use

The construction of the proposed wind farm will involve short-term land use change primarily for the excavation of three borrow pits areas, four temporary construction compounds, turbine foundations and hardstands, the construction of internal access roads, on-site electrical substation, and associated ancillary services.

The borrow pit areas and temporary construction compounds, all located within the proposed wind farm site, will be reinstated on completion of the construction phase which is anticipated to last for approximately 24 months.

There will be changes to the land use for the farmland, forestry and peat-bog being utilised for the proposed wind farm, as those lands will then be used to accommodate electrical infrastructure.

Facilitation of temporary works will be required at the proposed TDR works areas on the public road network and at private properties to accommodate the delivery of turbine components (see Chapter 2 of the EIAR).

It is not anticipated that the construction of the proposed project will have a significant effect on the land use associated with the proposed GCR and proposed TDR works areas where required along public road corridors and at private properties during the construction phase. Non-significant, brief effects will occur at the temporary works areas along the proposed TDR where signage will be removed, hardstanding will be laid, vegetation trimmed and during the construction of the proposed GCR. Some temporary localised diversions and traffic management will be utilised in some road sections.

During the construction phase of the project, there will be some impacts on nearby NSLs due to noise emissions from site traffic and other construction activities. However, given the distances between the main construction works and the NSLs, the short-term duration of the construction phase, and the assessment's findings that the expected noise and vibration emissions will be below the identified threshold and limit values, the impacts will not be significant. The impact of noise is assessed further in Chapter 11.

Overall, it is not anticipated that the proposed project will have a significant effect on land use. Any likely effects on population receptors in terms of land use are therefore predicted to be slight, neutral to positive and short-term.

Chapter 8 (Land, Soils and Geology) outlines the baseline environment in terms of land use and contains a detailed assessment of impacts associated with the proposed project on lands, soils and geological receptors.

5.4.2.1.2 Population Trends

It is anticipated that those working on the construction phase of the proposed project will commute from the local area or wider region daily. Where relevant, some individual personnel may choose to live locally or commute for a portion or duration of the construction phase (24 months).



It is not predicted that the construction phase of the proposed project will have a significant effect on local or wider population trends, such as population levels, density, age or household size. Any likely effects on population trends in the area would be direct, neutral to positive, imperceptible, and short-term.

5.4.2.1.3 Property Receptors & Residential Amenity

Negative effects on local property receptors (including residential, educational, and commercial properties) as a result of the construction works may arise from construction activity at the wind farm site, as well as on the local road network, such as from increased traffic movements associated with vehicles accessing the wind farm site or works associated with the proposed GCR and the proposed TDR works areas, resulting in potential increases in emissions locally (e.g., noise, vibration and emissions to air (including dust)). This may also have potential to impact on local residents' enjoyment of their homes, i.e., residential amenity. Residential amenity relates to the human experience of a person's home, derived from the general environment and atmosphere associated with the residence. The quality of residential amenity is influenced by a combination of factors, including site setting and local character, land-use activities in the area and the relative degree of peace and tranquillity experienced at the residence.

It is anticipated that limited peat extraction will continue within the site during the construction phase. Communication between relevant parties will be maintained to coordinate activities, and appropriate health and safety measures—including signage, barriers, and access controls—will be implemented as required to safeguard site personnel and the public (See Chapter 8 for further details).

The haul routes proposed are existing public roads which are already used by heavy goods vehicles (HGVs), however, there will be a short-term increase in (traffic volume) effects during the construction phase due to increased vehicle trips in the vicinity and on-site construction activity.

The proposed wind farm has achieved a separation distance of 720 m, which is 4 times the tip height (with the exception of an involved landowner). One residential property, located approximately 550 m from Turbine T4, is associated with a landowner who is involved in the proposed project. A letter of consent from this landowner has been appended to the planning application, confirming their acknowledgment of the dwelling's proximity to the proposed turbine and acceptance of this.

The distance from the proposed onsite substation to nearest sensitive receptor is also 720 m. Along the TDR, the works are small scale and transient in nature and mostly constitute temporary works along the public road. They may result in temporary localised noise and dust emissions, and there may also be some traffic management implications for road users. These effects are assessed in detail in the Chapter 10 (Air Quality), Chapter 11 (Noise and Vibration), Chapter 12 (LVIA) and Chapter 14 (Traffic and Transport) and Chapter 17 (Climate). Along the proposed GCR works will be similar to any other normal road works that might be carried out and will last only for a few days at any particular location. For the locations that require HDD potential effects will be temporary to short-term.

Any likely effects on property receptors in the area of these proposed works would be direct, negative, temporary and not significant. Overall, based on the predicted effects outlined above (inc. dust, noise, road traffic etc.), and given the distance between sensitive property receptors



and the proposed wind farm site, significant impact on sensitive property receptors and residential amenity associated with the construction phase of the proposed wind farm is unlikely. Any likely effects on property receptors / residential amenity in the area would be direct, negative, slight, and temporary to short-term.

5.4.2.1.4 Property Values

It is not anticipated that the construction works for the proposed wind farm will have a significant effect on local property values. A major UK study entitled *“The Effect of Wind Farms on House Prices”* carried out in March 2014, discussed in more detail in Section 5.3.2.3, noted that *“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”*. Furthermore, the 2023 CERIS working paper entitled *‘Wind Turbines and House Prices Along the West of Ireland: A Hedonic Pricing Approach’* found that there are *“no significant reduction in house price beyond 1 km for all specifications”* and the results indicate that the effects on house value are not persistent and diminish over time.

Therefore, based on the available published studies presented in Section 5.3.1.3, it is reasonable to infer that the construction phase of the proposed wind farm will similarly not have a significant effect on local property values. For house properties within 1km of the proposed wind farm site there may be slight, negative effect on house prices as per the 2023 CERIS study described above.

Construction works for the proposed wind farm will be carried out within wind farm boundary and traffic associated with travel to the proposed wind farm will use existing public roads. Works associated with the proposed GCR and the proposed TDR works areas will be localised and relatively minor.

Based on the above, it is predicted that significant effects on property value in the area due to the construction phase of the proposed wind farm are unlikely. Any effects on property value in the area would likely be direct, negative, slight to moderate, and short-term.

5.4.2.1.5 Employment / Economy

The proposed project will create and support direct and indirect employment during the construction phase at local level, primarily through local construction workforce on site, and at regional and national level, through more specialised construction services and supply of building materials.

It is anticipated that the wind farm will have the following effects locally:

- Development activities such as site monitoring/surveys, site investigations, legal fees, consultancy studies during pre-construction and construction works, etc.;
- Spending locally by construction employees; and
- Accommodation and sustenance will be required in the locality for those workers on site.

Guidance from a 2009 IWEA and Deloitte study⁴⁰ states *“ Our analysis has shown that the wind energy sector in Ireland can support 1.50 jobs per MW to be installed on the island”*. This number includes construction, operation and maintenance of all wind farms. Based on the proposed

⁴⁰ IWEA and Deloitte, *Jobs and Investment in Irish Wind Energy: Powering Ireland’s Economy* (2009)



wind farm's maximum capacity of approximately 77 MW, this equates to approximately 116 jobs across a number of different sectors (including development (contracts, financing etc), planning, construction, operation and maintenance, support services, and research and development (R&D)). Construction provides the majority of the jobs opportunities available from the wind energy sector (IWEA and Deloitte, 2009). The IWEA and Deloitte study (2009) estimated that 68% of the Irish wind energy jobs created are within the construction sector. From this study, it is estimated that approximately 79 persons will be directly employed during the construction period⁴¹.

Throughout the construction phase, there is potential for materials such as quarried products and concrete supplies, as well as machinery and equipment and associated operatives, to be sourced locally, which will support local business, as well as direct and indirect employment. Furthermore, the local area and region will experience a benefit from secondary investment associated with increased visitors and spend within the area, as well as potential increased activity in the local hospitality and café/restaurant service industries driven by use of these by construction staff. The proposed wind farm will be a valuable contribution to Offaly and Tipperary County Council's economic aims for further development of its green economy.

The construction of the proposed wind farm will have an estimated capital cost in the region of up to €97.2 million⁴² and an estimated 11% of the total capital cost will relate to civil engineering works (i.e., site works) (The Irish Wind Farmers' Association (MnaG), n.d.)⁴³ which has the potential to support local contractors and suppliers. The *"Life-cycle of an Onshore Wind Farm published"* by IWEA in March 2019 stated that *"One recent 169 MW windfarm project estimated that €20 million was spent with local suppliers and contractors within 30 kilometres of the site during construction"*.

Therefore, it is predicted that the construction phase of the proposed project is likely to have direct and indirect positive, slight to moderate, short-term effects on employment and economy in the local area, wider counties (Tipperary and Offaly), and the Midland and Mid-West Regions.

5.4.2.1.6 Tourism / Recreation

As set out in Section 5.3.1.7, there are a number of relevant tourist attractions and public amenities in Counties Offaly and Tipperary and in the wider area surrounding the wind farm site. Birr Castle and Demesne is located approximately 5 km from the proposed wind farm site and the closest trail is the Birr Cycle Hub Loop, which is located approximately 2.5 km to the east of the proposed wind farm site at its nearest point.

No existing designated tourist sites or walkways/trails were identified as intersecting with or within the proposed wind farm site boundary.

Intermittent and temporary traffic effects due to movement of vehicles, as well as plant and machinery, related to the proposed project, and the requirement for abnormal loads related to the delivery of the turbines to site may impact local road traffic during the construction phase due to the increased road traffic movements. Abnormal loads will occur at set times and along

⁴¹ Note figures are an estimate based on the study, refer to Chapter 2 for figures used throughout the EIAR

⁴² Using an average investment cost of €1.3 million per MW – SEAI, *A Macroeconomic Analysis of Onshore Wind Development to 2020* (2015)

⁴³ Irish Wind Farmers Association - FAQ | Meitheal na Gaoithe Irish Wind Farmers Association (mnag.ie) - <https://mnag.ie/frequently-asked-questions/> (Accessed July 2025)



designated routes. Therefore, there is potential for effects to local and tourist road users in the area during these periods.

No other direct effects on tourism activity are anticipated during the construction phase. Therefore, it is predicted that the construction phase of the proposed project is likely to have an indirect, neutral to negative, not significant, short-term effect on local tourism.

5.4.2.2 Potential Effects - Operational Phase

5.4.2.2.1 Land Use

Original land use where the installed permanent infrastructure is located will change, with the exception of the three proposed borrow pits, four temporary construction compounds, and any other temporary areas (e.g., proposed TDR works areas) (see Chapter 2 Description of the Proposed Project), which will be reinstated post construction.

Figure 2-1 (see Chapter 2 Description of the Proposed Project) outlines the final configuration of the internal roads.

Furthermore, change of land use associated with the wind farm will produce clean renewable energy for the duration of the 35-year operational life from the date of commissioning of the entire wind farm.

Significant impact on land use at the proposed wind farm site associated with the operational phase of the proposed project is unlikely. The proposed project will not result in permanent land use change in the wider area beyond the proposed wind farm site boundary. Operational phase effects on population in terms of change of land use at the proposed wind farm are therefore likely to be positive, slight to moderate, and long-term.

5.4.2.2.2 Population Trends

The proposed project has the potential to bring significant positive benefits to local communities through provision of a Community Benefit Fund, proposed in line with industry best practice, which is in accordance with the terms and conditions of the Government's Renewable Electricity Support Scheme (RESS). The Ballincor Wind Farm Community Benefit Fund proposal is set out in Appendix 1-4 Community Engagement Report of this EIAR. Support from the Community Benefit Fund could potentially make the local area attractive for people to move to, which may result in a marginal increase in local population numbers.

It is not anticipated that the proposed project will have a significant effect on population trends locally or in Counties Tipperary or Offaly. Operational phase effects in terms of population trends are therefore likely to be neutral, not significant to slight, and long-term.

5.4.2.2.3 Property Receptors & Residential Amenity

The turbine layout at the proposed wind farm site has been designed with cognisance of the local population and sensitive receptor locations. As mentioned, the Draft Revised 2019 WEDGs recommend a minimum setback distance of four times the tip height from a proposed turbine to the curtilage of any residential property and the proposed wind farm complies with this recommendation. Extensive consideration has been given to the layout of the proposed wind farm and the position of the turbines in ensuring sufficient set-back distances from sensitive



receptors and adjustment for noise, shadow flicker, visual impact and telecommunication impacts.

A minimum setback distance of 720 m has been applied based on a maximum turbine tip height of 180 m considered for the proposed project (i.e., $180 \text{ m} \times 4 =$ four times the tip height) and will therefore provide an adequate setback distance (with the exception of an involved landowner). One residential property, located approximately 550 m from Turbine T4, is associated with a landowner who is involved in the proposed project. A letter of consent from this landowner has been appended to the planning application, confirming their acknowledgment of the dwelling's proximity to the proposed turbine and acceptance of this

These considerations during the design, planning and EIA phase, in accordance with the relevant guidelines, are designed to minimise the potential effects on property receptors and residential amenity from the proposed wind farm.

There will be a potential for low levels of additional traffic on local roads (i.e., for site maintenance).

As mentioned, a Ballincor Wind Farm Community Benefit Fund has been developed in accordance with the terms and conditions of the Government's RESS. The proposed wind farm will offer amenity and a Community Benefit Fund which will be positive for those residing in the local area. Those living in closest proximity should be priority beneficiaries and as such some of the fund is designated for 'Near Neighbour' payments. However, broader community benefits apply as well. A Community Benefit Fund worth €2/MWh (megawatt hour) of generated electricity for the operational period has been pledged by the applicant. The potential effects on human beings at their residences during the operational phase are assessed in the following chapters; Chapter 10 (Air Quality), Chapter 11 (Noise and Vibration), Chapter 12 (LVIA), Chapter 14 (Traffic and Transport) and Chapter 17 (Climate).

Impacts in terms of environmental factors and human health are discussed in Section 5.4.3.

A significant effect on local property receptors and residential amenity during the operational phase is unlikely. Any likely effects in terms of property receptors and residential amenity during the operational phase are therefore considered to be negative, slight, and long-term.

5.4.2.2.4 Property values

Based on the literature reviewed, it is not anticipated that the operational phase of the proposed wind farm will have significant effect on local property values.

As described in Section 5.4.2.1.4 above, A major UK study entitled "*The Effect of Wind Farms on House Prices*" carried out in March 2014, discussed in more detail in Section 5.3.1.3, noted that "*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*". Furthermore, the 2023 CERIS working paper entitled '*Wind Turbines and House Prices Along the West of Ireland: A Hedonic Pricing Approach*' found that there are "*no significant reduction in house price beyond 1 km for all specifications*" and the results indicate that the effects on house value is not persistent and diminishes over time.

Furthermore, the community benefit fund for the local area may be a motivation for potential property buyers to move to the local area.



Therefore, based on the available published studies presented in Section 5.3.1.3, it is reasonable to conclude that significant effects on property value in the area due to the operational phase of the proposed wind farm are unlikely. Any effect on property value in the area would likely be direct, negative, slight to moderate, and short to medium-term.

5.4.2.2.5 Employment / Economy

It is anticipated that there will be ongoing local employment on the proposed wind farm site throughout the operational phase of the proposed wind farm relating to turbine servicing/maintenance, breakdowns/faults, inspections, and substation maintenance, as well as maintaining the internal access roads, drainage, and other ongoing site work. Once operational, it is estimated that the wind farm will support 22-27 jobs in operation and maintenance (based on 0.36 jobs per MW⁴⁴).

Although only a small proportion of these jobs are likely to be directly based in the wind farm site, it is likely that the operational phase will support indirect jobs, such as suppliers, consultants, research institutions and universities, financial services, energy sector roles, and hospitality and service industry roles, and benefit the wider employment profile.

Furthermore, there may occasionally be a requirement for additional people to visit site if a particular task requires it. Some local employment or contract opportunities may develop over the lifetime of the wind farm from occasional specific requirements.

Economic benefits from operational activities will include ongoing purchases of local materials, supplies, services and equipment required for the operational phase of the wind farm, as well as local spend generated from technical operational and maintenance staff such as on local hospitality facilities, accommodation and services (e.g., by maintenance workers and contractors).

The impact of the Community Benefit Fund is likely to enhance the local economy, with potential for substantial funding for local projects in support of relevant UN Sustainable Development Goals (SDGs), clubs, charities and near neighbours, which will be invested in the local area.

In addition, the proposed wind farm will require payment of rates to Offaly and Tipperary County Council which will provide additional revenue for their work around the county.

Positive economic effects will also be felt in the wider area due to the ongoing benefits of renewable electricity generation. The energy generated will feed directly into the national electricity transmission system, providing a sustainable electricity source and a low impact energy supply to the country's domestic and industrial consumers. This is a significant, positive long-term effect for electricity consumers.

Therefore, it is anticipated that the operational phase of the proposed wind farm is likely to have direct and indirect positive, slight to moderate, long-term effects on employment and economy in the local area, Counties (Offaly and Tipperary), the Midland and Mid-West Regions, and nationally.

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<https://opus.lib.uts.edu.au/bitstream/10453/43718/1/Rutovitzetal2015Calculatingglobalenergysectorjobsmethodology.pdf> (Accessed July 2025)



5.4.2.2.6 Tourism / Recreation

As noted previously, Fáilte Ireland surveyed tourists' perceptions in relation to wind farms in the Irish landscape in 2007 and 2012. Results were positive, with approximately 80% of tourists considering the presence of wind farms to either have no impact or a positive impact on their sightseeing.

In addition, when asked if further wind farm development in Ireland would influence their decision to holiday in Ireland again, over 70% of responses cited no impact or a positive impact on their return to Ireland. Similarly, the 2017 study carried out by BiGGAR Economics (see Section 5.3.1.8) examined the link, if any, between onshore wind energy development and the sustainable tourism sector in Scotland and did not find a direct relationship between tourism and the wind energy sector in itself. However, it did conclude that the increase in wind farm development did not negatively impact employment in the sustainable tourism industry in Scotland (BiGGAR, 2017).

As noted previously, there are a number of relevant tourism attractions and public amenities in Counties Offaly and Tipperary and in the wider area surrounding the wind farm site. Birr Castle and Demesne is located approximately 5 km from the proposed wind farm site and the closest trail is the Birr Cycle Hub Loop, which is located approximately 2.5 km to the east of the proposed wind farm site at its nearest point.

The proposed wind farm will be visible from several features in the area (as discussed in Chapter 12 (LVIA) of this EIAR).

The proposed project is not anticipated to have a significant impact on tourism and amenity in the local area or wider region. It is considered that the proposed wind farm will likely have a not significant, negative, long-term effect on the tourism experience and numbers in the vicinity of the proposed wind farm site.

5.4.3 Human Health

5.4.3.1 Construction Phase

5.4.3.1.1 Air quality and dust

Good construction practice and mitigation measures in terms of dust control will minimise any potential effects and are discussed in more detail in Chapter 10 (Air Quality) and the CEMP (see Appendix 2-3 of this EIAR). While in a construction project of this scale it is inevitable that there will be occasional dust generated, this is likely to be very localised in place and time.

Sources of dust impacts from the proposed project will be associated with earthworks, construction activities, and trackout. No demolition is required as part of the proposed project. The air quality assessment (Chapter 10) of the EIAR) states the following in terms of overall risk of dust impacts associated with earthworks, construction activities, and trackout.

The proposed project has been assessed as having a medium risk of dust soiling impacts, a low risk of dust related human health impacts. As a result, best practice dust mitigation measures associated with medium-risk works will be implemented to ensure there are no significant effects at nearby sensitive receptors, see Chapter 10 for further details regarding mitigation measures. In the absence of mitigation, dust impacts are predicted to be direct, short-term, localised, negative and not significant.



5.4.3.1.2 Noise and Vibration

As described in Chapter 11, the assessment of construction noise and vibration and has been conducted in accordance with best practice guidance contained in BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Noise and BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Vibration. Residual noise associated with the construction phases have been predicted to be below the proposed threshold values. Therefore, there are no likely significant effects from construction phase associated with the proposed project.

5.4.3.1.3 Water Quality

During the construction phase of the proposed project, risk of accidental pollution impacting local water quality could potentially arise from the following sources:

- Accidental release of oils, fuels, and other contaminants from construction phase vehicles (on-site and off-site);
- Spillage or leakage of chemicals and fuel / hydrocarbons stored on site;
- Run-off from materials and waste temporarily stored onsite;
- Spillage or leakage of oils and fuels stored and used in the refuelling, operation, and maintenance of construction plant, machinery and vehicles; and,
- Spillages arising during the delivery and use of concrete and cement for turbine foundations, roads and hardstanding areas.

The key receptors in terms of water quality impacts and human health are the construction personnel due to the potential for direct contact with polluting substances and water during the construction activities. It is anticipated that any incidents related to accidental release, mobilisation, spillage or leakage of substances would likely be localised, contained, and managed in line with mitigation set out within Chapter 9 (Hydrology and Hydrogeology) and the CEMP.

The potential for significant effects on public/private water supply and human health as a result of the construction phase activities are considered low.

Significant negative effects on human health due to water quality effects associated with the proposed project is unlikely. Any likely effects related to water quality impacting on human health, from a polluting incident, would be negative, indirect or direct depending on the incident, temporary to short-term, and not significant to slight.

Chapter 9 (Hydrology and Hydrogeology) outlines the baseline environment in terms of surface water and groundwater features and quality and contains a detailed assessment of water quality impacts associated with the proposed project.

5.4.3.1.4 Land / Soils

No contaminated soils were encountered during site investigations (SI) at the proposed wind farm site. Site Investigation works and laboratory results associated with the proposed wind farm site are discussed within Chapter 8 (Land, Soils and Geology) and associated appendices.

Human health-related impacts associated with soil contamination during the construction activities are primarily associated with dust from material extraction and transport of soils and excavated rock, which is discussed under Air Quality above and in Chapter 10 (Air Quality), and risks of spills or leaks from construction vehicles, plant, and machinery, which could result in localised contamination of soils. Other negative effects include the typical risks to construction



personnel associated with earthworks and large excavations such as falling from heights, engulfment, drowning. The key receptors in terms of soil impacts on human health are the construction personnel due to the potential for direct contact, ingestion or inhalation with polluting substances and soil (which may potentially contain hydrocarbon concentrations from site activities (potential minor leaks and spills of fuels, oils, and paint)) during the construction activities, e.g., excavation / earthworks activities. It is anticipated that any incidents related to accidental release, mobilisation, spillage or leakage of substances would likely be localised, contained, and managed in line with mitigation set out within Chapter 8 (Land, Soils and Geology) and the CEMP (Appendix 2-3).

Taking account of the baseline environmental setting and the proposed mitigation measures during the construction phase, human health risks associated with exposure to contaminants (i.e., via direct contact, ingestion, or inhalation), as well as typical risks described (e.g., falling from heights), resulting from the proposed project are not anticipated, and significant negative effects on human health due to soil quality effects associated with the proposed project are unlikely. Any likely effects related to soil quality, excavation and earthworks impacting on human health, such as from a polluting incident, would be localised, negative, imperceptible to slight, temporary to short-term, not significant, and unlikely to cause a discernible change to health status of human health receptors.

Chapter 8 (Land, Soils and Geology) outlines the baseline environment in terms of soil and geological features and quality and contains a detailed assessment of impacts associated with the proposed project on lands, soils and geological receptors.

5.4.3.1.5 Traffic

Negative effects on road users in terms of traffic are primarily due to traffic delays associated with construction works and vehicle movements, and the associated traffic management measures, such as signage and diversions. Traffic movements associated with the construction phase of the proposed project, such as those associated with the proposed TDR, the proposed TDR works areas, and the proposed GCR, have the potential to cause impact to local road users.

5.4.3.1.6 Health and Safety

All activities carried out by the appointed Contractor on the proposed project will be in accordance with the requirements of the *Safety, Health and Welfare at Work Act 2005* as amended and Regulations made under this Act. The CEMP sets out the Health and Safety requirements for the project including the erection of fencing, signage and notification of commencement of works to the Health and Safety Authority (HSA). This will apply to whatever final turbine dimensions are chosen from the entire proposed range of turbine dimensions.

The proposed TDR to allow for the transport of the turbines to the proposed wind farm site will involve some works as discussed in Chapter 2 of the EIAR (Description of the Proposed Project). These works will be carried out to the relevant construction and road safety guidelines. When the turbine components are being transported, they will have a Garda escort, and will be carried out at night when there is less traffic on the road. The proposed turbine delivery works allow for the entire range of proposed turbine dimensions.

With adherence to the proper health and safety guidelines throughout the construction phase of the proposed project, significant negative effects in terms of health and safety related to construction phase are considered unlikely.



5.4.3.2 Operational Phase

5.4.3.2.1 Air quality and dust

There will be little to no emissions to air during the operational phase of the proposed wind farm. Any emissions will mainly result from occasional maintenance vehicle use associated with maintenance personnel's occasional visits, inspections and maintenance work required at the proposed wind farm. Any vehicular activity has the potential to create nuisance dust and exhaust emissions locally, however, vehicle movements associated with the operational phase are anticipated to be intermittent and consistent with typical vehicle use and frequency within the local environment.

Additionally, the generation of electricity to the national grid associated with renewable energy production will lead to indirect net savings in terms of NO_x emissions, which may have been emitted from fossil fuels to produce electricity. Replacing fossil fuel powered generation stations with clean renewable energy from the proposed project, will have a positive overall effect on air quality nationwide, particularly in the regions where fossil fuel generation stations are currently operational, as compared to a Do-Nothing scenario (i.e., where the wind farm is not built). Results, outlined in Chapter 10 (Air Quality), indicate that the impact of the wind farm on Ireland's obligations under the National Emissions Reduction Directive are positive.

Therefore, significant negative effects related to air and dust emissions impacting human health during the operation phase are considered unlikely. Any likely effects associated with air quality are anticipated to be indirect slight, positive, and long-term.

Chapter 10 (Air Quality) provides a more detail in relation to operational phase air quality and associated emissions.

5.4.3.2.2 Noise and Vibration

The findings of the noise and vibration assessment confirmed that the predicted operational noise levels associated with the proposed wind farm will be within best practice noise criteria recommended in the Irish guidance '*Wind Energy Development Guidelines for Planning Authorities*', therefore it has been determined that there will be no significant effect associated with the proposed project. Chapter 11 (Noise and Vibration) states that while noise levels at low wind speeds will increase due to the proposed project and specifically the operation of the turbines, the predicted levels will remain low, albeit new sources of noise will be introduced to the soundscape. The predicted operational turbine noise effects are anticipated to be negative, not significant and long-term at the nearest NSLs. The noise from fixed plant items (BESS and substation) is predicted to comply with the recommendations contained in best practice and with the proposed criteria discussed Chapter 11, and no negative impacts are expected. Therefore, no significant effects are expected. There are no likely significant effects from the operation of the fixed plant items of the proposed project.

It is therefore concluded that negative effects on human health due to noise and vibration from environmental exposure as a result of the operational phase of the proposed project are unlikely.

The detailed assessment of noise and vibration and mitigation measures are presented in Chapter 11 (Noise and Vibration).



5.4.3.2.3 Water Quality

During the operational phase of the proposed project, accidental pollution impacting local water quality as a result of operational and maintenance activity is not anticipated. However, risk of accidental pollution is still associated with the following:

- Spillage or leakage of machinery on site through routine site maintenance activity during the operational phase;
- Spillages arising relating to the use of substation and hardstanding areas;
- Risk of pollution from site traffic through the accidental release of oils, fuels, and other contaminants from vehicles.

The key receptors in terms of water quality effects and human health are maintenance personnel due to the potential for direct contact with polluting substances and water during the maintenance activities. It is anticipated that any incidents related to accidental release, mobilisation, spillage or leakage of substances would be localised, contained, and managed in line with mitigation measures set out within Chapter 9 (Hydrology and Hydrogeology).

The potential for effects as a result of the operational phase with respect to impacts on public/private water supply and human health are considered low.

Overall, significant negative effects on water quality associated with the operational phase of the proposed project is unlikely. Therefore, any likely effects related to water quality impacting on human health, resulting from a polluting incident, are considered indirect or direct depending on the incident, negative, temporary to short-term, and not significant.

Chapter 9 (Hydrology and Hydrogeology) outlines the baseline environment in terms of surface water and groundwater features and quality and contains a detailed assessment of water quality impacts associated with the proposed project.

5.4.3.2.4 Land and Soil

No contaminated soils were encountered during SI at the proposed wind farm site. SI works and laboratory results associated with the proposed wind farm site are discussed within Chapter 8 (Land, Soils and Geology) and associated appendices. Human health related impacts associated with soil contamination during the operational activities are primarily associated with the risks of spills or leaks from maintenance vehicles and machinery, which could result in localised contamination of soils.

The key receptors in terms of soil impacts on human health are the maintenance personnel due to the potential for direct contact with polluting substances and soil during maintenance activities. It is anticipated that any incidents related to accidental release, mobilisation, spillage or leakage of substances would likely be localised, contained, and managed in line with mitigation set out within Chapter 8 (Land, Soils and Geology).

Overall, human health risks associated with exposure to polluting substances and soil during maintenance activities are not anticipated, and significant negative effects on human health due to soil quality effects associated with the proposed project are unlikely. Any likely effects on human health resulting from a polluting incident impacting soil quality, would be localised, direct, negative, short-term, and not significant.

Chapter 8 (Land, Soils and Geology) outlines the baseline environment in terms of soil and geological features and quality and contains a detailed assessment of impacts associated with the proposed project on lands, soils and geological receptors.



5.4.3.2.5 Traffic

It is anticipated that the operational phase will generate very little traffic movements (e.g., six movements per day, consisting of three arriving and three departing). The operational traffic volumes were assessed against the TII TTA Guidelines thresholds and were found to be sub-threshold (refer to Chapter 14 (Traffic and Transport)). Therefore, significant effects on human health related to operational phase traffic are considered unlikely. Furthermore, the maintenance of the visibility splays undertaken during the operational phase will have a positive effect on the safety aspect of the access to the wind farm site. The likely effects associated with the operational phase are therefore considered to be imperceptible, and not significant.

5.4.3.2.6 Wind turbine health effects

Noise and Infrasound

The referenced publications and studies outlined in this Chapter and within Chapter 11 (Noise and Vibration) indicate that there appears to be little scientific evidence of effects of “Wind Turbine Syndrome”, and that wind farms are not a significant source of noise and infrasound, and that traffic and everyday human activity are likely to be more relevant.

In general, the distances between the proposed wind farm infrastructure and the nearest property receptors are such that significant noise and vibration effects at these receptors are unlikely.

Furthermore, as mentioned above, based on the outcomes of the wind turbine noise assessment undertaken in Chapter 11 (Noise and Vibration), the predicted noise levels associated with operational wind turbines at the proposed wind farm will be within best practice noise criteria. Chapter 11 (Noise and Vibration) states that low frequency noise and infrasound associated with wind turbines is expected to be below perceptibility thresholds and are not likely to result in any significant effects at NSLs. There are no criteria proposed to assess low frequency noise or infrasound as part of the EIAR.

Therefore, it is predicted that wind turbine noise associated with the proposed project will be not significant. It is therefore concluded that human health effects cited as an outcome of wind turbine noise and infrasound (such as nausea, disturbance of sleep, and tinnitus (ringing in the ear)) generated during the operational phase of the proposed wind farm is unlikely. Any effect in terms of wind turbine noise associated with the operational phase works would be negative, slight and long-term.

Electromagnetic interference

The proposed underground electrical cables will adhere to the international guidelines for ELF-EMF which are described by the International Commission on Non-Ionizing Radiation Protection (ICNIRP). This is a formal advisory agency to the WHO. The proposed wind farm will also adhere to the EU guidelines for human exposure to EMF. As the ICNIRP guidelines will not be exceeded, even directly above the underground cables, there will be no associated operational effects on Human Health.

The on-site substation for the proposed wind farm will be located as indicated in the planning drawings, available as part of this planning application. The distance from the nearest sensitive receptor to this on-site substation is approximately 350 m. The construction and electrical components of the substations and associated cabling will be to ESB and EirGrid specifications within the parameters assessed. No health agency has concluded that exposure to EMF from



power lines and other electrical sources is a cause of any long-term negative effects on human, plant or animal health.

Based on the above, this assessment concludes that significant effects on human health as a result of electromagnetic radiation are unlikely. Therefore, this assessment concludes that any effect in terms electromagnetic radiation / EMF on human health will likely be neutral, not significant and long-term.

Shadow flicker

Wind turbines can cast long shadows when the sun is low in the sky. 'Shadow flicker' is an effect that occurs when the rotating blades of a wind turbine cast a moving shadow over a building. The effect is experienced indoors where a moving shadow passes over a window in a nearby property and results in a rapid change or flicker in the incoming sunlight. Rotating wind turbine blades can cause brightness levels to vary periodically at locations where they obstruct the sun's rays. This can result in a nuisance when the shadow is cast over the windows of a building, primarily concerned with residential properties. This intermittent shadow flicker can be a cause of annoyance at residences near wind turbines.

Shadow flicker is largely dictated by the relative position of the turbine(s) and the window, in combination with weather conditions (i.e., presence of direct sunlight, wind speed and wind direction) and the time of day and year (i.e., affecting the position of the sun). Shadow flicker will occur if the turbine rotors are located between an observer within a dwelling and the sun. The frequency of the flicker effect is related to the frequency of the rotating turbine blades. It can also be dependent on the number of individual turbine rotors that are casting shadows on a window.

Chapter 16 (Shadow Flicker) discusses the shadow flicker phenomenon in detail and sets out the criteria which determine the occurrence of shadow flicker, which is summarised as:

- The presence of screening;
- The location and orientation of the property;
- The distance of the property from turbines;
- The presence of direct sunlight;
- The time of day and year;
- Wind speed;
- Direction of wind; and
- The presence of people.

The shadow flicker model undertaken provides a detailed report and illustration of the potential shadow effects on the identified shadow flicker receptors.

Modelling of predicted shadow flicker occurrence is presented in Chapter 16 (Shadow Flicker) and provides a detailed report and illustration of the potential shadow effects on the identified shadow flicker receptors and is assessed in consideration with the current 2006 WEDGs and the Draft Revised 2019 WEDGs. The full reports are provided in Appendix 16.1-16.3. For the operational phase of the proposed wind farm, the results of the shadow flicker assessment indicate that potential impact from shadow flicker in the worst-case scenario and before mitigation measures are applied at a defined number of receptors (see set out in Table 16-1, Chapter 16) will be likely, significant and long-term and with any individual occurrences of shadow flicker being momentary to brief in duration.



The implementation of mitigation measures, to screen shadow flicker effects from sensitive receptors and/or implement wind turbine control measures in accordance with a defined Turbine Shutdown Scheme, will ensure that any residual shadow flicker effects from the wind farm will be limited to less than 30 minutes per day (2006 WEDGs) at all shadow flicker receptors. This will be ensured through the mitigation measures set out in Chapter 16 (Shadow Flicker). The Applicant is committed to minimising any negative effects from the proposed wind farm on the local community. The Applicant has committed to near zero shadow flicker occurrence. There may be a very brief time where a shadow moves over a property in the time it takes for the proposed turbine rotor to come to a safe stop, between 1 and 2 minutes. This will depend on the reaction time of the shadow flicker control modules and the particular proposed turbine type, however this is considered a negligible effect as it would likely take at most 1-2 minutes to stop. In the interest of transparency, it has been called “near zero shadow flicker” in this EIAR to account for this fact that it will never be possible to entirely eliminate it, see Chapter 16 for further details.

Based on the above, this assessment concludes that significant negative effects on human health as a result of shadow flicker are unlikely. Any likely effect in terms shadow flicker on human health would be negative, slight to moderate, and long-term.

Health benefits

Aside from the potential socio-economic benefits previously discussed (see Section 5.4.2), there are significant environmental benefits associated with the operation of the proposed wind farm. The current and historical practice of fossil fuel combustion with the associated release of a range of pollutants including particulate matter, oxides of nitrogen, sulphur dioxide, carbon dioxide and many others is well documented. The release of these pollutants from the power generation sector is also a major contributor to global warming and the resulting changing effects on our climate.

The phasing out of electricity generation from burning fuels in Ireland is a key step in achieving Ireland’s 2030 decarbonisation ambition as set out in the Ireland’s Climate Action Plan 2025 (CAP25)⁴⁵ and the placement of fossil fuels in electricity generation by clean renewable wind energy will have significant benefits for air quality and slowing down global warming.

The proposed wind farm will play a significant role in contributing to the country’s national renewable electricity production and carbon emissions reduction targets by 2030, while also supporting a growing economy and population. During operation, the proposed wind farm will eliminate the need to generate the equivalent amount of electricity from fossil fuels, and it will therefore help to reduce total national greenhouse gas emissions. As a result, it will reduce our dependence on external energy sources, help improve our energy security of supply and make a major contribution to Ireland’s CAP25, which has set a target of 9 GW of onshore wind capacity by 2030.

The contribution of the proposed wind farm to a decrease in reliance on fossil fuel combustion will have a moderate to significant positive long-term effect on the health and well-being of the general population.

⁴⁵ https://assets.gov.ie/static/documents/Climate_Action_Plan_2025_updated_cover.pdf (Published April 2025)



5.4.3.3 Decommissioning Phase

The wind turbines are expected to have a lifespan of 35-years. Following the end of their useful life, the wind turbines may be replaced with a new set of machines, subject to planning permission being obtained, or the proposed wind farm will be decommissioned fully, with the exception of the electricity substation and site roads and drainage.

Upon decommissioning of the proposed wind farm project, the wind turbines will be disassembled in reverse order to how they were erected. All above ground turbine components will be separated, cut up to allow them fit on a standard articulated lorry and removed off-site for recycling.

Turbine foundations will remain in place underground and along with hardstands will be allowed to revegetate naturally. Leaving the turbine foundations and hardstands in-situ is considered a more environmentally prudent option, as to remove that volume of reinforced concrete and stone from the ground could result in potentially needless environment nuisances such as noise, dust and/or vibration. There would be no real environmental benefit from removing the foundations, as the concrete is underground, stable and inert if untouched. The proposed wind farm roadways will be in use for additional purposes to the operation of the wind farm (e.g. for forest/agricultural access) by the time the decommissioning of the project is to commence, and therefore it is more appropriate to leave the proposed wind farm roads in situ for future use.

The BESS will be removed during the decommissioning phase. The on-site substation and 110 kV grid connection will not be removed at the end of the useful life of the wind farm project as it will form part of the national electricity network. Therefore, the substation will be retained as a permanent structure and will not be decommissioned.

Should decommissioning be required, the activities required to facilitate wind turbine decommissioning and removal from site will be similar to those outlined for the construction phase, albeit in reverse and to a lesser extent and duration than during the construction stage. Therefore, for the purpose of this assessment, it is anticipated that the impacts on population and human health receptors associated with decommissioning phase will be no greater than those identified for the construction phase.



5.5 MITIGATION MEASURES

5.5.1 Embedded Mitigation

The design of the wind farm has included a minimum setback distance of four times the tip height from a proposed turbine to the curtilage of any residential property. A minimum set back of 720 m has been included in the design (with the exception of involved landowner, as described above) which is in excess of the minimum setback requirements stated in the 2006 and in line with Draft Revised 2019 WEDGs.

Extensive consideration has been given to the layout of the wind farm site and the position of the turbines in ensuring sufficient set-back distances from sensitive receptors and adjustment for noise, shadow flicker, visual impact and telecommunication impacts.

5.5.2 Construction Phase

No specific mitigation is proposed in relation population and human health during the construction phase other than what has already been set out within the CEMP and other chapters of this EIAR.

Where required, mitigation measures for other environmental aspects associated with the proposed project which may interact with the human environment are set out in the relevant chapters of this EIAR, namely:

- Chapter 8 Land, Soils and Geology;
- Chapter 9 Hydrology and Hydrogeology;
- Chapter 10 Air Quality;
- Chapter 11 Noise and Vibration;
- Chapter 12 Landscape and Visual Impact Assessment (LVIA);
- Chapter 14 Traffic and Transport;
- Chapter 15 Material Assets;
- Chapter 16 Shadow Flicker; and
- Chapter 17 Climate;
- Chapter 18 Major Accidents and Natural Disasters.

A cross reference of environmental factors is also presented in Chapter 19 (Interaction of the Foregoing).

All activities carried out by the appointed Contractor during the construction phase 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.

Health and safety plans will be developed prior to any construction taking place. A Health and Safety Plan covering all aspects of the construction process will outline Health and Safety requirements in detail. At the procurement stage, the Health and Safety Plan will be prepared on a preliminary basis and developed further at construction stage, with all hazards and risks identified and assessed.

The proposed TDR to allow for the transport of the turbines to the wind farm site will involve permanent works at one location and temporary works to facilitate delivery of oversized loads and turbine delivery, as discussed in Chapter 2 (Description of the Proposed Project) of the



EIAR. These works will be carried out to the relevant construction and road safety guidelines and will allow for the proposed turbine dimensions. Turbine components will be being transported at night when there is less traffic on the road and will be accompanied by Garda escort.

The potential for health and safety and environmental related risks / effects are greatly minimised through compliance with appropriate health and safety guidelines and the CEMP throughout the construction phase.

5.5.3 Operational Phase

No specific mitigation in relation to the operational phase and the population and human health assessment is proposed other than what has already been set out within the CEMP and the chapters of this EIAR. All activities carried out during the operational phase 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.

Where required, specific mitigation measures for other environmental factors discussed previously which may interact with the human environment health are discussed in their respective chapters of this EIAR. A cross reference of environmental factors is also presented in Chapter 19 (Interaction of the Foregoing).

- Chapter 8 Land, Soils and Geology;
- Chapter 9 Hydrology and Hydrogeology;
- Chapter 10 Air Quality;
- Chapter 11 Noise and Vibration;
- Chapter 12 Landscape and Visual Impact Assessment (LVIA);
- Chapter 14 Traffic and Transport;
- Chapter 15 Material Assets;
- Chapter 16 Shadow Flicker;
- Chapter 17 Climate; and
- Chapter 18 Major Accidents and Natural Disasters.

5.5.4 Decommissioning Phase

As stated previously the wind turbines are expected to have a lifespan of 35 years. Following the end of their useful life, the wind turbines may be replaced with a new set of machines, subject to planning permission being obtained, or the proposed wind farm will be decommissioned fully, with the exception of the electricity substation and site roads and drainage.

Should decommissioning be required, the activities required to facilitate wind turbine decommissioning and removal from site will be similar to those outlined for the construction phase, albeit in reverse and to a lesser extent and duration than during the construction stage.

All activities carried out by the appointed Contractor during the decommissioning phase 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.

Therefore, it is anticipated that the effects on population and human health receptors associated with the decommissioning phase will be no greater than those identified for the construction phase.



No specific mitigation is proposed for the decommissioning phase in respect of effects on population and human health.



5.6 RESIDUAL EFFECTS

5.6.1 Construction Phase

The proposed project will have a slight, positive residual effect on the local population through an influx of construction workers in the short-term. This influx is likely to cause a slight increase in local population over a short period of time resulting in a boost to the local economy through use of accommodation and spend in local shops and restaurants. Local suppliers will also receive additional business from the proposed project. This will have a moderate, short term, positive effect on the local economic activity.

It is considered likely that there will be a brief to temporary, not significant, negative residual effect on traffic, tourism and recreation amenity as a result of traffic delays associated with construction works and vehicle movements, and the associated traffic management measures, during the construction phase following the communication of guidance and information to the public on alternative available transport routes / diversions where required.

A short-term, negative and not significant residual effect is likely as a result of construction phase traffic (and associated noise and dust) on residential amenity and sensitive receptors.

Short-term, slight, negative residual effects are predicted on residential amenity and property values and neutral imperceptible effects on the local population and land use.

Overall, no significant effects are predicted during the construction phase.

5.6.2 Operational Phase

The proposed project will provide clean energy from a renewable resource and help to achieve targets in national energy and climate change policies. This is a direct, positive, long-term residual effect for the country which will benefit the local population and communities.

Short to medium term, slight, negative residual effects are predicted on property values.

In terms of population, the residual effects are expected to be positive particularly in terms of local economy, employment, tourism and amenity. Following the implementation of the mitigation measures prescribed in the relevant chapters of the EIAR, the operation of the proposed project is unlikely to have significant negative residual effects on the local or wider population.

The establishment of a Community Benefit Fund will be a long-term positive contribution to the local community in general. This aspect of the proposed project will have a positive long-term effect on the individuals living in the local community, including contributing to a positive effect on individuals physical and psychological health through the development of community led projects and maximising the level of local involvement in terms of influencing how the funds are spent.

Based on the literature reviewed, there is currently no reliable evidence to link wind turbines to negative health impacts. Every community will have vulnerable individuals; however, the health status of the community can only be established to certain level (i.e., small area statistics). Individual health status or potential vulnerability of individual receptors cannot be known or assessed. Emission limits and management, such as for noise or dust, allow for the protection of the most vulnerable, and so long as the limits are met, vulnerable individuals and the wider community are protected. Emissions arising from the operational phase of the proposed project



(i.e., air, dust, noise and vibration) are predicted to fall below the limits and/or thresholds set, therefore it is anticipated that significant negative effects on health, even amongst the vulnerable, are unlikely.

Overall, it is considered likely that there will be a long-term, slight, positive residual effect on the local population and human health as a result of the proposed project.

Following the implementation of the mitigation measures set out in the relevant chapters of the EIAR, the operation of the proposed project is unlikely to have significant negative residual effects on the human health.

5.6.3 Decommissioning Phase

As mentioned, the wind turbines proposed as part of the proposed wind farm are expected to have a lifespan of 35-years. Following the end of their lifespan, the wind turbines may be replaced with a new set of machines, subject to planning permission being obtained, or the proposed wind farm may be decommissioned fully, with the exception of the electricity substation. The activities required to facilitate wind turbine decommissioning and removal from site will be similar to those outlined for the construction phase, albeit in reverse and to a lesser extent and duration than during the construction stage.

It is anticipated that residual effects on population and human health receptors associated with decommissioning works will be no greater than those identified for the construction phase.

5.7 CUMULATIVE EFFECTS

In the assessment of cumulative effects, any other existing, permitted, or proposed projects in the surrounding area have been considered where they have the potential to generate in-combination or cumulative effects with the proposed project, see Section 4.3 of Chapter 4 for further details. The nearest operational wind farms to the proposed wind farm are Skehanagh and Carrig (Lacka) Wind Farms respectively, located 1.7 km and 2.7 km west of the nearest proposed turbine (T6). The proposed turbines for Carrig Wind Farm (AIR⁴⁶, ACP Ref:318689) are located 3.9 km to 5.3 km northwest of the T1 and T3, which received a grant permission from ACP in June 2025.

The potential for cumulative effects on the local population and human health, in particular air quality, water, noise, land / soils, shadow flicker, traffic and visual impacts are discussed in the relevant chapters.

5.7.1 Population

Considering other planned renewable energy and electrical upgrade projects in the area, the proposed project would be anticipated to have both a short and long term positive cumulative effect under the topic of population.

5.7.1.1 Land Use

Considering the other projects in the area, it is not anticipated that the proposed project will have a significant cumulative effect under the topic of land use.

⁴⁶ Atlantic Infrastructure Renewables



5.7.1.2 Population Trends

Considering the other projects in the area, it is not anticipated that the proposed project will have a significant cumulative effect under the topic of population trends. There is a potential positive cumulative effect in terms of population trends in the event of increased investment in the area from the Community Benefit Fund.

5.7.1.3 Property Receptors/Residential Amenity

In terms of property receptors and residential amenity, it is not anticipated that there will be significant cumulative effects on residential amenity due to the distance and type of projects planned in the local area.

5.7.1.4 Property Value

It is not anticipated that there will be significant cumulative effects for property values due to the nature of the proposed wind farm and the distance and type of projects planned in the local area. Any cumulative effect on property value in the area would likely be direct, negative, moderate, and short to medium-term.

5.7.1.5 Employment/Economy

Considering the other projects reviewed in the area, which would all individually contribute to the local employment and economy to varying degrees, the proposed project would be anticipated to have both a short and long term positive cumulative effect under the topic of employment/economy.

5.7.1.6 Tourism

All wind energy projects must now include a Community Benefit Fund, and although the details of how this fund is spent would have to be decided by a committee of representatives from industry and the local community. The Ballincor Wind Farm Community Benefit Fund is discussed further in Appendix 1-4 of this EIAR and has been developed in accordance with the terms and conditions of the Government's Renewable Energy Support Scheme (RESS). There is a potential positive cumulative effect for tourism in the event of increased investment in the area from the community benefit fund.

5.7.2 Human Health

There is the potential for both positive and negative cumulative effects under the topic of human health.

Negative cumulative effects primarily relate to traffic (road safety and dust) and the presence of additional work machinery being active in the area if the construction phase of the proposed project and other planned renewable energy/grid upgrade projects coincide.

Positive cumulative effects relate to long term improvements in air quality from decarbonising the national grid and contributions to climate targets.

No cumulative noise and vibration effects are anticipated during construction, operational or decommissioning phase (see Chapter 11).

Other developments proposed in the study area consist of smaller scale projects related to upgrades to electrical or water services, roadworks and retention of existing infrastructure.



5.7.3 Cumulative Effects Summary

The developments/projects/activities identified during the population and human health cumulative assessment (i.e., within 2 km) are not anticipated to have a significant cumulative effect on the above population and human health topics due to their type, scale and/or location with respect to the proposed project.

Overall, significant cumulative effects from the proposed project on population and human health when considered alongside the other developments/projects/activities in the area are not anticipated.



5.8 CONCLUSION

There is currently no credible evidence to link wind turbines to negative health impacts. Emission limits, such as for noise or dust, are set to protect the most vulnerable in a community rather than the robust. Compliance with the limits set out in best practice guidelines (described in the relevant chapters on noise and vibration, air quality, shadow flicker) will ensure that individuals and communities are protected.

Design stage considerations, such as turbine locations, and the mitigation measures outlined in the relevant technical chapters will be put in place to ensure that the emissions and effects from the proposed project are in compliance with the standards to ensure that there will be no significant negative effects on health, even amongst the most vulnerable.

Following consideration of the residual effects as set out in Section 5.6, it is considered that the proposed project will not result in a significant negative effect on population and human health in the local and regional area. **In summary, there are no likely significant effects during the construction, operation or decommissioning phases.**



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