4.7 Decommissioning Stage

Decommissioning of the existing wind farm is required to be carried out in August 2025, i.e. 20 years from the grant of permission for the 11 no. turbines, under the current planning permission. The Proposed Development would extend the operation of the existing wind farm for a further 20 years, thereby postponing decommissioning until 2045. It is also proposed to permanently extend the operational life of the existing onsite 110kV substation, as permitted under WCC Ref 2004/4702 and subsequently amended under WCC Ref 2005/3945.

Condition 8 of the current Planning Permission states:

> *'Upon termination of use of the wind farm, the mast and turbines shall be dismantled and removed from the site and the site shall be restored to its existing condition in consultation with the planning authority. Prior to the commencement of development, the developer shall lodge with the County Council a cash deposit, a bond of insurance company, or other security to secure the satisfactory reinstatement of the site on the cessation of the project. The form and amount of the security shall be agreed between the Council and the developer or, in default of agreement, shall be determined by An Bord Pleanála'.*

It is considered that this Condition is not appropriate in the current environment, as returning the site to its original condition would involve removal of site roads and turbine foundations, which would require significant excavation and ground works. As part of the Proposed Development, a more environmentally sensitive Decommissioning Plan is presented in Appendix 4-4 of this EIAR and outlined below.

Upon decommissioning of the Proposed Development, the wind turbines will be disassembled in reverse order to how they were erected. All above-ground turbine components will be separated and removed offsite for reuse or recycling. The Applicant has made a commitment to recycle as many components as possible, including the utilisation of both currently tested recycling methods and future options that may be available by 2045.

During decommissioning, it may be possible to reverse some of the potential impacts caused during the initial construction of the wind farm by rehabilitating construction areas such as turbine bases and hard standing areas. This will be done by allowing these areas to naturally revegetate and regenerate which reduces run-off and sedimentation.

In November 2020, Wind Europe published the '*Decommissioning of Onshore Wind Turbines*'[2] in which EU-wide industry guidelines were amalgamated and put forward. This document was submitted to the International Electrotechnical Commission TC88 for Wind Turbines, as a starting point towards the creation of an international standard for the decommissioning of onshore wind turbines. These guidelines present the main steps a decommissioning project should perform. This document outlines that the decommissioning plan is the key document for the decommissioning of a wind farm. A decommissioning plan of a wind farm must reflect national and, in some cases, regional or local legislation. The guidelines provided in this document provide key examples of decommissioning plans from a number of European countries, including Germany, France, Denmark and the Netherlands. Wind turbines are a valuable source of resources that can be reintroduced into the circular economy. The aim should be for use over a long period of time. However, at some point, wind turbines need to be decommissioned as they reach the end of their operational life. The '*Decommissioning of Onshore Wind Turbines*' report therefore presents a number of scenarios in which wind turbines can be decommissioned in a safe and more sensitive manner than has been put forward in the past.

As noted in the Scottish Natural Heritage (SNH) report *Research and Guidance on Restoration and Decommissioning of Onshore Wind Farms* (SNH, 2013) reinstatement proposals for a wind farm are

[2] *https://windeurope.org/intelligence-platform/product/decommissioning-of-onshore-wind-turbines/*

typically made far in advance, so within the proposed (10-15)-year extension of operation of the site, technological advances and preferred approaches to reinstatement are likely to change. According to the SNH guidance, it is therefore *"best practice not to limit options too far in advance of actual decommissioning but to maintain informed flexibility until close to the end-of-life of the wind farm".*

The final Decommissioning Plan will therefore be prepared in line with the above guidance and agreed with the Local Authority at least three months prior to decommissioning of the Proposed Development.

5. POPULATION AND HUMAN HEALTH

5.1 Introduction

This section of the Environmental Impact Assessment Report (EIAR) identifies, describes and assesses the potential effects of the Proposed Development on Human Beings, Population and Human Health and has been completed in accordance with the EIA guidance and legislation set out in Chapter 1: Introduction of this EIAR.

The full description of the Proposed Development is provided in Chapter 4 of this EIAR.

One of the principal concerns in the development process regarding the Proposed Development is that human beings, as individuals or communities, should experience no significant diminution in their quality of life from the direct, indirect or cumulative effects arising from the operation and decommissioning of a development. Ultimately, all the impacts of a development impinge on human beings, directly and indirectly, positively and negatively. The key issues examined in this chapter of the EIAR include population, human health, employment and economic activity, land-use, residential amenity, property values and health and safety.

5.2 Statement of Authority

This section of the EIAR has been prepared by Keelin Bourke and Gráinne Griffin, and reviewed by Sean Creedon, all of MKO.

Keelin is an Environmental Scientist with MKO having joined the company in September 2023. Keelin holds a BSc (Hons) in Environmental Science from University College Cork and an MSc (Dist) in Environmental Engineering from Trinity College Dublin. Prior to taking up her position with MKO, Keelin worked as an Environmental Health and Safey Officer in an EPA licensed Waste Transfer Station in Cork City. Keelin's current key strengths and areas of expertise are in environmental surveying, report writing and environmental mapping. Since joining MKO, Keelin has become a member of the MKO Environmental Renewables Team which work on producing high quality Environmental Impact Assessment Reports for a variety of Renewable Energy clients.

Gráinne is an Environmental Scientist with MKO with over 4 years' experience in the environmental consultancy sector, which included ecological roles as a marine mammal observer and an aerial survey operator. Gráinne holds a BSc in Applied Freshwater & Marine Biology from ATU Galway and a MSc in Environmental Leadership from the University of Galway. Gráinne's key strengths and areas of expertise include managing and researching reports in areas of environmental conservation and policy, ecology, renewable energy, marine spatial planning, and climate action. Gráinne has experience in report writing, including Appropriate Assessments, Natura Impact Statements, feasibility studies and EIA screening reports. Gráinne also holds skills in environmental restoration project research and design. Since joining MKO Gráinne has been involved in coordinating environmental site work for a wide range of developments, assisting in stakeholder engagement, scoping exercises, organising and attending pre-application meetings with local authorities and An Bord Pleanála. Within MKO, Gráinne has been assisting managers in the coordination and production of EIARs for largescale SID wind energy developments. Gráinne also holds a membership with the Chartered Institute of Ecology and Environmental Management (CIEEM).

Sean is an Associate Director in the Environment Team at MKO. He oversees a team of highly skilled environmental professionals working on EIAR for large-and medium scale Renewable Energy infrastructure. Sean has directed and overseen multiple renewable energy projects across wind, solar, battery and hydrogen as well as a range of thermal and other energy related developments. He has worked on the planning and environmental impact elements within all stages of wind farm project

delivery. He is a member of the MKO senior management team responsible for developing the business, mentoring team members, fostering a positive culture and promoting continuous employee professional development. Sean has over 22 years' experience in program and project development, holds an MSc from NUI Galway and a Diploma in Project Management from Institute of Project Management Ireland.

5.3 Population

5.3.1 Receiving Environment

The Proposed Development relates to the original 11 turbine wind farm, as described in full detail in Chapter 4 of this EIAR.

This socio-economic study of the receiving environment included an examination of the population and employment characteristics of the area. Information regarding population and general socio-economic data were sourced from the Central Statistics Office (CSO), the Wexford County Development Plan 2022-2028, Fáilte Ireland and any other literature pertinent to the area. The study included an examination of the population and employment characteristics of the area. This information was sourced from the Census of Ireland 2022, which is the most recent census for which a complete dataset is available, also the Census of Ireland 2016, the Census of Agriculture 2010 and from the CSO website (www.cso.ie). Census information is divided into State, Provincial, County, Major Town and Electoral Division (ED) level.

The existing Castledockrell Wind Farm is located 8.1km west of Ferns and 6.5km south of Bunclody, Co. Wexford; please refer to Figure 1-1 of Chapter 1: Introduction, for the exact site location. The existing Wind Farm comprises lands in the townlands of Kilcullen, Ballynelahillan, Carranroe, Tomatee, Knockduff and Sroughmore. The (EIAR Site Boundary covers an area of approximately 97 hectares (ha) with a development footprint of approximately 3.23 hectares.

Current land-use within the Proposed Development site is predominantly agricultural, which is split between pastural and arable land. Within the wider landscape of the existing Castledockrell Wind Farm, land use bordering the site comprises of agricultural grassland, tillage and one-off rural housing. No additional changes to the current land uses of agricultural grassland and tillage are proposed for the site. The existing land uses of the Proposed Development site will continue in conjunction with the existing wind farm site should it be granted planning permission.

In order to assess the population in the vicinity of the Proposed Development the Population Study Area for the Population section of this EIAR was defined in terms of the Electoral Divisions (EDs) where the Proposed Development site is located, and where relevant, nearby EDs which may be affected by the Proposed Development. The existing Castledockrell Wind Farm lies within two EDs: Castledockrell and Ballindaggan as shown in Figure 5-1. Both of these EDs will collectively be referred to hereafter as the Population Study Area for the purposes of the assessment contained within this chapter. The Population Study Area has a population of 1,320 persons, as of 2022 and comprises a total land area of 41.16km^2 (Source: CSO Census of the Population 2022).

73 no. properties exist within 1km of the existing turbine locations, 69 no. are inhabitable dwellings, and 4 no. have been granted planning permission. 3 no. of those properties belong to the landowners who form part of the Proposed Development. 25 no. properties exist within 500m of the existing turbine locations, all of which are inhabitable dwellings. 3 no. of those properties belong to the landowners who form part of the existing Castledockrell Wind Farm. The closest inhabitable dwelling is located approximately 278 metres from the nearest turbine location (T10).

For the shadow flicker assessment, which is further detailed in Section 5.8 below, the Shadow Flicker Study Area is defined as ten times rotor diameter from each turbine as set out in the '*Wind Energy Development Guidelines for Planning Authorities 2006*' (DoEHLG) (referred to as the Guidelines). The

Shadow Flicker Study Area for this assessment is 710 metres based on a rotor diameter maximum of 71 metres and is further detailed in Section 5.8.5 below.

5.3.2 Baseline Population

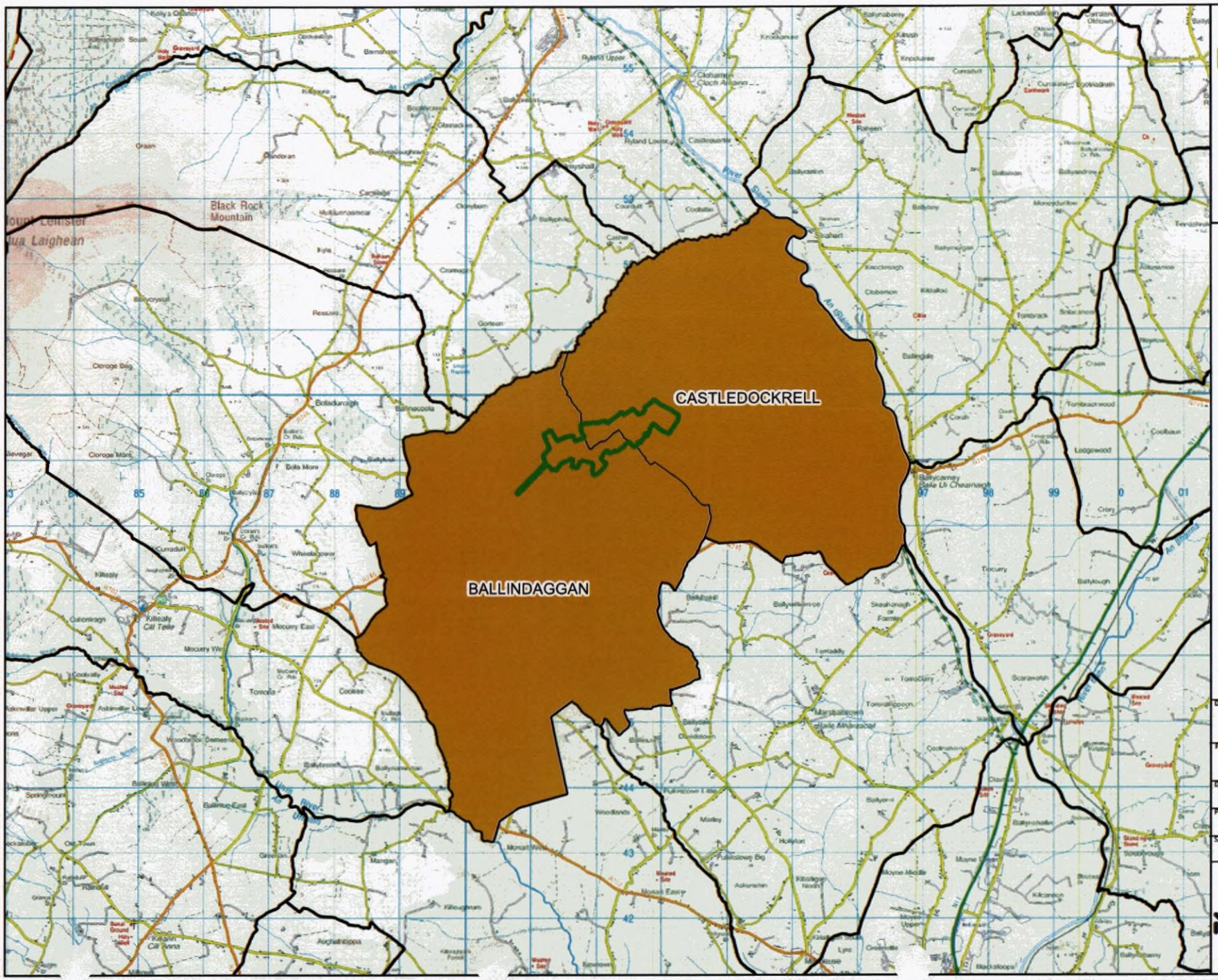
The existing Castledockrell Wind Farm consists of 12 no. Enercon E70 model wind turbines, with a tip height of 120 metres and a rotor diameter of 71 metres and a hub height of 84.5m. As set out in Chapter 1 of this EIAR, the Proposed Development consists of the extension of lifetime of 20 years to 11 no. of the 12 no existing turbines (i.e. T1-T11), and a permanent extension to the existing onsite 110kV substation.

In the period between the 2016 and the 2022 Census, the population of Ireland increased by 8.1%. During this time, the population of County Wexford grew by 9.5% to a 163,919 populace. Other population statistics for the State, County Wexford, and the Population Study Area have been obtained from the Central Statistics Office (CSO) and are presented in Table 5-1.

Table 5-1 Population 2016 and 2022 (Source: CSO)

Area	Population Change		% Population Change
	2016	2022	2016-2022
State	4,761,865	5,149,139	8.1%
County Wexford	149,722	163,919	9.5%
Population Study Area	1225	1320	7.8

The data presented in Table 5-1 shows that the population of the Population Study Area increased by 7.8% between 2016 and 2022. There is an increase in population growth for the Population Study Area but the population growth rate is below both that of County Wexford and the State. When the population data is examined in closer detail, it shows that the rate of population increase within the Population Study Area differs between the two EDs comprising the Population Study Area. Castledockrell ED increased its population by 17.8% to 502 persons while Ballindaggan ED increased its population by 2.4% to 818 persons.



Map Legend

- EIAR Site Boundary
- Population Study Area
- Electoral Divisions

N

Drawing Title

Population Study Area

Project Title

Castledockrell Wind Farm
Extension of Operational Life

Drawn By	Checked By
KB	BT
Project No.	Drawing No.
210847	Figure 5-1
Scale	Date
1:75,000	2025-02-26

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5.3.3 Population Density

The population densities recorded within the State, County Wexford, and the Population Study Area during the 2016 and 2022 Census are shown in Table 5-2.

Table 5-2 Population Density in 2016 and 2022 (Source: CSO)

Area	Population Density (Persons per square kilometre)	
	2016	2022
State	67.76	73.27
County Wexford	63.25	69.25
Population Study Area	29.8	32.1

The population density of the Population Study Area recorded during the 2022 Census was 32.1 persons per km^2. This figure is significantly lower than the national population density of 73.27 persons per km^2 and the Wexford County population density of 69.25 persons per km^2. These findings indicate that the Population Study Area has a low population density.

Similar to the trends observed in Section 5.3.2 above, the population density recorded across the Population Study Area varies between EDs. Ballindaggan ED has a slightly bigger population density of 35.6/km^2 in comparison to Castledockrell 27.6/km^2.

5.3.4 Household Statistics

The number of households and average household size recorded within the State, County Wexford, and the Population Study Area during the 2016 and 2022 Censuses are shown in Table 5-3.

Table 5-3 Number of Household and Average Household Size 2016 and 2022 (Source: CSO)

Area	2016		2022	
	No. of Households	Avg. Size (persons)	No. of Households	Avg. Size (persons)
State	1,702,289	2.75	1,841,152	2.74
County Wexford	54,289	2.73	59,389	2.72
Population Study Area	445	2.8	463	2.9

In general, the figures in Table 5-3 show that the number of households within the State and County has increased from 2016 to 2022. The number of households in the Population Study Area has also increased slightly, while the average size of the household from 2016 to 2022 has decreased by 3.0%. Average household size recorded within the Population Study Area during the 2022 Census is above both the County and State level. The recorded average household size for the county level saw a slight decrease of 0.05% for 2022 along with a slight decrease in average size for state level. Similar to the trends observed above, the average household size recorded across the Population Study Area varies between EDs. EDs comprising the Population of Castledockrell ED had 2.96 persons per household recorded in 2022, while the Ballindaggen ED had 2.86 persons per household.

5.3.5 Age Structure

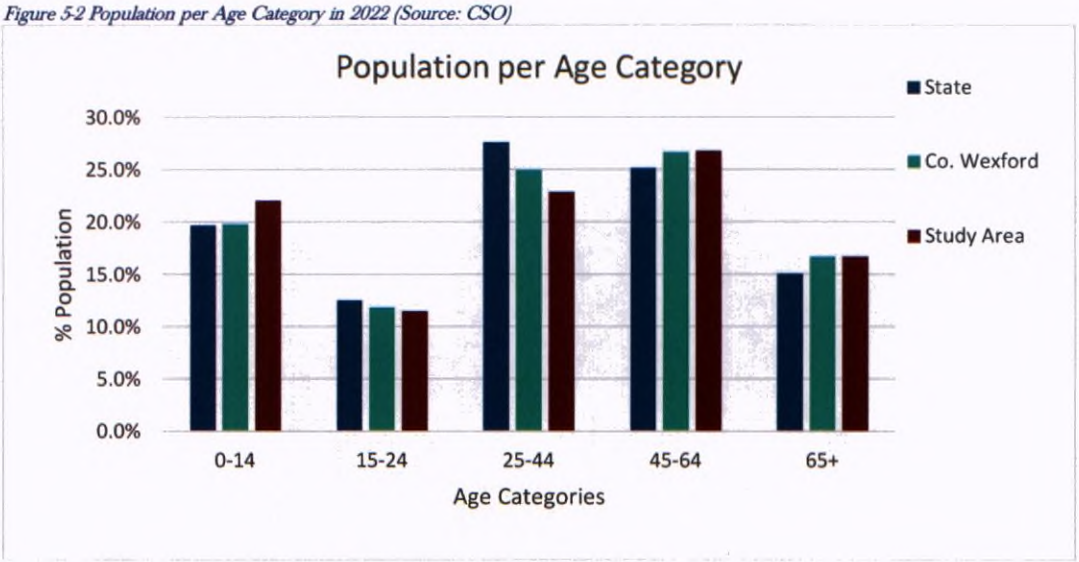
Table 5-4 presents the population percentages of the State, County Wexford, and the Population Study Area within different age groups as defined by the Central Statistics Office during the 2022 Census. This data is also displayed in Figure 5-2.

Table 5-4 Population per Age Category in 2022 (Source: CSO)

Area	Age Category				
	0 - 14	15 – 24	25 - 44	45 - 64	65 +
State	19.7%	12.5%	27.6%	25.1%	15.1%
County Wexford	19.8%	11.8%	25.0%	26.7%	16.7%
Population Study Area	20.0%	11.3%	22.0%	30.0%	16.7%

The proportion of the Population Study Area population is broadly similar to those recorded at State and county level for most categories. There are inappreciable discrepancies in the 25-44 age category, where the population study areas population percentage is 22.0% which is slightly lower in comparison to the county and state level. In contrast, the age range 45-64 has a higher percentage in the population study area when compared with County and State level. For the Population Study Area, the highest population percentage also occurs within this 45-64 age category similarly to the County level whereas the State levels highest population percentage occurs in the 25-44 age bracket.

Figure 5-2 Population per Age Category in 2022 (Source: CSO)



5.3.6 Employment and Economic Activity

5.3.6.1 Economic Status of the Population Study Area

The labour force consists of those who are able to work, i.e., those who are aged 15+, out of full-time education and not performing duties that prevent them from working. In 2022, there were 2,531,099 persons in the labour force in the State. Table 5-5 shows the percentage of the total population aged 15+ who were in the labour force during the 2022 Census. This figure is further broken down into the

percentages that were at work or unemployed. It also shows the percentage of the total population aged 15+ who were not in the labour force, i.e., those who were students, retired, unable to work or performing home duties. In Census 2022, for the first time ever, two categories of unemployment detail were included, Long-term Unemployment and Short-term Unemployment, for the purpose of this assessment, both categories have been grouped into one Unemployment group.

Table 5-5 Economic Status of the Total Population Aged 15+ in 2022 (Source: CSO)

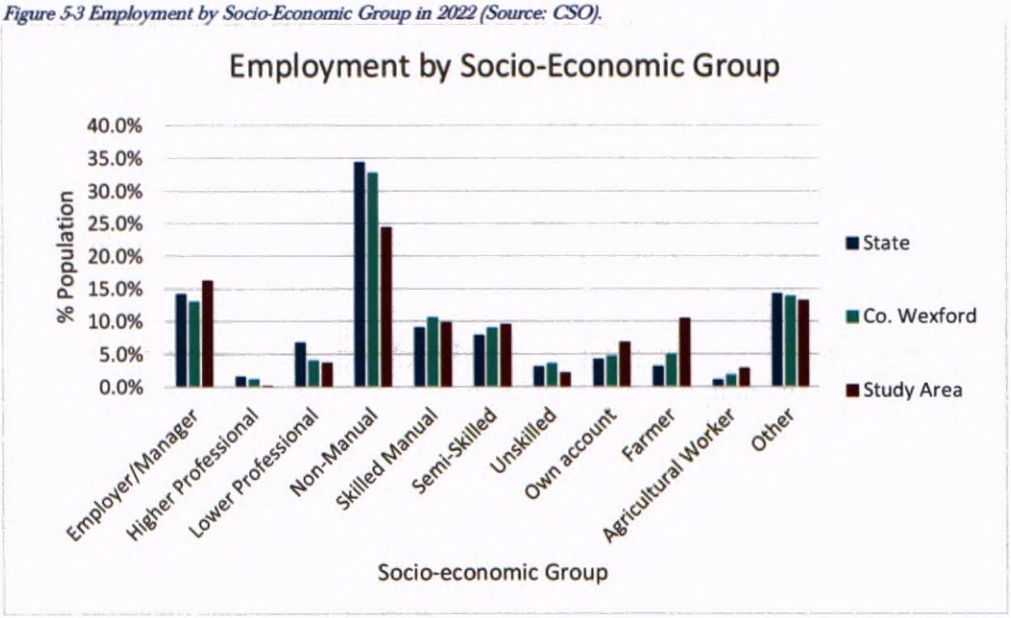
Status		State	County Wexford	Population Study Area
% of population aged 15+ who are in the labour force		61.2%	58.64%	59.09%
% of which are:	At work	91.67%	90.16%	92.26%
	Looking	1.36%	1.49%	1.65%
	Unemployed	6.96%	8.35%	6.10%
% of population aged 15+ who are not in the labour force		38.82%	41.36%	41.01
% of which are:	Student	28.6%	22.89%	25.36%
	Home duties	16.96%	18.95%	21.8%
	Retired	40.96%	42.92%	39.34%
	Unable to work	11.79%	13.45%	12.09%
	Other	1.69%	1.79%	1.42%

Overall, the principal economic status of those living in the Population Study Area is lower than that recorded at State and but higher than that of County level. During the 2022 Census, the percentage of people over the age of 15 who were in the labour force was similar at both county and Population Study Area level, but which were overall slightly lower than within the State with 61.2% of people over the age of 15 in the labour force. Of those who were not in the labour force during the 2022 Census, the highest percentage of the Population Study Area population were 'Retired' individuals, similar to state and county populations.

5.3.6.2 Employment by Socio-Economic Group

Socio-economic grouping divides the population into categories depending on the level of skill or educational attainment required. The 'Higher Professional' category includes scientists, engineers, solicitors, town planners and psychologists. The 'Lower Professional' category includes teachers, lab technicians, nurses, journalists, actors and driving instructors. Skilled occupations are divided into manual skilled such as bricklayers and building contractors; semi-skilled such as roofers and gardeners; and unskilled, which includes construction labourers, refuse collectors and window cleaners. Figure 5-3 shows the percentages of those employed in each socio-economic group in the State, County Wexford, and the Population Study Area during 2022.

Figure 5-3 Employment by Socio-Economic Group in 2022 (Source: CSO).



The highest level of employment within the Population Study Area was recorded in the Non-Manual category. The levels of employment within the Employers/Managerial, Semi-Skilled, Own Account Workers and Farmers and Agricultural Workers were higher than those recorded for the State and Wexford County, while those recorded within the Higher Professional, Lower Professional, Non-Manual, Unskilled, and All Other Gainfully Occupied were lower. The remaining categories, Skilled Manual, fall in the middle of State and County averages.

The CSO employment figures grouped by socio-economic status includes the entire population for the Population Study Area, County and State in their respective categories. As such, the socio-economic category of 'Other' is skewed to include those who are not in the labour force.

5.3.6.3 Employment and Investment Potential in the Irish Wind Energy Industry

5.3.6.3.1 *Background*

A report entitled '*Jobs and Investment in Irish Wind Energy – Powering Ireland's Economy*' was published in 2009 by Deloitte, in conjunction with the Irish Wind Energy Association (IWEA). This report focused on the ability of the Irish wind energy industry to create investment and jobs. In terms of the overall economic benefit to be obtained from wind energy, the report states in its introduction:

> *"Ireland is fortunate to enjoy one of the best wind resources in the world. Developing this resource will reduce and stabilise energy prices in Ireland and boost our long-term competitiveness as an economy. It will also significantly reduce our dependence on imported fossil fuels."*

More recently, a report published in 2014 by Siemens entitled '*An Enterprising Wind - An economic analysis of the job creation potential of the wind sector in Ireland*', also in conjunction with the Irish Wind Energy Association (IWEA), concluded that, *'a major programme of investment in wind could have a sizeable positive effect on the labour market, resulting in substantial growth in employment.'*

The report considers the three potential types of direct employment created, as a result of increased investment in wind energy, to be:

- **Wind Energy Industry Employment:**
  - Installation
  - Development
  - Planning
  - Operation and Maintenance
  - Investor activity
- Electricity Grid Network Employment
- Potential Wind Turbine Manufacturing Employment

5.3.6.3.2 Energy Targets

The Climate Action Plan 2024 (CAP)[1] was launched in December 2024 by the Department of Communications, Climate Action and Environment. Following on from Climate Action Plans 2019, 2021 and 2023, CAP 2024 sets out the roadmap to deliver on Ireland's climate ambition. It aligns with the legally binding economy-wide carbon budgets and sectoral ceilings that were agreed by Government in July 2022 following the Climate Action and Low Carbon Development (Amendment) Act 2021, which commits Ireland to a ***legally binding target of net-zero greenhouse gas emissions no later than 2050, and a reduction of 51% by 2030.*** **The CAP 2024 sets out indicative ranges of emissions** reductions for each sector of the economy. Under this revised CAP, Ireland has set targets of 6 GW of onshore wind energy by 2025, to increase to 9 GW of onshore wind energy by 2030, with at least 5 GW of offshore wind energy by the end of 2030.

5.3.6.3.3 Employment Potential

The 2014 Siemens and IWEA "***An Enterprising Wind: An economic analysis of the job creation potential of the wind sector in Ireland***" report predicted that the wind energy sector in Ireland would result in 6,659 direct jobs in a scenario where 4GW capacity is achieved by 2020. This figure of 6,659 is broken down further; 5,596 of these jobs are associated directly with the construction and installation of windfarms, while the remaining 1,063 jobs are associated with the national grid. Under this scenario this contributes 1.66 direct jobs per Megawatt (MW) of wind capacity throughout the various stages of installation. According to Wind Energy Ireland, the installed wind capacity in Ireland is over 4.2GW as of February 2021, which would support employment during the last decade. Ireland needs to achieve a total of 8.2GW of onshore wind by 2030 which will further support further employment.

The Sustainable Energy Authority of Ireland estimates, in their '***Wind Energy Roadmap 2011-2050***',[2] note that '***Onshore and offshore wind could create 20,000 direct installation and O&M jobs by 2040***'. Furthermore, '***wind energy resource represents a significant value to Ireland by 2050. This value is presented in terms of its ability to contribute to our indigenous energy needs, the benefits of enhanced employment creation and investment potential, and the ability to significantly abate carbon emissions to 2050***.

The 2014 report '***The Value of Wind Energy to Ireland***', published by Pöyry[3], stated that growth of the wind sector in Ireland could support 23,850 jobs (construction and operational phases) by 2030. If Ireland instead chooses to not develop any more wind, then by 2030 the country will be reliant on natural gas for most of our electricity generation, at a cost of €671 million per annum in fuel import costs.

Internationally, a report issued by WindEurope in September 2017, entitled '***Wind energy in Europe: Scenarios for 2030***' details various scenarios in Europe in respect to the EU target for renewable energy. According to WindEurope's High Scenario, which assumes favourable market and policy conditions

[1] *Government of Ireland - Climate Action Plan 2024 << https://www.gov.ie/pdf/?file=https://assets.gov.ie/284675/70922dc5-1480-4c2e-830e-295afd0b5356.pdf#page=null >>*
[2] ***SEAI (2019),*** *https://www.seai.ie/publications/Wind_Energy_Roadmap_2011-2050.pdf*
[3] ***Pöyry (2014),*** *https://windenergyireland.com/images/files/9660bd6b05ed16be59431aa0625855d5f7dca1.pdf*

including the achievement of a 35% EU renewable energy target (slightly higher than the 32% EU target for renewables), '*397 GW of wind energy capacity would be installed in the EU by 2030, 298.5 GW onshore and 99 GW offshore. In this scenario, the wind energy industry would invest €351bn by 2030, and it would create 716,000 jobs*'.

A more recent report which was issued by WindEurope in February 2022, titled '*Wind Energy in Europe: 2021 Statistics and the Outlook for 2022-2026*' details various scenarios in Europe in respect to the EU target for renewable energy. According to WindEurope's report, '*Europe installed 17GW (11 GW in the EU-27) of new wind capacity in 2021. This is not even half of what the EU should be building to be on track to deliver its 2030 Climate Energy Goals.* The report continued on to state that *'We expect Europe to install 116 GW of new wind farms over the period from 2022-2026. Three quarters of these new capacity additions will be onshore wind.'* The report also states that '*The European Commission modelling shows that we need at least 79 GW offshore wind, but National Government have pledged to build at least 92 GW offshore wind capacity by 2030.'*

As of February 2024, there were 6,094 Megawatts (MW) of wind energy capacity installed on the island of Ireland[4]. Of this, 4,730.4 MW was installed in the Republic of Ireland. The majority of the Republic of Ireland's installed wind energy capacity is located in Counties Donegal, Galway, Cork, Clare and Kerry, contributing to employment potential on the Island of Ireland.

5.3.6.3.4 Economic Value

The 2009 Deloitte report titled 'Jobs and Investment in Irish Wind Energy – Powering Ireland's Economy'[5] states that the construction and development of wind energy projects across the island of Ireland would involve approximately €14.75 billion of investment from 2009 up to 2020, €5.1 billion of which would be retained in the Irish economy (€4.3 billion invested in the Republic of Ireland and €0.8 billion in Northern Ireland).

The report also states that increasing the share of our energy from renewable sources will deliver significant benefits for the electricity customer, the local economy and society. It estimates that between 25 and 30% of capital investment is retained in the local economy. This typically flows to companies in construction, legal, finance and other professional services. The report states:

> *".. the framework acknowledges the need to put the energy/climate change agenda at the heart of Ireland's economic renewal. Every new wind farm development provides a substantial contribution to the local and national economy through job creation, authority rates, land rents and increased demand for local support services. More wind on the system will also result in lower and more stable energy prices for consumers while helping us achieve our energy and emissions targets."*

A 2019 report by Baringa, '*Wind for a Euro: Cost-benefit analysis of wind energy in Ireland 2000-2020*',[6] has analysed the financial impact for end consumers of the deployment of wind generation in Ireland over the period 2000-2020. The report calculates how the costs and benefits for consumers would have differed if no wind farms had been built. The analysis indicated that the deployment of 4.1 GW of wind generation capacity in Ireland between 2000 and 2020 (2018-2020 results being projective) will result in a total net cost to consumers, over 20 years, of €0.1bn (€63 million to be exact), which equates to a cost of less than €1 per person per year since 2000. Further cost benefit analysis noted that wind energy has delivered €2.3 billion in savings in the wholesale electricity market. As such, the economic benefit of renewable energy to consumers is greater than what would have been if Ireland did not invest in wind power. This tallies with the Deloitte report which indicated that more wind energy feeding into the national grid would result in lower and more stable energy costs for consumers.

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[4] EirGrid (2024), << https://www.eirgrid.ie/grid/system-and-renewable-data-reports >>
[5] *Deloitte, Irish Wind Energy Association 2009 Jobs and Investment in Irish Wind Energy Powering Ireland's Economy. Available at: https://windenergyireland.com/images/files/9660bd5e72bcac538f47d1b02cc6658c97d41f.pdf*
[6] *Baringa. (2019), << https://windenergyireland.com/images/files/baringa-wind-for-a-euro-report-january-2019.pdf >>*

Furthermore, in May 2020, IWEA released its 70by30 Implementation Plan Reports[7] which further details the savings that can be made from the continuation of onshore wind. The report, entitled '*Saving Money - 70by30 Implementation Plan*', notes that '*Baringa calculated previously that if onshore wind in Ireland can be delivered at €60/MWh, on average, between 2020 and 2030, then the 70 per cent renewable electricity target set out in the Climate Action Plan will actually be cost neutral for the consumer. If we can achieve prices under €60/MWh then Ireland's electricity consumers will be saving money*'.

The Proposed Development will, if consent is granted, continue to contribute to the economic value that renewable energy brings to Ireland by reducing the reliance of fossil fuels in Ireland and assist in meeting our renewable energy targets as set out by the EU.

5.3.7 Land-Use

The original 11 turbine wind farm site is currently operational as a wind farm and has been since 2011.

The predominant land-use within the overall Population Study Area is agricultural, with the data contained in Table 5-6 below.

The total area of farmland within the Population Study Area measures approximately 3772 hectares, comprising approximately 91.64% of the Population Study Area, according to the CSO Census of Agriculture 2020. There are 94 agricultural holdings within the Population Study Area, with an average farm size of 50.6 hectares.

Table 5-6 Farm Size and Classification within the Population Study Area in 2020 (Source: CSO)

Characteristic	Value
Size of Population Study Area	4116 ha
Total Area Farmed within Population Study Area	3772 ha
Farmland as % of Population Study Area	91.64%
Breakdown of Farmed Land in Population Study Area	**Area (hectares)**
Total Grassland	1,619.6
Total Cereals	1907.6
Total Cattle Herd (Beef)	3355
Total Dairy Cows	535*
Total Sheep	6744

**Data suppressed for confidentiality reasons.*

[7] *IWEA (2020), https://windenergyireland.com/images/files/70by30-implementation-plan-reports.pdf*

5.3.7.1 Equine Industry

There are 4 stud farms or equestrian facilities identified within 10km of the Proposed Development. The closest such facility is Anvil Lodge Riding School, Ballindaggan which is located approximately 3.5km to the southwest of the existing Castledockrell Wind Farm. Monbeg Sport Horses is located approximately 3.7km southwest, and Monart Equestrian and Kilack Stud are located south of the Proposed Development at an approximate distance of 8.8km and 9.7km respectively.

There have been no known studies carried out in Ireland on the impacts of wind farms on the equine industry. In 2014 Marshall Day Acoustics published a document entitled ***'Summary of research of noise effects on Animals'***. The Marshall Day study specifically assessed the impacts of varying levels of noise on horses in three differing behavioural settings. The three behavioural settings studied included horses in stables, breeding mares and racing horses.

Horses in Stables

The study by Marshall Day Acoustics found that horses, stabled at the Flemington Racecourse Australia at the same time as a music concert on the site, when exposed to $L_{Aeq,15min}$ of 54-70 dB showed little response to the music noise unless the noise was particularly impulsive. The horses stabled at Flemington Racecourse were thoroughbreds, and stables were located 200 metres from the concert.

Breeding Mares

A study by Le Blanc et al (1991) and summarised by Marshall Day studied the effects of simulated aircraft noise over 100 dB and visual stimuli on pregnant mares. The study focused on pregnancy success, behaviour, cardiac function, hormonal production and rate of habitation. Le Blanc concluded the following:

> ***Le Blanc et al (1991) found that birth success of pregnant mares was not affected by F-14 jet aircraft noise. While the 'fright-flight' reaction was initially observed, the mares did adapt to the noise.***

Racehorses

Marshall Day Acoustics concluded the following in relation to their study on the impacts of noise on racehorses:

> ***Marshall Day Acoustics have observed horses grazing in paddocks directly under the main approach path of the Christchurch International Airport where noise levels are in excess of 90 dB (LAmax) during an aircraft flyover. Although these horses are arguably "used to" the noise, there was generally little recognition by them of an aircraft passing, let alone any sign of disturbance. This tends to support the conclusions by Le Blanc et al (1991).***

5.3.7.1.2 *Guidance*

In the absence of national policy or guidance in relation of the development of wind farms near stud farms/equestrian centres, MKO have reviewed the British Horse Society's ***'Advice on Wind Turbines and Horses – Guidance for Planners and Developers'***. A copy of the guidance document is included in Appendix 5-1 of this EIAR.

The British Horse Society policy statement states the following in relating to the siting of wind turbines in the vicinity of equine businesses:

> ***'The BHS strongly recommends that the views and concerns of local equestrians should be recognised and taken into account when determining separation distances and that normally a***

minimum separation distance of 200m or three times blade tip height (whichever is greater) will be required between a turbine and any route used by horses or a business with horses.'

As mentioned previously, the closest stud farm or equestrian facility is located approximately 3.5km from the Proposed Development site. The existing turbines and closest equestrian centre are at a distance beyond that of the British Horse Society's recommended minimum separation distance of 200 metres as noted above. The minimum separation distance from existing turbines exceeds the 360 metres separation distance (based on three times the turbine blade tip height 120 metres) between a turbine and any business with horses.

5.3.8 Services

The site of the Proposed Development is located approximately 10km northwest of Enniscorthy Town, Co. Wexford. Access to the site is from the L2012 Local Road, running in a north-south direction along the western boundary of the site. The L2012 Local Road connections to the R745 Regional Road at the Monalee Cross Roads and to the L2007at Bola Beg. The Proposed Development is served by a number of existing agricultural roads and tracks.

The main services for the Population Study Area are located within Bunclody Town, approximately 7.5 kilometres northwest of the Proposed Development. Other settlement centres in the wider region which provide retail, recreational, educational, and religious services include Enniscorthy, Co. Wexford, approximately 10 kilometres southeast, Gorey Co. Wexford, 25 kilometres to the northeast of the Proposed Development, and New Ross, Co. Wexford, 30 kilometres to the southwest of the Proposed Development.

5.3.8.1 Education

The nearest Primary school to the Proposed Development is the Castledockrell National School, located in County Wexford approximately 1.5km southeast of the Proposed Development approximately 1.5km southeast of the Proposed Development at its closest point (T11). Ballindaggin National School, the next closest National School, is located approximately 2.5km southwest of the Proposed Development at its closest point (T01). Tombrack School, is located approximately 5.5km east of the Proposed Development at its closest point (T11).

The closest secondary school is FCJ Secondary School situated approximately 7km south of the Proposed Development at its closest point (T11). The closest third-level institute to the site is the South East Technological University Carlow Campus. It is located approximately 32km to the southwest of the Proposed Development at its closest point (T08).

5.3.8.2 Access and Public Transport

The Proposed Development is accessed via the L2012 Local Road, running in a north-south direction along the western boundary of the site. The L2012 Local Road connections to the R745 Regional Road at the Monalee Cross Roads and to the L2007at Bola Beg. The Proposed Development is served by a number of existing agricultural roads and tracks.

The Proposed Development itself is served by a number of existing agricultural roads and existing wind farm access tracks. The current entrances to the Castledockrell Wind Farm will remain the primary entrance, utilising the existing access roads and infrastructure, eliminating the need to build any additional access routes or forestry roads for construction machinery, as this site is operational and does not require any further construction work.

There are no public transport routes available to access this site. The nearest bus stop is 1.8km away in Craanrue, Castledockrell serviced by Local Link Wexford route 369 daily.

5.3.8.3 Amenities and Community Facilities

There are a number of amenities and community facilities, including sports clubs, youth clubs, recreational areas, retail and personal services located in the nearby villages and towns of Ferns, and Bunclody, Enniscorthy and Ballindaggan. The towns of Gorey and Enniscorthy also offer a large selection of amenities and community facilities. There are a number of GAA clubs in the areas surrounding the Proposed Development, some of which are the Marshalstown Castledockrell GAA Club, Ferns St. Aidans GAA Club, Half way House Bunclody GAA Club, Duffry Rovers GAA Club and the Wexford GAA Centre of Excellence. There are also a number of soccer clubs within the areas surrounding including Castledockrell United, Bunclody AFC, Ferns Utd., Enniscorthy Utd., and Moyne Rangers.

The varied environment of this area of County Wexford provides many opportunities for walking, cycling, fishing and playing golf. Bunclody Golf and Fishing Club is located approximately 8.6km northwest of the Proposed Development, while Enniscorthy Golf Club and Driving Range is approximately 11.5km southeast. There are a number of beaches which run along the east coast of County Wexford from Kilmichael Point in the north to the Hook Head, including Courtown Beach, Morriscastle Beach and Carnsore Point Beach.

Community Benefit

Community Benefit proposals, which would enhance local amenities and community facilities are described in Chapter 4: Description of the Proposed Development. Substantial commercial property rates payments are paid to Wexford County Council, which provide income to local council, acting as the base support of the entire range of services which are provided by local authorities to the community.

Currently, a community benefit fund of €22,000 per year is contributed to a number of community facilities including community and development groups, churches, schools and sports clubs. Under the proposed revised Community Contribution, funds to these community facilities would be doubled to €44,000 upon a grant of permission of the lifetime extension of the existing 11 turbine Castledockrell Wind Farm.

5.4 Tourism

Tourism is one of the major contributors to the national economy and is a significant source of full time and seasonal employment. Fáilte Ireland's *Tourism Barometer: Strategic Research and Insight*[8] document notes that 52% of the Irish businesses surveyed have reported an increase in tourism numbers and revenue in 2023 in comparison to 2022.

5.4.1 Overseas Tourist Numbers and Revenue

Tourism is one of the major contributors to the national economy and is a significant source of full time and seasonal employment. During 2019, overseas tourists to Ireland grew by 0.7% to 9.7 million. In 2019, out-of-state (Overseas and Northern Ireland) tourist expenditure amounted to €5.6 billion. With a further €1.8 billion spent by overseas visitors on fares to Irish carriers, foreign exchange earnings were €7.4 billion. Domestic tourism expenditure amounted to €2.1 billion, making tourism a €9.5 billion industry (*Key Tourism Facts 2019 Fáilte Ireland, March 2021*[9]). The Central Statistics Office's official

[8] *Tourism Barometer Strategic Research and Insight (September 2023) Fáilte Ireland* https://www.failteireland.ie/FailteIreland/media/WebsiteStructure/Documents/Publications/failte-ireland-tourism-barometer-september-2023.pdf?ext=.pdf

[9] *Key Tourism Facts 2019 (March 2021) Fáilte Ireland,* https://www.failteireland.ie/FailteIreland/media/WebsiteStructure/Documents/Publications/2022-key-tourism-facts.pdf?ext=.pdf

count of direct employment in 'Accommodation and food service activities', a category which includes hotels, restaurants, bars, canteens and catering, was 177,700 in Q3 2019 (7.6% of total employment) and rises to 260,000 when including seasonal and casual employment in the industry.

The Republic of Ireland is divided into seven tourism regions.

Table 5-7 shows the total revenue and breakdown of overseas tourist numbers to each region in Ireland during 2019 ('*Tourism Facts 2019*, Fáilte Ireland, March 2021).

Table 5-7 Overseas Tourists Revenue and Numbers 2019 (Source: Fáilte Ireland)

Region	Total Revenue (€m)	Total Number of Non-Domestic Tourists (000s)
Dublin	€2,305m	6,927
Mid-East/Midlands	€400m	1,124
South-East	€282m	995
South-West	€995m	2,373
Mid-West	€480m	1,455
West	€701m	2,056
Border	€411m	1,365
Total	€5,574 m	16,295

The South-East Region, in which the site of the Proposed Development is located, comprises Counties Carlow, Kilkenny, Waterford and Wexford. This Region benefited from approximately 13% of the total number of overseas tourists to the country and approximately 13% of the total tourism income generated in Ireland in 2019.

Table 5-8 presents the county-by-county breakdown of overseas tourist numbers and revenue to the West Region during 2017 ('*2017 Topline Tourism Performance By Region, Fáilte Ireland, August 2018*)[10]. There is no published County by County tourism breakdown for 2018 to 2022 to date). As can be observed, County Wexford had a tourism revenue of at €886 million.

Table 5-8 Overseas Tourism to Border Region during 2017 (Source: Fáilte Ireland)

County	Revenue Generated by Overseas and domestic Tourists (€m)	No. of Overseas Tourists (000s)
Carlow	273	79
Kilkenny	613	315
Tipperary (South)	387	139

[10] *2017 Topline Tourism Performance By Region, Fáilte Ireland, August 2018 Available at:* https://www.failteireland.ie/FailteIreland/media/WebsiteStructure/Documents/3_Research_Insights/2_Regional_SurveysReports/2017-topline-regional-performance-(003).pdf?ext=.pdf

County	Revenue Generated by Overseas and domestic Tourists (€m)	No. of Overseas Tourists (000s)
Waterford	582	255
Wexford	**886**	**232**

5.4.1.1 Domestic Tourism and Revenue

Fáilte Irelands latest key tourism performance data was released in October 2023, which provides Domestic Tourism and Revenue data for 2022[11]. During 2022, total domestic expenditure was approximately €2,930 million, an increase from €2,146.6 million in 209 and €2,006 million in 2018.

Table 6-10 shows the total estimated expenditure and breakdown of domestic tourist trips numbers to each of Irelands seven tourist regions during 2022.

Table 5-9 Domestic Tourism

Region	Estimated Expenditure (€m)	Total No. Trips (000s)
Dublin	€419	1,861
Mid-East/Midlands	€395	1,957
South-East	**€381**	**1,899**
South-West	€665	2,763
Mid-West	€261	1,322
West	€459	1,866
Border	€350	1,606
Total	€2,930	13,274

The Proposed Development is located within the South-East Tourism Region. The South-East Region, which comprises of Counties Carlow, Kilkenny, Tipperary, Waterford and Wexford, benefitted from approximately 14% of total domestic trips and 13% of associated estimated expenditure in Ireland in 2022.

5.4.1.2 Tourist Attractions

There are two key identified tourist attractions pertaining specifically to the site of the Proposed Development itself. Deerpark and Kilbrannish Trail, which is host to a number of forest trails and loop walks, with a dedicated Windfarm Loop of 3km, located approximately 8.1 kilometres northwest of the nearest turbine (T02). The existing Castledockrell Wind farm itself is accessible to the public by foot via the existing entrance off the L2012. The existing wind farm site is used as an amenity area by many locals from the area, as well as nearby towns.

[11] *Key Tourism Facts 2022 (October 2023) Fáilte Ireland,* https://www.failteireland.ie/FailteIreland/media/WebsiteStructure/Documents/Publications/2022-key-tourism-facts.pdf?ext=.pdf

County Wexford has a number of views, prospects and scenic routes, which are identified for protection in the Wexford County Development Plan 2022-2028. These include views to and from upland areas, views of heritage features, and views at several waterbodies and coastal promontories. The varied natural landscape and scenic amenity of this area provide many opportunities for general outdoor recreation within the wider area including cycling, golfing and walking, as discussed above. The nearest tourist centre to the Proposed Development site is located approximately 30km from the Proposed Development in Wexford Town, which operates seasonally during the summer months. Tourist attractions advertised within these centres include gardens, museums, art collections and galleries, farmers markets and food outlets, heritage sites, breweries, historical sites and touring routes to other tourism activities in Ireland.

Key tourist attractions within County Wexford include Hook Head and Lighthouse, Dunbrody Famine Ship, Dunbrody Abbey, Mount Leinster and the Blackstairs Mountains.

Many additional tourist attractions are found in Bunclody, Wexford Town and Enniscorthy.

The Discover Ireland website (www.discoverireland.ie) lists the following attractions with the vicinity of the Proposed Development:

- **Hook Lighthouse** – approximately 55km south of the Proposed Development, the oldest intact operational lighthouse in the world, providing tours to the public.
- **Dunbrody Famine Ship** – approximately 40km southwest of the Proposed Development, an authentic reproduction of an 1840's emigrant vessel.
- **JFK Homestead and Arboretum** – approximately 36km south of the Proposed Development, a 623-acre arboretum containing a number of wakes and hilltop views.
- **Seal Rescue Ireland** – approximately 30km northeast of the Proposed Development, a dedicated seal rescue and rehabilitation centre, providing educational tours and information to the public.
- **Irish National Heritage Park** – approximately 28km southeast of the Proposed Development, containing 35 acres of reconstructed historic villages with hillside, woodland and riverbank walks.
- **Secret Valley Wildlife Park** – approximately 20km south of the Proposed Development, 14 acre facility hosting both exotic and native wildlife, with activities such as animal feeding, pony rides and educational talks.

The Wexford County Development Plan 2022-2028 lists the following attractions within the county with relation to the Proposed Development:

- **Tintern Abbey** – approximately 40km south of the Proposed Development, a Cistercian Monastery founded in 1200, surrounded by woodlands and walking trails.
- **Ferns Castle and visitor centre** – approximately 10km east of the Proposed Development, an historic pre-Norman castle in the centre of Ferns Town, with public admission during the Summer months and a number of historical artefacts on show
- **Enniscorthy Castle** – approximately 12km southeast of the Proposed Development, built in the 13th century, Enniscorthy Castle now acts as an historical hub which explores the history of the town and Castle itself from its Anglo-Norman origins, with tours and historical and art exhibitions.

5.4.1.3 Tourist Attitudes to Wind Farms

5.4.1.3.1 Scottish Tourism Survey 2016

BiGGAR Economics undertook an independent study in 2016, entitled ***'Wind Farms and Tourism Trends in Scotland'***[12], to understand the relationship, if any, that exists between the development of onshore wind energy and the sustainable tourism sector in Scotland. In recent years the onshore wind sector and sustainable tourism sector have grown significantly in Scotland. However, it could be argued that if there was any relationship between the growth of onshore wind energy and tourism, it would be at a more local level. The study therefore considered the evidence at a local authority level and in the immediate vicinity of constructed wind farms.

Eight local authorities had seen a faster increase in wind energy deployment than the Scottish average. Of these, five also saw a larger increase in sustainable tourism employment than the Scottish average, while only three saw less growth than the Scottish average. The analysis presented in this report shows that, at the Local Authority level, the development of onshore wind energy does not have a detrimental impact on the tourism sector. This found that in the majority of cases (66%) sustainable tourism employment performed better in areas surrounding wind farms than in the wider local authority area. There was no pattern emerging that would suggest that onshore wind farm development has had a detrimental impact on the tourism sector, even at the very local level.

Overall, the conclusion of this study is that published national statistics on employment in sustainable tourism demonstrate 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. However, the report also concluded that

> "***Although this study does not suggest that there is any direct relationship between tourism sector growth and wind farm development, it does show that wind farms do not cause a decrease in tourism employment either at a local or a national level.***"

5.4.1.3.2 Fáilte Ireland Surveys 2007 and 2012

In 2007, Fáilte Ireland in association with the Northern Ireland Tourist Board carried out a survey of domestic and overseas holidaymakers to Ireland in order to determine their attitudes to wind farms. The purpose of the survey was to assess whether or not the development of wind farms impacts on the enjoyment of the Irish scenery by holidaymakers. The survey involved face-to-face interviews with 1,300 tourists (25% domestic and 75% overseas). The results of the survey are presented in the Fáilte Ireland Newsletter 2008/No.3 entitled ***'Visitor Attitudes on the Environment: Wind Farms'***.

The Fáilte Ireland survey results indicate that most visitors are broadly positive towards the idea of building wind farms in Ireland. There exists a sizeable minority (one in seven) however who are negative towards wind farms in any context. In terms of awareness of wind farms, the findings of the survey include the following:

- Almost half of those surveyed had seen at least one wind farm on their holiday to Ireland. Of these, two thirds had seen up to two wind farms during their holiday.
- Typically, wind farms are encountered in the landscape while driving or being driven (74%), while few have experienced a wind farm up close.
- Of the wind farms viewed, most contained less than ten turbines and 15% had less than five turbines.

With regard to the perceived impact of wind farms on sightseeing, the Fáilte Ireland report states:

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[12] ***BiGGAR Economics (2021),*** https://biggareconomics.co.uk/wp-content/uploads/2021/11/BiGGAR-Economics-Wind-Farms-and-Tourism-2021.pdf

> *"Despite the fact that almost half of the tourists interviewed had seen at least one wind farm on their holiday, most felt that their presence did not detract from the quality of their sightseeing, with the largest proportion (45%) saying that the presence of the wind farm had a positive impact on their enjoyment of sightseeing, with 15% claiming that they had a negative impact."*

In assessing the perceived impact of wind farms on beauty, visitors were asked to rate the beauty of five different landscape types: Coastal, Mountain, Farmland, Bogland and Urban Industrial, and then rate on a scale of 1-5 the potential impact of a wind farm being sited in each landscape. The survey found that each potential wind farm must be assessed on its own merits. Overall, however, in looking at wind farm developments in different landscape types, the numbers claiming a positive impact on the landscape due to wind farms were greater than those claiming a negative impact, in all cases.

Regarding the perceived impact of wind farms on future visits to the area, the Fáilte Ireland survey states:

> *"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. 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."*

The report goes on to 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. Good planning has been an integral component of the Proposed Development throughout the site design and assessment processes. Reference has been had to the Department of the Environment, Heritage and Local Government's *'Planning Guidelines on Wind Energy Development 2006'* and the Draft Revised Wind Energy Development Guidelines December 2019 throughout all stages, including pre-planning consultation and scoping.

The 2007 survey findings are further upheld by a more recent report carried out by Fáilte Ireland on tourism attitudes to wind farms in 2012. The results of the updated study were published in the 'Fáilte Ireland Newsletter 2012/No.1 entitled *'Visitor Attitudes on the Environment: Wind Farms – Update on 2007 Research'*. The updated survey found that of 1,000 domestic and foreign tourists who holidayed in Ireland during 2012, over half of tourists said that they had seen a wind turbine while travelling around the country. Of this number of tourists, 21% claimed wind turbines had a negative impact on the landscape. However, 32% said that it enhanced the surrounding landscape, while 47% said that it made no difference to the landscape. 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.

Further details regarding the public perception of wind energy, including those living in the vicinity of a wind farm, are presented in Section 5.5 below.

5.5 Public Perception of Wind Energy

5.5.1 WEI Interactions Opinion Poll on Wind Energy 2019

Published in January 2020, Wind Energy Ireland (WEI) undertook a national opinion poll on Wind Energy November 2019 with the objective to "*measure and track public perceptions and attitudes around wind energy amongst Irish adults.*" Between November 20th – 30th 2019, a nationally

represented sample of 1,019 adults and a booster sample of 200 rural residents participated in an online survey.

The 2019 results indicate that 79% of both the nationally represented sample and rural sample strongly favour or favour wind power while 16% of both samples neither favour or oppose it. Amongst those in favour of wind power, the majority cited environmental and climate concerns as their main reasons for supporting such developments. Other reasons cited for supporting wind energy developments include: "economic benefits," "reliable/efficient," "positive experience with wind energy" and recognise it as a "safe resource." When questioned about wind developments in their local area, 55% of nationally represented sample favour or tend to favour such proposals and 51% of the rural population reported the same. Reasons cited for supporting wind developments in their local area include: "good for the environment," "social responsibility," "create jobs," "good for the community."

The WEI November 2019 survey follows previous national opinion polls on wind energy undertaken in October 2017 and November 2018. The 2019 survey results are consistent with the 2017 and 2018 figures and thus indicate that approximately 4 out of 5 Irish adults have continued to support for wind energy.

5.5.2 Sustainable Energy Ireland Survey 2003

5.5.2.1 Background

The results of a national survey entitled *'Attitudes Towards the Development of Wind Farms in Ireland'* were published by the Sustainable Energy Authority of Ireland (SEAI) in 2003. A catchment area survey was also carried out by SEAI (formerly SEI) to focus specifically on people living with a wind farm in their locality or in areas where wind farms are planned.

5.5.2.2 Findings

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

With regards to the economic and environmental impacts of wind farm development, the national survey reveals that attitudes towards wind energy are influenced by a perception that wind is an attractive source of energy:

"Over 8 in 10 recognise wind as a non-polluting source of energy, while a similar number believe it can make a significant contribution to Ireland's energy requirements."

The study reveals uncertainty among respondents with regards to the issues of noise levels, local benefits and the reliability or otherwise of wind power as an energy source. It goes on to state however that the finding that people who have seen wind farms rate these economic and environmental factors more favourably is a further indication that some experience of the structures tends to translate into positive attitudes towards wind energy.

Similar to the national survey, the surveys of those living within the vicinity of a wind farm also found that the findings are generally positive towards wind farms. Perceptions of the impact of the development on the locality were generally positive, with some three-quarters of interviewees believing it had impacted positively.

In areas where a wind farm development had been granted planning permission but was not yet under construction, three quarters of the interviewees expressed themselves in favour of the wind farm being built in their area. Four per cent were against the development. The reasons cited by those who expressed themselves in favour of the wind farm included the fact that wind energy is clean (78%), it would provide local jobs (44%), it would help develop the area (32%) and that it would add to the landscape (13%). Those with direct experience of a wind farm in the locality are generally impressed with it as an additional feature in the landscape. The report states:

"It is particularly encouraging that those with experience of wind turbines are most favourable to their development and that wind farms are not solely seen as good in theory but are also seen as beneficial when they are actually built."

Few of those living in proximity either to an existing wind farm or one for which permission has been granted believe that the development damages the locality, either in terms of damage to tourism potential or to wildlife. The survey found that there is a clear preference for larger turbines in smaller numbers over smaller turbines in larger numbers.

5.5.2.3 Survey Update 2017

Additionally, a survey carried out by Interactions in October 2017, published by the SEAI, show 47% of Irish adults polled said they are strongly in favour of wind power in Ireland while a further 38% favour it. Overall, this is a 4% increase in favourable attitudes towards wind power compared with similar research in 2013.

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

The survey also captured the perceived benefits of wind power among the public. Of those surveyed three quarters selected good for the environment and reduced carbon dioxide emissions while fewer people, just over two in three, cited cheaper electricity.

5.5.2.3.1 *Conclusions*

The main findings of the SEAI survey indicate that the overall attitude to wind farms is *"almost entirely positive"*. The study highlights that in 2017 two-thirds of Irish adults are either very favourable or fairly favourable to having a wind farm built in their locality, with little evidence of a "Not In My Back Yard" (NIMBY) effect. The final section of the 2017 report states:

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

5.5.2.4 Public Perceptions of Wind Power in Scotland and Ireland Survey 2005

5.5.2.4.1 *Background*

A survey of the public perception of wind power in Scotland and Ireland was carried out in 2003/2004 by researchers at the School of Geography & Geosciences, University of St. Andrews, Fife and The

Macaulay Institute, Aberdeen *('Green on Green: Public Perceptions of Wind Power in Scotland and Ireland'*, Journal of Environmental Planning and Management, November 2005). The aims of the study were to ascertain the extent to which people support or oppose wind power, to investigate the reasons for these attitudes and to establish how public attitudes relate to factors such as personal experience of operational wind farms and their proximity to them.

5.5.2.4.2 Study Area

Surveys were carried out at two localities in the Scottish Borders region, one surrounding an existing wind farm and one around a site at which a wind farm had received planning permission but had not yet been built. In Ireland, surveys were carried out at two sites in Counties Cork and Kerry, each of which has two wind farms in proximity.

5.5.2.4.3 Findings

The survey of public attitudes at both the Scottish and Irish study sites concluded that large majorities of people are strongly in favour of their local wind farm, their personal experience having engendered positive attitudes. Attitudes towards the concept of wind energy were described as ***"overwhelmingly positive"*** at both study sites in Scotland, while the Irish survey results showed almost full support for renewable energy and 92% support for the development of wind energy in Ireland.

The results of the survey were found to agree with the findings of previous research, which show that positive attitudes to wind power increase through time and with proximity to wind farms. With regards to the NIMBY effect, the report states that where NIMBY-ism does occur, it is much more pronounced in relation to proposed wind farms than actual wind farms. The Scottish survey found that while positive attitudes towards wind power were observed among those living in proximity to both the proposed and existing wind farm sites, people around the proposed site were less convinced than those living in proximity to the existing site. Retrospective questioning regarding pre- and post-construction attitudes at the existing site found that attitudes remained unchanged for 65% of respondents. Of the 24% of people who altered their attitudes following experience of the wind farm, all but one became more positive. The report states:

> *"These results support earlier work which has found that opposition to wind farms arises in part from exaggerated perceptions of likely impact, and that the experience of living near a wind farm frequently dispels these fears. Prior to construction, locals typically expect the landscape impacts to be negative, whereas, once in operation, may people regard them as an attractive addition."*

The reasons that people gave for their positive attitude to the local wind farm were predominantly of a global kind, i.e., environmental protection, and the promotion of renewable energy, together with opposition to a reliance on fossil fuels and nuclear power. Problems that are often cited as negative impacts of wind farms, such as interference with telecommunications and shadow flicker were not mentioned at either site. With regards to those who changed to a more positive attitude following construction of the wind farm, the reasons given were that the wind farm is ***"not unattractive (62%), that there was no noise (15%), that community funding had been forthcoming (15%) and that it could be a tourist attraction (8%)"***.

The findings of the Irish survey reinforce those obtained at the Scottish sites with regards to the increase in positive attitudes to wind power through time and proximity to wind farms. The survey of public attitudes at the sites in Cork and Kerry found that the highest levels of support for wind power were recorded in the innermost study zone (0 – 5 kilometres from a point in between the pair of wind farms). The data also suggests that ***"those who see the wind farms most often are most accepting of the visual impact"***. The report also states that a previous Irish survey found that most of those with direct experience of wind farms do not consider that they have had any adverse impact on the scenic beauty of the area, or on wildlife, tourism or property values. Overall, the study data reveals ***"a clear pattern***

of public attitudes becoming significantly more positive following personal experience of operational wind farms".

With regards to wind farm size, the report notes that it is evident from this and previous research that wind farms with small numbers of large turbines are generally preferred to those with large numbers of smaller turbines.

5.5.2.4.4 Conclusions

The overall conclusions drawn from the survey findings and from the authors' review of previous studies show that local people become more favourable towards wind farms after construction, that the degree of acceptance increases with proximity to them, and that the NIMBY syndrome does not adequately explain variations in public attitudes due to the degree of subjectivity involved.

5.5.3 IWEA Interactions Opinion Poll on Wind Energy

In early 2023, Wind Energy Ireland (WEI) published the results of their most recent nationwide annual poll on attitudes to wind energy, the ***Public Attitudes Monitor***.[13] The objective of the poll was to 'measure and track public perceptions and attitudes around wind energy amongst Irish adults.'

Between 23rd November and 8th December 2022, a nationally representative sample of 1,017 Irish adults together with a booster sample of 201 rural residents participated in the survey. The 2022 results reported that 4 in 5 (80%) are now in favour of wind power which is a 6% increase on the 2021 results (54% of those in favour were 'strongly in favour'). Amongst rural residents, 4 in 5 (85%) were recorded as having favourable attitudes towards wind power. The survey has been run annually since 2017 and while there has been a marginal decrease in those in favour of wind power nationally during this time (from 85% to 80%) there has been an increase in those in favour from the rural population (from 79% to 85%).

Amongst those in favour of wind power, the majority cited the fact that Ireland was a windy country with a readily available renewable resource and environmental and climate concerns as their main reasons for supporting such developments. Other reasons cited for supporting wind energy developments include: 'free/cheap/costs less', 'reliable/efficient', 'economy/jobs', and view that it as a 'safe resource'.

When questioned about wind energy developments in their local area, 58% of the nationally representative sample either 'favour' or 'tend to favour' such proposals compared to 56% of the rural population reporting the same.

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

[13] *Wind Energy Ireland Public Attitudes Monitor. Available at: https://www.windenergyireland.com/images/Final_WEI_Annual_Attitudes_Survey_2022.pdf*

5.6 Human Health

5.6.1 Health Impacts of Wind Farms

5.6.1.1 Health Impact Studies

While there are anecdotal reports of negative health effects on people who live very close to wind turbines, peer-reviewed research has not supported these statements. There is currently no published credible scientific evidence to positively link wind turbines with adverse health effects. The main publications supporting the view that there is no evidence of any direct link between wind turbines and health are summarised below.

1. ***'Wind Turbine Syndrome - An independent review of the state of knowledge about the alleged health condition'**, Expert Panel on behalf of Renewable UK, July 2010*

This report consists of three reviews carried out by independent experts to update and understand the available knowledge of the science relating to infrasound generated by wind turbines. This report was prepared following the publication of a book entitled *'Wind Turbine Syndrome'*, in 2009 by Dr. Pierpont, which received significant media attention at the time. The report discusses the methodology and assessment carried out in the 2009 publication and also assessed the impact of low-frequency noise from wind turbines on humans. The independent review found that:

- *"The scientific and epidemiological methodology and conclusions drawn (in the 2009 book) are fundamentally flawed;*
- *The scientific and audiological assumptions presented by Dr Pierpont relating infrasound to WTD are wrong; and*
- *Noise from Wind Turbines cannot contribute to the symptoms reported by Dr. Pierpoint's respondents by the mechanisms proposed."*

Accordingly, the consistent and scientifically robust conclusion remains that there is no evidence to demonstrate any significant health effects arising in humans arising from noise at the levels of that generated by wind turbines.

2. ***'Wind Turbine Sound and Health Effects - An Expert Panel Review'**, American Wind Energy Association and Canadian Wind Energy Association, December 2009*

This expert panel undertook extensive review, analysis, and discussion of the large body of peer-reviewed literature on sound and health effects in general, and on sound produced by wind turbines in particular. The panel assessed the plausible biological effects of exposure to wind turbine sound. Following review, analysis, and discussion of current knowledge, the panel reached consensus on the following conclusions:

- *"There is no evidence that the audible or sub-audible sounds emitted by wind turbines have any direct adverse physiological effects.*
- *The ground-borne vibrations from wind turbines are too weak to be detected by, or to affect, humans.*
- *The sounds emitted by wind turbines are not unique. There is no reason to believe, based on the levels and frequencies of the sounds and the panel's experience with sound exposures in occupational settings, that the sounds from wind turbines could plausibly have direct adverse health consequences."*

The report found, amongst other things, that: