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DESIGNING AND DELIVERING A SUSTAINABLE FUTURE

ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAR) FOR THE PROPOSED DREHID WIND FARM AND SUBSTATION, CO. KILDARE

VOLUME 2- MAIN EIAR
CHAPTER 11- POPULATION, HUMAN HEALTH & MATERIAL ASSESTS

Prepared for:

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11. POPULATION, HUMAN HEALTH & MATERIAL ASSESTS

11.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) examines the potential effects of the Proposed Development on Population and Human Health and Material Assets. The chapter includes a description of the existing environment in respect of population, human health and material assets and considers the likely effects arising from the Proposed Development during construction, operation and decommissioning under the following elements:

- Population;
- Employment and Economic Activity;
- Land Use;
- Recreation, Amenity and Tourism;
- Human Health and Safety;
- Potential for the project to cause accidents and/or natural disasters and the vulnerability of the project to potential disaster/accidents; and
- Material Assets

There are a wide range of sources of effects from the Proposed Development with potential to impact on the elements listed above, which focus on human interaction with the Proposed Development. The assessment presented in this chapter draws upon the findings of other chapters throughout the EIAR, including: air quality; noise; shadow flicker; traffic and transport; landscape and visual impacts; and telecommunications and aviation; and are addressed separately in Chapters 6, 7, 12, 13, 15, 16 of Volume 2 of this EIAR respectively. Potential impacts associated with lands, soils and geology are discussed in Chapter 9 and potential effects associated with hydrology and water quality are discussed in Chapter 10 of this EIAR. In addition, other assessments are set out including those relating to potential effects on population statistics, socio-economics, changes to land use, facilities, human perception, human safety and potential impacts to resources.

Material assets relating to transport infrastructure are dealt with in Chapter 13: Traffic and Transportation. Material assets with respect to natural resources are considered in Chapter 9: Lands, Soil and Geology, Chapter 10 Hydrology and Water Quality, Chapter: 6 Air Quality and Climate, and Chapter 8: Biodiversity. Assets of Archaeological, Architectural, and Cultural Heritage are considered in Chapter 14 of Volume 2 of this EIAR. The findings of these chapters in terms of the potential and residual impacts on population and human health are drawn upon in this chapter.

The Proposed Development consists of three main elements:

- The ‘Proposed Wind Farm’ (consisting of 11 turbines, turbine foundations and hardstanding areas, new access tracks, underground electrical and communications cabling, drainage, temporary site compounds and associated works; The Proposed Wind Farm also includes the ‘Proposed Recreation and Amenity Trail’);
- The ‘Proposed Substation’ (110 kV substation and loop-in connection to the existing overhead lines);
- Turbine delivery route (TDR).

In order to allow for the Board to assess the Proposed Wind Farm and the Proposed Substation pursuant to Section 37 and Section 182 of the Planning & Development Act 2000 respectively, the EIAR splits the project into the separate elements to enable the Competent Authority to assess each element of the project individually and cumulatively. Where the environmental impacts are not being assessed, for example in the Introduction chapter, the 'Proposed Development' is described as a whole in the interest of brevity, to include the Proposed Wind Farm, the Proposed Substation and the TDR. Further details of the Proposed Development are given in Chapter 3.

This assessment considers the turbine design parameters which have been selected for this project as described in Chapter 1 Introduction and Chapter 3 Description of the Proposed Development. The plans and particulars submitted with this application for consent are precise and provide specific dimensions for the turbine structures. The candidate turbine for the Proposed Development is the Nordex N133. The Proposed Wind Farm consists of the erection of 11 x Nordex 133 wind turbines. One turbine (T1) will have a tip height of 147.9 m, with the remaining 10 turbines having tip heights of 167 m. Alongside the wind turbines, the Proposed Wind Farm consists of access tracks, temporary compounds as well as temporary minor alterations to the public road for the delivery of turbines to the site (turbine delivery route). The Proposed Wind Farm will connect to the national grid via the Proposed Substation, as described in Chapter 3.

11.2 Methodology

This chapter of the EIAR has been completed in accordance with the guidance set out by the Environmental Protection Agency (EPA), in particular, the Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' (EPA, May 2022), The Government of Ireland's Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (August, 2018) and the European Union's guidance document: Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report as per Directive 2011/92/EU as amended by 2014/52/EU. The determination of significance of impact is in line with the EPA's Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' (EPA, May 2022).

Population

Demographic data has been sourced from the Central Statistics Office (CSO)'s Census of Ireland (2011 to 2022) records. Demographic information relating to the State, County Kildare, County Meath and the wider Study Area has been assessed to establish the existing demographic trends. The demographic analysis of the study area as set out in this Chapter is defined in terms of Electoral Divisions (EDs), within which the Proposed Wind Farm and Proposed Substation site boundary is contained and within which the TDR is contained. Therefore, for the purpose of this aspect of the assessment, there are three separate areas contained within the 'Study Area' as follows:

- The Proposed Wind Farm site is located within the EDs of Drehid and Dunfierth;
- The Proposed Substation is located in the ED of Drehid and Dunfierth;
- The turbine delivery route ('TDR') is contained within the EDs of Innfield, Cadamstown, Drehid and Dunfierth before the TDR meets a motorway at the M4 Motorway located to the south of Enfield.

The Study Area including the Wind Farm, the Substation and the TDR are identified in Figure 11-1. For the purposes of the assessment of potential effects on population trends, the TDR area covers electoral divisions where works are proposed.

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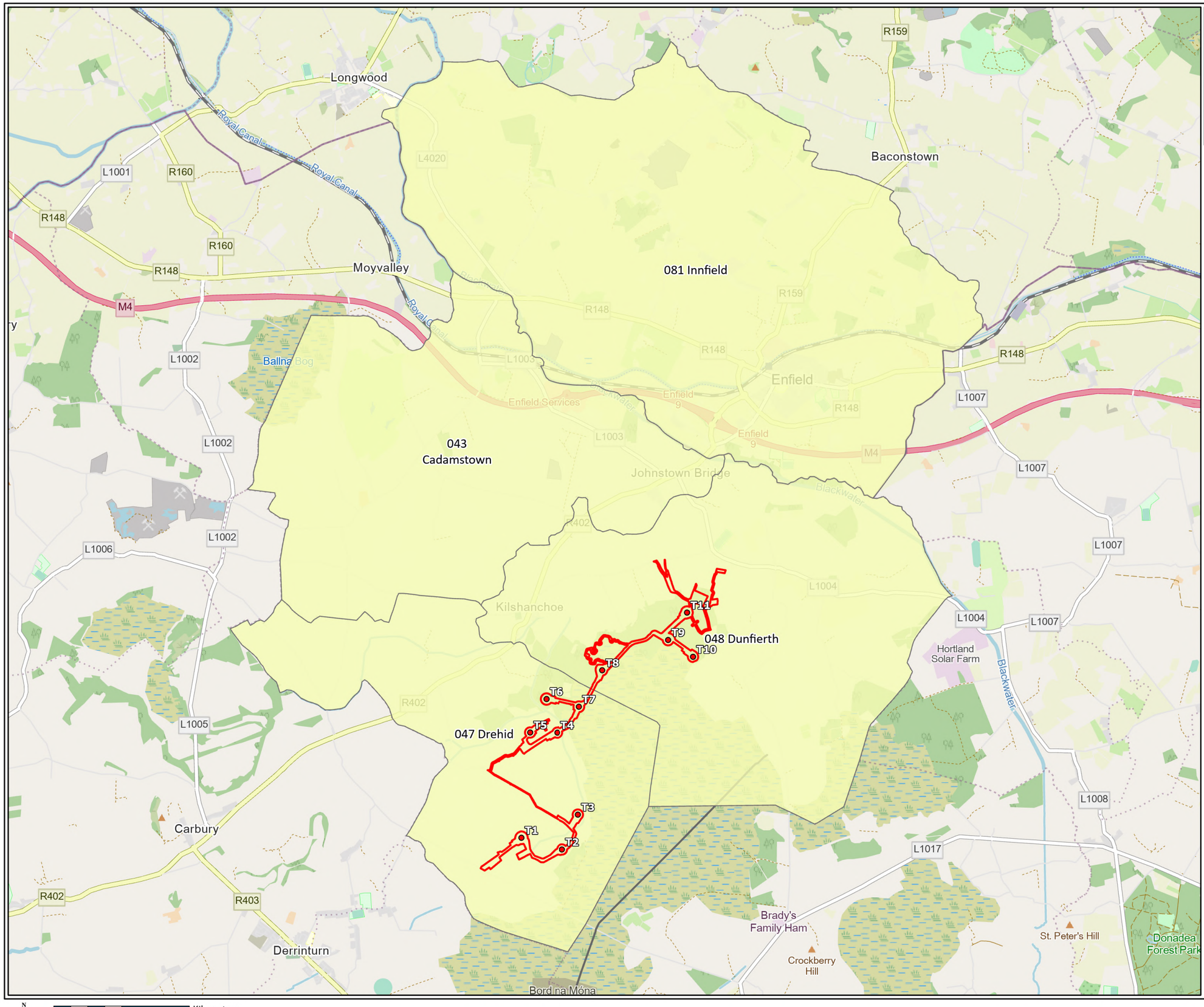

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TITLE:	Population and Human Health Study Area		
PROJECT:	Drehid Wind Farm and Substation		
FIGURE NO:	11.1		
CLIENT:	North Kildare Wind Farm Ltd.		
SCALE:	1:55,000	**REVISION:**	0
DATE:	01/05/2025	**PAGE SIZE:**	A3

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Areas of the TDR located along national primary routes have been screened out as effects are likely to be imperceptible due to the limited nature of the proposed works along these routes and the capacity of the routes to accommodate large vehicles and loads associated with the delivery of turbine components to the main wind farm site.

Eircode data (2025), Geodirectory data, and planning application lists sourced from Kildare County Council, An Bord Pleanála and the Department of Housing and Local Government's EIA Portal have been assessed to identify any commercial or residential receptors in proximity to the Proposed Development. These sources were assessed in 2025 Eircode and Geodirectory data provides locations (geographic coordinates) for registered addresses. This information was ground-proofed with a house survey where a surveyor travelled to the site of the Proposed Development and identified locations of all residential receptors in proximity to the Proposed Development. A desktop house survey was carried out for the TDR where temporary works are proposed. A planning search was conducted to identify permitted unbuilt dwellings and planned dwellings which do not appear on Eircode or Geodirectory Databases and are not visible from ground proofing exercises.

The data gathered has informed the consideration of impacts on the existing population within the immediate environs of the proposed development and allows for a comprehensive assessment of the potential effects on population trends which may occur during the construction, operational, and decommissioning phase of the proposed development.

Socio-Economics

A socio-economic profile of the existing environment was established using live register data (2020 to 2024) and Census (2016 and 2022) data to outline an employment profile of the study area. Peer reviewed research from the Institute for Sustainable Futures and the European Wind Energy Association was referred to in order to estimate the employment which the proposed development has the potential to create through the construction, operation and decommissioning phases of the proposed development, and the impact this employment will have on the study area.

Land Use

Land use in the area was examined to determine potential impacts on existing land use patterns which may arise because of the proposed development. Tailte Eireann Maps (2018) as studied and observations were carried out throughout the ground-proofing survey to determine land uses in the study area. The impact of the proposed development was then considered with regard to these land uses. Further information on Land Uses is outlined in section 11.5 of this report.

Recreation, Amenity & Tourism

With regard to Recreation, Amenity and Tourism, Fáilte Ireland published a guideline document on tourism and environmental impacts in 2011 entitled 'Guidelines on the Treatment of Tourism in an Environmental Impact Statement'. This document has been considered and is referred to in Section 11.6 of this Chapter. The document informed the methodology used in assessing potential impacts on Recreation, Amenity and Tourism. A profile of tourism in the region was established through examination of Fáilte Ireland Statistics in order to indicate the strength of Recreation, Amenity and Tourism in the surrounding region. Recreation and amenity facilities and attractions in the area were identified through a desktop study and distances from the Proposed Development were established. Potential impacts as a result of the Proposed Development were then considered in relation to the tourism profile, amenity and recreation facilities and attractions of the area.

A review of planning policy and strategies was carried out to identify recreation and amenity features, monuments, attractions, walking trails and cycling routes and other rights of ways within the study area of 15km. This is further detailed in section 11.6.1.

Human, Health & Safety

The assessment on human health and safety has regard to the Environmental Protection Agency's (EPA US) Human Health Risk Assessment process which provides information on potential human health impact. CSO data (2016 and 2022) and reports published by the Department of Health were examined to establish a baseline health profile of the study area. Criteria of potential impacts on human health was extracted from this literature in order to assess potential effects on human health as a result of the proposed development. A desktop examination of potential hazardous land uses in the study area was carried out and vulnerability of the project to natural disaster was assessed through a desktop geographical study and literature review. The assessment was further informed by field surveys which were completed as part of the EIA process. Potential impacts to human health as described throughout this EIAR are detailed in this Chapter, including potential impacts on air quality, noise and traffic and potential impacts on human safety including potential for flood risk and slope failure.

Material Assets Renewable Resources, Non-renewable Resources and Utility Infrastructure)

An examination of material assets was carried out which includes renewable and non-renewable resources and utility infrastructure. A desktop study established material assets of the area such as quarries and peat bogs, in line with Geological Survey Ireland's available database and is further outlined in Chapter 16 Telecommunications and Aviation. Companies who own and/or operate material assets such as gas mains, water mains, cabling; and various telecommunications companies were contacted during the scoping process to identify infrastructure in the area. Potential impacts on the identified material assets resulting from the proposed development were then examined.

Scoping & Consultation

As outlined in Chapter 5, prior to preparing the EIAR, statutory authorities and other relevant bodies were consulted. Key items of relevance to Population, Human Health and Material Assets, as raised by these parties have been addressed and referenced within this Chapter of the EIAR where relevant.

Consultation responses of relevance to the population, human health and material assets assessment were received from Fáilte Ireland, Irish Peatland Conservation Council and Gas Networks Ireland as well as from the wider community through public consultation in 2018. A further scoping and consultation process was entered into in 2024 advising stakeholders of revisions to the proposed development. The consultation responses received have been given due consideration in the formation of this chapter.

Cumulative Effects

In relation to cumulative effects for Population, Human Health, and Material Assets, the potential effect of the proposed project 'in combination' with other projects, constructed, proposed or permitted has been assessed. The cumulative impact assessment provides a baseline from which a full environmental assessment of the potential effects arising from the project in combination with other plans and projects can be considered comprehensively. A search for proposed, consented and existing projects was conducted within 20 km of the proposed project to identify development in proximity to the Proposed Wind Farm, Proposed Substation and TDR.

A 20 km distance from the Wind Farm site was considered a reasonable zone of influence for the purpose of assessing potential cumulative effects on population, human health and material assets, considering the size and extent of the project, the nature of the impacts and the receiving environment of the wider area. The geographic extent of the cumulative assessment is considered on a case-by-case basis, in line with the Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions (European Commission, 1999).

The 20 km radius from the proposed turbines is considered relevant in line with the recommended study area for the zone of theoretical visibility of proposed wind farm projects as set out in the Wind Energy Development Guidelines (2006) which cites the use of a 20 km radius for blade tips greater than 100 m. This represents a visual study area for potential cumulative projects but also represents an appropriate study area for other potential cumulative effects including traffic, noise, water quality and air quality. It is considered that potential impacts beyond this distance are imperceptible.

Other less significant projects were also examined in close proximity to the Wind Farm, Substation and TDR where construction and operation of proposed, consented or existing projects may be affected by the construction activities of the proposed project. All development within 250 m of the TDR nodes were examined for potential cumulative effects. It is considered that potential impacts posed by small scale projects beyond this distance will be imperceptible.

Monthly planning searches from January 2024 were carried out to identify proposed development in proximity to the Wind Farm, the Substation and the TDR. This included a search for major infrastructure projects in the zone of influence; large residential, renewable energy or commercial developments in the zone of influence; proposed or consented development within the immediate environs of the proposed project; as well as an examination of relevant plans and policies for the area as detailed in Chapter 4: Policy. Cumulative impact is further detailed in Section 11.10.

Mitigation Measures

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

Do-nothing Scenario

A do-nothing scenario 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 of the current state of the environment without implementation of the project". This section details the likely evolution of the receiving environment in the future should the proposed project not be carried out.

References

Finally, all materials which contributed to the establishment of the baseline conditions and assessment of potential impacts are referenced in Section 11.12.

11.3 Population

Population relates to the people living in an area. Assessing the demographic makeup of an area can reveal insightful information to guide environmental considerations of a proposed development. This section provides an overview of the population profile for the Study Area, County Kildare, County Meath and the State between the Census years of 2011 and 2022 to create a baseline demographic profile of the receiving environment and identify potential impacts on demographic trends arising as a result of the Proposed Development.

The study area for the purpose of assessing population has been chosen based on Electoral Divisions (EDs) within which the proposed Wind Farm, Substation and TDR are located and are set out in Table 11-1:

Table 11-1: Electoral Divisions Associated with the Study Area

Electoral Division of the Study Area (2022)		
Wind Farm	**Substation**	**Turbine Delivery Route**
Drehid (County Kildare)	Drehid (County Kildare)	Innfield (County Meath)
Dunfierth (County Kildare)	Dunfierth (County Kildare)	Cadamstown (County Kildare)
		Drehid (County Kildare)
		Dunfierth (County Kildare)

11.3.1 Existing Environment - Population

Population Growth

The Proposed Development is located in North County Kildare. The main towns and villages within the vicinity of the Proposed Development are as follows[1]:

- Enfield, Co. Meath is located approximately 3.7 km north of the closest turbine
- Kilcock, Co. Kildare is located approximately 12.4 km east of the closest turbine
- Clane, Co. Kildare is located approximately 14.6km south-east of the closest turbine
- Edenderry, Co. Offaly is located approximately 10.5 km west of the closest turbine
- Maynooth, Co. Kildare is located approximately 17.5 km east of the closest turbine
- Derrinturn, Co. Kildare is located approximately 3.7 km south-west of the closest turbine

The area is predominantly rural in character consisting of one-off houses and ribbon development focused around the local road network L 5012 to the north and L 5025 to the south.

According to Eircode data 2025, within 1 km, there are only 91 no. receptors; with no receptors located within 4 times the tip height of any turbine. This is due to the constraints-led design of the Proposed Development, which has had a particular focus on maximising the distance between turbines and receptors. Of these dwellings, 79 no. are registered as residential, 3 no. are registered as commercial, and 9 no. are registered as both commercial and residential. There are no records of vacant properties within 1 km of the site. Figure 11-2 illustrates the residential receptors within the vicinity of the Proposed Wind Farm and Proposed Substation according to Eircode (2025) and Geodirectory data. This information is supported by the ground proofing survey and planning application search.

[1] Based on straight line distances

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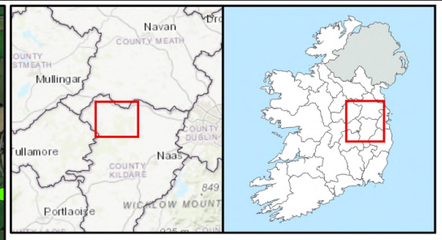

Legend

- Proposed Development Boundary
- 1km
- Commercial
- Residential
- Mixed-Use
- Turbine Locations

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0 0.5 1 2 Kilometers

TITLE:	Residential Receptors within 1km of Wind Farm Site		
PROJECT:	Drehid Wind Farm and Substation		
FIGURE NO:	11.2		
CLIENT:	North Kildare Wind Farm Ltd.		
SCALE:	1:50,000	**REVISION:**	0
DATE:	01/05/2025	**PAGE SIZE:**	A3

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The data presented in Table 11-2 demonstrates that the state population in the six years between the 2016 Census and the 2022 Census has seen a national increase in population of 8.1%. This is a continuation of the upward trend in national population observed since 2011, which is reflected at a higher percentage at County level for both Meath and Kildare which is a higher growth percentage than at national level. This high growth in both counties may be attributed to both counties' proximity to Dublin City and sections of both counties located within the wider Dublin Metropolitan Area. Locally, within the Wind Farm Site and Substation EDs associated with the Site, the growth in population is at a lower rate to state and counties' levels observed since the 2016 Census.

Of the EDs associated with the Proposed Development, Dunfierth has the largest population in 2022 with a population of 804 persons which is higher than the population of Drehid with a population of 269 persons. The population of Innfield has the highest population associated with the TDR EDs with a population of 4858.

Thus, data presented in Table 11-2 shows that that the population within the Turbine Delivery Route EDs has seen the strongest population growth especially between 2011 and 2022 with a percentage change that is higher than the State's but lower than County Meath and County Kildare. This growth in the TDR may be attributed to the location of Enfield within the EDS. Within the Wind Farm Site EDS and the Substation EDS, there was a decrease in population between 2011 and 2016 below the State and County figures. All of the areas associated with the Wind farm site have seen Population Growth in the 2016-2022.

Population statistics for the State, Kildare County, Meath County and the 'Study Area' (EDs associated with the proposed Wind Farm, Substation and TDR) set out in Table 11-2:

Table 11-2: Population of Study Area

Area	Population			% Population Change		
	2011	2016	2022	2011-2016	2016-2022	2011-2022
State	4,588,252	4,761,865	5,149,139	+3.8%	+8.1%	+12.2%
Kildare County	210,312	222,504	247,774	+5.8%	+11.4%	+17.8%
Meath County	184,135	195,044	220,826	+5.9%	+13.2%	+19.9%
Wind Farm	1009	1003	1073	-0.6%	+7%	+6.4%
Substation	751	733	804	-2.3%	+9.7%	+7.1%
TDR	6280	6760	7485	+7.6%	+10.7%	+19.2%

Population Density

The population density recorded within the State, County Kildare, County Meath and the Study Area during the 2011, 2016 and 2022 Census are set out hereunder in Table 11-3. For 2011, 2016 and 2022, the Wind farm Site and Substation site have low population density compared to state, county and TDR population density. Higher figures for the TDR may be attributed to a growth in the town of Enfield falling within the TDR EDs.

The high population density in Kildare and Meath are reflective of their status as some of the most densely populated counties in the country which is likely attributed due to their proximity to Dublin and location within the Greater Dublin Metropolitan Area. A number of towns especially in the east of the counties act as commuter towns to those working in Dublin and numerous rail and transport links to Dublin. Compared to the overall population density of the County, the relatively low population density at the Proposed Development site highlights the suitability for a wind farm development at this location.

Table 11-3: Population Density between 2011-2022 (Persons per square kilometre)

Area	Population Density (Persons per square kilometre) 2011	Population Density (Persons per square kilometre) 2016	Population Density (Persons per square kilometre) 2022
State	67	70	73.3
Kildare County	124.2	132.8	146.2
Meath County	80	84.4	94.3
Wind Farm site	26.5	26.7	28.3
Substation	33.4	33.1	35.9
TDR	67.8	73.8	80.8

11.3.2 Potential Impacts on Population - Construction

The potential effects on population and demographic trends arising from the Proposed Development during its construction phase relate to potential population increase or decrease.

During the construction phase of the project, it is likely that many of the workers travelling to the site will do so from outside of the area. This is due to the large numbers expected to be employed at the site of the Proposed Development. It is expected that workers from the locality within the immediate area will also be employed, and due to the number of settlements in proximity and with employment and unemployment figures as identified in Table 11-5 in the following section, indicates that there is an available work force in the project area and therefore many workers employed at the construction site would likely be travelling from the surrounding catchment settlements and the wider areas of Counties Kildare and Meath.

Thus, this will give rise to short-term/brief population growth at the site of the Proposed Development during working hours. This is associated with the direct employment of construction workers, trades people, labourers and specialised contractors. The population of the Proposed Study Area encompassing the Wind Farm Site, Substation and TDR EDs recorded in the 2022 Census was 7,485 persons. Based on an export capacity of 52.8 MW, an estimate of 160 jobs (see 11.4.3 for calculation) associated with the construction works has potential to temporarily increase the population of the wider Study Area encompassing the Proposed Wind Farm, the Proposed Substation and the TDR by 2.1%. The employment projections are further set out in section 11.4.2. However, this increase is associated with daily construction works and many may already be living in a number of these EDs or as already referenced, commute from surrounding settlements and thus the population of the Proposed Development Area will increase temporarily during construction hours and return to normal outside of working hours on a daily basis over the 18-month construction period. As construction work is temporary, it is unlikely that workers coming from outside the EDs will take up residence within the Proposed Development EDs, however, it is likely that some workers may stay in accommodation in the larger settlements such as Enfield and Kilcock located outside the EDs. Overall, this will result in a slight, short-term increase in population resulting in a slight, short-term neutral impact.

The temporary accommodation works associated with the TDR are limited to 15 no. points along the route. It is expected that there will be a slight increase in numbers at these points along the TDR during working hours for the construction of the accommodation works and temporary removal of furniture/signage/poles. However, as the works are limited, this temporary increase in population is considered brief to temporary and insignificant.

It is unlikely that permanent impact to population in the Proposed Wind Farm site, TDR or Proposed Substation site will occur, in terms of changes to population trends or population density as a result of the construction phase.

11.3.3 Potential Impacts on Population - Operational

Once constructed, it is envisaged that there will be direct and indirect employment associated with the operational phase of the Proposed Development. Opportunities for mechanical-electrical contractors and craftspeople to become involved with the operation and maintenance of the project will arise.

As set out in section 11.4.4 it is expected that the operational phase of the proposed wind farm site could create between 16-21 long term jobs (with an installed capacity of approximately 52.8 MW). These jobs include operations and maintenance, back-office support and indirect jobs created by other activities related to installed turbines including IPP/utilities, consultancy firms, research institutions, universities and financial services.

Although only a small proportion of these jobs are likely to be based in the Wind Farm Site, the operational phase will give rise to temporary, slight population increase in the Wind Farm Site during working hours as a result of operations and maintenance occurring at the site. This impact is expected to be imperceptible.

It is unlikely that the population of the Substation site and TDR will be impacted during the operational phase of the Drehid Wind Farm as further works and activities in these areas are not envisaged.

Furthermore, as previously stated the wind farm design has been developed with local receptors in mind with a minimum set back of 4 times tip height meaning that operational effects on receptors are aimed to be minimised. For further reference on any effects to receptors during the operational phase, please see Chapter 6- Air and Climate, Chapter 7- Noise & Vibration and Chapter 12- Shadow Flicker.

Any effect on population within the Study Area is expected to be imperceptible.

11.3.4 Potential Impacts on Population - Decommissioning

The decommissioning phase of the Proposed Development is described in Section 3.8 (Chapter 3) of this EIAR and provides for the removal of turbines and associated infrastructure from the site. The potential impacts associated with the decommissioning phase in relation to population trends will be similar to those associated with the construction phase but of a reduced magnitude.

A construction crew will be required for dismantling the infrastructure and carrying out remediation where necessary. As the decommissioning of the project is expected to be less intensive than the construction phase, it is likely that less construction workers will be required for this phase. During the decommissioning phase, the population of the Wind Farm Site will increase daily during working hours and return back to normal outside of working hours.

As removal works will be relatively short duration, it is unlikely that workers will take up residence in the Wind Farm Site, however, it is likely that some workers will stay in accommodation within the area of the Wind Farm Site or nearby towns, resulting in potential temporary population increases. The decommissioning phase is therefore likely to result in a slight, temporary increase in population within the Wind Farm Site and nearby towns, producing a slight temporary impact on population trends. It is not likely that the decommissioning phase will result in any permanent impact to population in terms of changes to population trends and density.

The Proposed Substation element of the project will remain in situ following decommissioning. There is no expected impact on population trends in the Proposed Substation area as a result of the decommissioning phase. Similarly, there is no expected impact on population trends across the TDR as a result of the decommissioning phase.

11.3.5 Mitigation Measures - Population

As there are no significant impacts predicted on population trends and population density, no mitigation measures are required.

11.3.6 Residual Impacts - Population

The residual effects of the Proposed Development with respect to population are associated with operation and maintenance jobs during the operational phase of the Drehid Wind Farm. This is likely to result in a temporary, slight, neutral impact on population statistics due to population increase in the Wind Farm Site during working hours. As per the assessment of operational impacts, any impact to the population of the Wind Farm Site in terms of changes to population trends will be imperceptible. It is therefore unlikely that long term residual impacts will occur to population and demographic trends because of the overall Proposed Development at all lifecycle stages.

11.4 Socio-Economics, Employment and Economic Activity

This section provides a comprehensive overview of the socio-economic, employment and economic activity associated with the receiving environment, including the Proposed Development EDs, together with County Kildare and Meath itself and the State as a whole. This provides an understanding of the overall socio-economic profile of the receiving environment and the potential effects arising from the Proposed Development.

The Census (2022) has published figures of Ireland's working population aged 15 to 64 for Electoral Divisions, allowing for a greater insight into the Study Area's socio-economic profile.

The basic indicator for employment is the proportion of the working-age population aged 15+ who are employed. Table 11.6 sets out the percentage of the total population aged 15+ who were in the labour force during the 2016 and 2022 Census. Table 11.5 also sets out those who were not in the labour force, this includes students, retired people, those unable to work, persons performing home duties etc.

11.4.1 Existing Environment – Socio-economic, Employment and Economic Activity

Live register data (CSO, 2023) provides information relating to the number of people registering for Jobseekers Benefit, Jobseekers Allowance, or for various other statutory entitlements. The figure is useful to gauge unemployment estimations for an area; however, it is noted that the Live Register data includes part-time workers (working up to three days per week), seasonal workers and casual workers who are entitled to Jobseekers Benefit or Jobseekers Allowance and therefore, cannot be relied upon entirely for conclusive employment data. Furthermore, there was a significant increase in unemployment throughout the country due to the COVID-19 pandemic, however, the impacts of this have largely receded. The population aged 15 years and older in 2016 and 2022 as per the most recent census is included in Table 11-4 below. Table 11-5 shows the Live register data for the State, Kildare County and Meath County between December 2016 and December 2023.

Table 11-4: Total Population aged 15-64 for State, Kildare County and Meath County 2016 and 2022:

	Total Pop Aged 15+ 2016	Total Population Aged 15+ 2022
Kildare County	168,944	194,397
Meath County	146,113	170,594
State	3,755,313	4,136,852

Table 11-5: Live Register Data for Kildare County, Meath County and the State December 2016 – December 2023

	December 2016	December 2017	December 2018	December 2019
Kildare County	11375	9853	8083	7353
Meath County	6492	5448	4729	4341
State	276502	236268	199669	181996

Source: CSO & data.gov.ie

	December 2020	December 2021	December 2022	December 2023
Kildare County	7856	6230	6458	6182
Meath County	4450	3644	3774	3986
State	189860	163856	184642	173003

Note 1 As per OECD (Demography – Working age population – OECD Data) the working age population is defined as those aged 15 to 64. Citizens Information (Children and rights in Ireland, citizensinformation.ie) states that those aged 15 are able to work 8 hours a week light work in school term time. The maximum working week for children outside school term time is 35 hours or up to 40 hours if they are on approved work experience.

Between December 2016 and December 2023, unemployment trends in Kildare County, Meath County, and the State experienced a series of decreases and increases, where numbers recorded on the live register decreased by approx. 38.6% throughout Kildare County and 45.7% throughout Meath County, and; there has been a decrease recorded on the live register of approx. 38% in the state in the same period.

11.4.2 Existing Environment – Socio-economic, Employment and Economic Activity

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. Table 11-6 sets out the percentage of the total population aged 15+ who were in the labour force during the 2022 Census. Table 11-6 also sets out those who were not in the labour force, this includes students, retired people, those unable to work, persons performing home duties etc.

As set out in Table 11-6, the principal employment status in 2022 across the State, Kildare County & Meath County and the Proposed Development ED Areas is ‘at work’, and the percentage of the population spread across the employment categories (status) generally align across the State, Counties and the Proposed Development EDs and reflect employment status in the country as a whole during that time. In terms of interpretation of the data in Table 11-6 below, it is evident that figures for those 'at work' are slightly higher in the Proposed Development study area than state and county level due to the proximity to Dublin City and subsequent varied transport options which is further evidenced by the lower number of those in the 'unemployed' category compared to State and County figures.

Table 11-6: Economic Status of the Total Population Ages 15+ in 2022

	Status	State	County Kildare	County Meath	Propsoed Wind Farm	TDR	Propsoed Substation
% of Population aged 15+ which are:	At Work	56.1%	59.1%	59.3%	63.1%	61.3%	62.3%
	First time job seeker	0.8%	0.8%	0.8%	1%	0.3%	0.2%
	Unemployed	4.3%	3.8%	4%	2%	2.7%	2.7%
	Student	11.1%	11.8%	11.2%	11.7%	9.2%	11.7%
	Home duties	6.6%	6.9%	7.2%	11.7%	11.5%	11.4%
	Retired	15.9%	13.1%	13.2%	6.7%	11.2%	8.3%
	Unable to work	4.6%	3.9%	3.7%	3.4%	3.4%	3%
	Other	0.7%	0.7%	0.6%	0.3%	0.3%	0.4%

As set out in Table 11-7, the principal industry distribution in 2022 across the State, Kildare County & Meath County and the Proposed Development ED Areas is 'Commerce and Trade' and 'Professional Services'. It is considered that there is a higher percentage of those working in 'Professional Services' at the Wind Farm Site, Substation site and TDR level than State and county figures due to the proximity of these EDs to Dublin City Centre and numerous commuter links to Dublin and those living in commuter towns and availing of flexible working options.

In interpretating trends in the data from Table 11-7 below, the Study Area has a higher percentage of employment from the Agriculture, Forestry and Fishing Industry compared to the State and County level with a gap of at least 1.8% upwards. This may be attributed to the sparse population and rural nature of the surrounding area which would accommodate works in these primary sectors.

The employment sectors for each of the areas show similarities with professional services, commerce and trade having the largest share across the State, County and Study Area.

The figures for 'Building & Construction' are higher for the Main Study Area EDs than at State and County level which may be attributed to the predominantly rural nature of these EDS with contractors serving the surrounding area and Dublin City Metropolitan Area.

Table 11-7: Industry Distribution by Area in 2022

Persons at Work by Industry	State	County Kildare	County Meath	Propsoed Wind Farm	TDR	Propsoed Substation
Agriculture forestry & fishing	3.5%	2.6%	3.6%	11%	7.1%	5.4%
Building & construction	5.8%	7%	8.3%	9.2%	9.1%	9.7%
Manufacturing industries	11.8%	11.8%	11.3%	9.1%	10.5%	12.7%
Commerce and trade	23.8%	26.9%	25%	21.4%	23.4%	21.3%
Transport and communications	9.2%)	9.2%	10%	6.7%	7.6%	9.4%
Public administration	5.7%	6.4%	6.1%	5.2%	5.7%	5.7%
Professional services	24.5%	23.6%	23%	30.8%	26.4%	25.9%
Other	15.8%	12.5%	12.8%	6.6%	10.3%	10%

11.4.3 Potential Impacts – Socio-economics, Employment and Economic Activity - Construction

According to "Job Creation during the global energy transition towards 100% renewable power system by 2050" (Ram and Aghahosseini 2019), 3.2 jobs per MW are created during installation of wind energy projects.

Using this figure, a projection of approximately 160 jobs could be created as a result of the construction of the proposed development which would have an installed capacity of 52.8 MW. It is not expected that all these jobs will be based at the wind farm site, however, the employment of tradespeople, laborers, and specialist contractors for the construction phase will have a direct, short-term significant, positive impact on employment in the study area.

It is likely that there will be direct employment for people living in the Study Area who may be qualified for construction-related roles. Materials will also be sourced in the vicinity of the Proposed Development where possible. This will assist in sustaining employment in the local construction trade. Furthermore, local businesses in the nearby towns and villages of Enfield, Kilcock and Edenderry will likely receive a slight indirect positive economic impact due to the influx of workers to the area who will require services such as shops and food places.

As a result, the construction phase of The Proposed Development will have a short-term, significant positive impact on the employment profile of the area and a short-term slight, positive impact on local businesses and services in the nearby towns and villages of the Study Area.

11.4.4 Potential Impacts – Socio-economics, Employment and Economic Activity – Operational

11.4.4.1 Economic Value & Employment Potential

The Proposed Development will contribute to achieving Ireland's energy targets as set out in the Climate Action Plan 2024/2025 (note that the latest Climate Action Plan for 2025 should be read in conjunction with the plan from 2024), which has a target of 80% of electricity generated from renewable sources by 2030. With a target increase in onshore wind of 9 GW by 2030. The Proposed Development has the potential to contribute up to 0.6% of this total.

The Sustainable Energy Authority of Ireland's (SEAI) Energy in Ireland 2022 Report states that wind energy provided Ireland with 34% of its electricity from September 2021 to 2022. The use of renewable energy reduced CO2 emissions by approx. 6.1 million tonnes in 2021, avoiding additional costs related to fossil fuel imports for that year. It is estimated that wind energy alone resulted in the avoidance of approximately 4 million tonnes of CO2 emissions in 2021. These savings will continue to rise with the installation of further wind energy and other renewable energy developments. Increased renewable electricity production as a result of the operational phase of The Proposed Development will have a positive medium to long-term economic effect due to the cost savings associated with the avoidance of fossil fuel imports. This will also act cumulatively with other proposed, consented and existing renewable energy projects throughout the country in providing cost savings, as discussed in section 11.10.

Once the Proposed Development is constructed, it is envisaged that there will be direct and indirect employment associated with the operational phase. Opportunities for mechanical-electrical contractors and craftspeople to become involved with the operation and maintenance of the project will arise.

According to the European Wind Energy Association's (EWEA) Report 'Wind at Work' (2009), 0.4 long-term jobs are created per MW of total installed capacity which would mean 21 jobs created. These jobs include operations, maintenance, back-office support and indirect jobs created by other activities related to installed turbines including IPP/utilities, consultants, research institutions, universities and financial services.

A study carried out by the Institute for Sustainable Futures (2015) estimates that the operational and maintenance job output for a wind farm is 0.3 jobs per MW of total installed capacity based on an average of 7 studies examined. This would result in 16 jobs created for operations and maintenance of new wind turbines and in the wider electricity supply sector.

Therefore, based on these estimates and considering an installed capacity of 52.8 MW, the operational phase of the Proposed Wind Farm could produce between 16-21 jobs.

Although only a small proportion of these jobs are likely to be directly based at the Drehid Wind Farm Site, it is likely that the indirect jobs the operational phase will support, such as consultants, research institutions, universities and financial services, will provide an indirect, long-term slight, positive effect to the employment profile of the wider economy of Counties Kildare and Meath.

It is likely that there will be direct employment available for people living in the Study Area who may be qualified for jobs associated with operation and maintenance. It is therefore considered that the operational phase of the proposed development has potential for an indirect, long-term slight, positive effect on employment in the Proposed Wind Farm Area, nearby towns and wider Counties Kildare and Meath.

Rates and development contributions paid by the developer will contribute significant funds to Kildare County Council which will likely be used to improve the services available to the people of the County. Business rates will also contribute significantly throughout the lifetime of the windfarm. General council services will benefit from rates and development contributions which include road upkeep, fire services, environmental protection, street lighting, footpath works etc., along with other local community initiatives and supports. This is likely to have a slight positive, long-term effect on resources of the Local Authority during the operational phase.

The terms of the Renewable Energy Support Scheme (RESS) states that all projects looking for support under the new RESS will need to meet pre-qualification criteria including the provision of a community benefit fund. This is discussed further in the following section.

11.4.4.2 Proposed Community Benefit Scheme

In May 2024, the government produced the Terms and Conditions for the fourth Competition under the Renewable Electricity Support Scheme known as RESS4. The document sets out the terms and conditions that will apply to the 4th competition to be conducted under RESS and to the ongoing administration of awards made in the RESS 4 Auction.

As set out in the terms of the Renewable Energy Support Scheme (RESS), all renewable energy projects applying for RESS are required to establish a Community Benefit Fund prior to Commercial Operation of the relevant RESS 4 Project. With effect from the Commercial Operation Date a RESS 4 Project shall be required to make a contribution of €2/MWh of Loss-Adjusted RESS Metered Quantity for all RESS 4 Projects

Furthermore, as part of RESS 4, the Community Benefit Fund will provide €1,000 that shall be paid to each household located within a distance of a 1 kilometre radius from the Onshore Wind RESS 4 Project. The 1-kilometre distance specified is measured from the base of the nearest turbine of the RESS 3 Project to the nearest part of the structure of the household, the location of which is identified in the An Post's GeoDirectory. Furthermore, a minimum of 40% of the funds shall be paid to not-for-profit community enterprises whose primary focus or aim is the promotion of initiatives towards the delivery of the UN Sustainable Development Goals, in particular Goals 4, 7, 11 and 13, including education, energy efficiency, sustainable energy and climate action initiatives.

The Proposed Wind Farm has a proposed installed capacity range of 52.8 MW which could mean €260,000 per annum is paid into the fund every year for 15 years. The amount of funding will be dependent on the final capacity and the amount of electricity generated by the wind farm when operational.

The provision of the Community Benefit Fund will have a significant long-term, positive effect on the socioeconomic profile of the study area and wider area, providing a regular payment to direct neighbours of the project and providing for projects which will benefit the community as a whole, bringing long-term socio-economic benefits.

As part of the overall Community Benefit Scheme, North Kildare Wind Farm Ltd are proposing a Recreational Amenity Trail as part of the proposed development. As detailed in Chapter 5: EIA Scoping, Consultation and Key Issues, during the engagement and consultation with the local community many people expressed a desire to see a recreational amenity area developed in the local area.

The 'Drehid Wind Farm Recreational Amenity Trail' is located in the northeast of the project site. This Recreational Amenity Trail will consist of 2 routes – a shorter 1.2 km loop and a longer route ca. 4 km which will be open to the public as a walkway and family cycleway. This trail can be used by the local community and will be suitable for a number of activities including walking, cycling, bird watching, nature and wildlife exploration. The Amenity Trail will include an area for safely storing bikes and picnic areas with interpretative information provided to add to the experience.

The trail will serve the catchment of the settlement of Johnstownbridge and is intended to serve the population of the village and those living in the hinterland and surrounding centres. The proposed Recreational Amenity Trail will introduce a recreational land use that would previously not have existed within the site. The impact of this proposed use is considered positive as it will add to a wider variety of recreation and amenity facilities.

11.4.4.3 Property Values

In the absence of any Irish studies on the effect of wind farms on property values, this section provides a summary of the largest and most recent studies from the United States and the UK.

A 2014 UK study entitled 'The effect of wind farms on house prices' carried out by the Centre for Economics and Business Research (CEBR) and commissioned by Renewable UK (previously BWEA) concluded that 'there is no evidence to suggest that there was a long-term negative impact on house prices, either during the period of construction or post completion of the wind farms.'

The purpose of this 2014 UK study was to examine whether windfarms have an effect on the value of residential properties within a 5km radius of the site. This was accomplished in two parts:

- Part 1: by analysing house price growth based on transactions completed within a 5km radius for seven wind farm sites to those in the wider county area between 1995-mid 2013.
- Part 2: the study used econometric tests to see if wind farms caused an impact on price growth.

The analysis of the raw house price data for transactions completed within the vicinity of the wind farms (radius of 5km) yielded no evidence that prices have been affected by either the announcement, construction or completion of the wind farms for six of seven sites.

For all three econometric tests conducted, there was no negative impact found within 5km of the wind farm installation.

- Test 1: Over the period between announcement of plans to construct wind farm and present day – there was no statistically significant difference and no negative impact on house price growth within 5km of a wind farm
- Test 2: Over the period between start of construction and present day – statistically significant positive impact on house price growth found within 5km of a wind farm.
- Test 3: Over the period between wind farm completion and present day – statistically significant positive impact on house price growth found within 5km of the wind farm.

The study concluded that although the number of case studies is limited, the descriptive and econometric analyses show that across the sites analysed, there is no evidence to suggest that there was a long-term negative impact on house prices, either during the period of construction or post completion of the wind farms.

A US government study 'The Impact of Wind Power Projects on Residential Property Values in the United States' carried out in 2009 by Lawrence Berkley National Laboratory (LBNL), recorded the sale price of approximately 7,500 homes in nine states and then devised mathematical models to reveal how, all other things being equal, proximity to a wind farm affected their value. It found that homes less than 1.5 kilometres from a wind farm sold for no less, on average, than homes 8 kilometres away. Similarly, home values tended to remain stable long after wind farms were erected. The most recent comprehensive piece of research on wind turbines, commissioned by the US Government and published in 2013 states that 'Across all model specifications, we find no statistical evidence that home prices near wind turbines were affected in either the post-construction or post announcement/pre-construction periods. This survey was carried out collecting data from 50,000 homes in nine different states.

The LBNL study has been updated as per the peer-reviewed paper 'A Spatial Hedonic Analysis of the Effects of Wind Energy Facilities on Surrounding Property Values in the United States' in August 2013. Data was collected for more than 50,000 home sales amongst 9 US states which were located within 10 miles of 67 different wind facilities, with 1,198 sales within 1 mile of a turbine. The study found no statistical evidence that home prices near wind turbines were affected in either the post-construction or post-announcement/pre-construction periods.

Climate Change Scotland's study, 'Impact of wind Turbines on House Prices in Scotland', published in October 2016 presents the key findings of a study carried out on over 500,000 properties sales in Scotland between 1990 and 2014. The key findings of the research are summarised as follows:

> *"No evidence of a consistent negative effect on house prices: Across a very wide range of analyses, including results that replicate and improve on the approach used by Gibbons (2014), we do not find a consistent negative effect of wind turbines or wind farms when averaging across the entire sample of Scottish wind turbines and their surrounding houses. Most results either show no significant effect on the change in price of properties within 2km or 3km, or find the effect to be positive.*
>
> *Results vary across areas: The results vary across different regions of Scotland. Our data do not provide sufficient information to enable us to rigorously measure and test the underlying causes of these differences, which may be interconnected and complex.*

Based on international literature and peer-reviewed articles, it can be reasonably assumed that no impact on property values within the area will arise as a result of the proposed wind farm development.

11.4.5 Potential Impacts – Socio-economics, Employment and Economic Activity – Decommissioning

The potential impacts associated with the decommissioning phase in relation to socioeconomics, employment and economic activity will be similar to those associated with the construction phase but of a reduced magnitude. It is important to note that decommissioning of the Proposed Wind Farm would be anticipated 35 years after commencement of its operational life, in accordance with the 35 year consent being sought. However, the decommissioning of the Proposed Substation would not be expected to occur until some undefined future date as it is intended that the infrastructure would remain in commission, as a node on the national grid, following decommissioning of the Proposed Wind Farm. Therefore, the potential impacts associated with decommissioning of the Proposed Wind Farm will not act cumulatively with the potential impacts associated with the decommissioning of the Proposed Substation.

A construction crew will be required for dismantling the infrastructure of the Proposed Wind Farm and carrying out remediation where necessary. As the decommissioning of the Proposed Wind Farm is expected to be less intensive than the construction phase, it is likely that less construction workers will be required for this phase. During the decommissioning phase employment opportunities will be available at the Wind Farm Site and outlying areas.

The influx of construction workers will have a temporary to short-term indirect positive impact on local businesses and services contributing to the local economy, similar to that of the construction phase but of lesser magnitude.

There will be a temporary to short-term slight, positive impact to socio-economics, employment and economic activity in the local area of the Proposed Wind Farm associated with the employment of construction workers within the vicinity of the works during the decommissioning phase.

The Proposed Substation element of the project will remain in situ following decommissioning of the Proposed Wind Farm. There is no expected impact on socio-economics, employment and economic activity trends in the Proposed Substation area as a result of the decommissioning phase. Similarly, there is no expected impact on socio-economics, employment and economic activity trends across the TDR as a result of the decommissioning phase.

11.4.6 Mitigation Measures – Socio-economics, Employment and Economic Activity

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

11.4.7 Residual Impacts – Socio-economics, Employment and Economic Activity

The residual effects of the development with respect to socio-economics is considered to be slight positive effect with respect to employment. This is as a result of the employment opportunities associated with the operation and maintenance of the development. There will also be a temporary slight positive economic effect from income spent by construction workers in the local area.

As detailed in section 11.4.4.2, the Community Benefit Fund associated with the Renewable Energy Support Scheme (RESS) will provide a significant long-term, positive impact to socio-economic profile of the proposed Wind Farm Site and greater community.

Rates payments and development contributions have potential to improve service provision throughout County Kildare and in the local area. This will likely have a slight positive, residual effect on resources of the Local Authority.

A positive residual effect is also envisaged in that wind energy decreases the cost of electricity. A cost benefit analysis of wind energy in Ireland was published by Baringa in association with IWEA in January 2019 (Baringa, 2019). The study indicates that the more renewable energy (low-cost) produced, the less dependency on fossil fuels is required which costs more per MW.

The report states that the savings involved with wind energy outweigh the amount of funding provided to support wind energy through the public service obligation levy, therefore the more wind power produced, the less electricity will cost. The proposed Wind farm project and associated substation will result in a slight long-term positive impact for electricity users throughout the country.

Overall, the residual effect associated with socio-economics, employment and economic activity as a result of the Proposed Development is considered to give rise to positive residual impacts.

11.5 Land Use

This section assesses the compatibility of the land use of the proposed project with the current land use. The determination of the potential effects on the existing land use is assessed for the construction, operation and decommissioning phases of the proposed project. Potential impact on sensitive land uses in the area of the proposed development have been examined in this section.

10.5.1 Existing Environment – Land Use

The proposed land use within the site can be broken down as follows:

- Substation within Mixed Forest Area
- Cable Route within Mixed Forest Area, improved Grassland and Cultivated land
- T9 within Peatland
- T10 within Transitional Forest
- T11 within Coniferous Forestry
- T8 within Woodland Scrub
- T6 and T7 within Coniferous Forestry
- T4 within Improved Grassland (Grassland, Saltmarsh and Swamp) and Woodland Scrub
- T1, T2, T3, and T5 within Improved Grassland (Grassland, Saltmarsh and Swamp)

Overall, the predominant land uses within the site includes woodland and forestry within the northern section. Woodland, forestry and scrub are found in the central parcel with some sections of agricultural grassland. There are sections of improved grassland within the southern part of the central parcel. The Southern parcel of the site contains predominantly improved grassland.

The subject lands are generally open and are free from buildings and structures that would hinder generating capacity. There is a concentration of receptors located outside the north-eastern boundary of the site and a concentration of receptors located outside the southern boundary of the site with a number of properties having associated agricultural or outbuildings.

Thus, the likely primary activity at the wind farm site is farming and also uses associated with commercial forestry. The site boundary also consists of forestry and peat bogs. As stated in section 11.3.1, there are a total of 91 no. receptors within 1 km of the turbine locations. Of these dwellings, 79 no. are registered as residential, 3 no. are registered as commercial, and 9 no. are registered as both commercial and residential. It is important to note that there are no receptors located within 4 times the tip height of any turbine. This is due to the constraints-led design of the Proposed Development, which has had a particular focus on maximising the distance between turbines and receptors.

There are 5 no. wind farms and 14 no. proposed solar farms located within 20 km of the site. The closest settlement is the village of Kilshanroe located approximately 600 m to the west.

Land use observed along the grid route consists of Mixed Forestry, Agricultural, and Wet Grass Swamp Land.

Large components associated with the wind farm construction will be transported to the Site from Dublin Port via the identified turbine delivery route (TDR). The TDR includes the following roads:

- N1
- M50
- N4
- M4
- R402
- L 5012 to the north and L5025 to the south.

Hedgerows and tree lines, typical to general pattern of field boundaries within the Irish landscape, are present on site. In line with industry practice these will be retained as part of the project design. The site is made up of c. 16 no. agricultural fields, bounded by hedgerows and tree lines. Internal and perimeter field boundaries comprising hedgerows and tree lines will generally be required to be retained for ecology and landscape protection and are treated as exclusions areas. Some hedgerows will be realigned to accommodate for bat buffers, as described in Chapter 8.

There are 2 no. 110 kV transmission lines traversing the site, a 110kV line to the north running from west to east twice through two different sections (19m and 5m respectively) of the northern boundary towards the existing Dunfierth 110kV substation located approx.1.1 km to the east. The other 110kV line has 164m travelling the Southern Section of the Site.

A site walk-over survey for ground conditions confirmed areas of peat in the northern portion of the site, and agricultural grassland in the southern and western parts of the site. There were no areas of exposed bedrock located within the proposed site. In general ground conditions across the site were found suitable for wind farm development and associated electrical infrastructure.

From a desktop assessment, there are no gas lines or significant water mains running through the lands.

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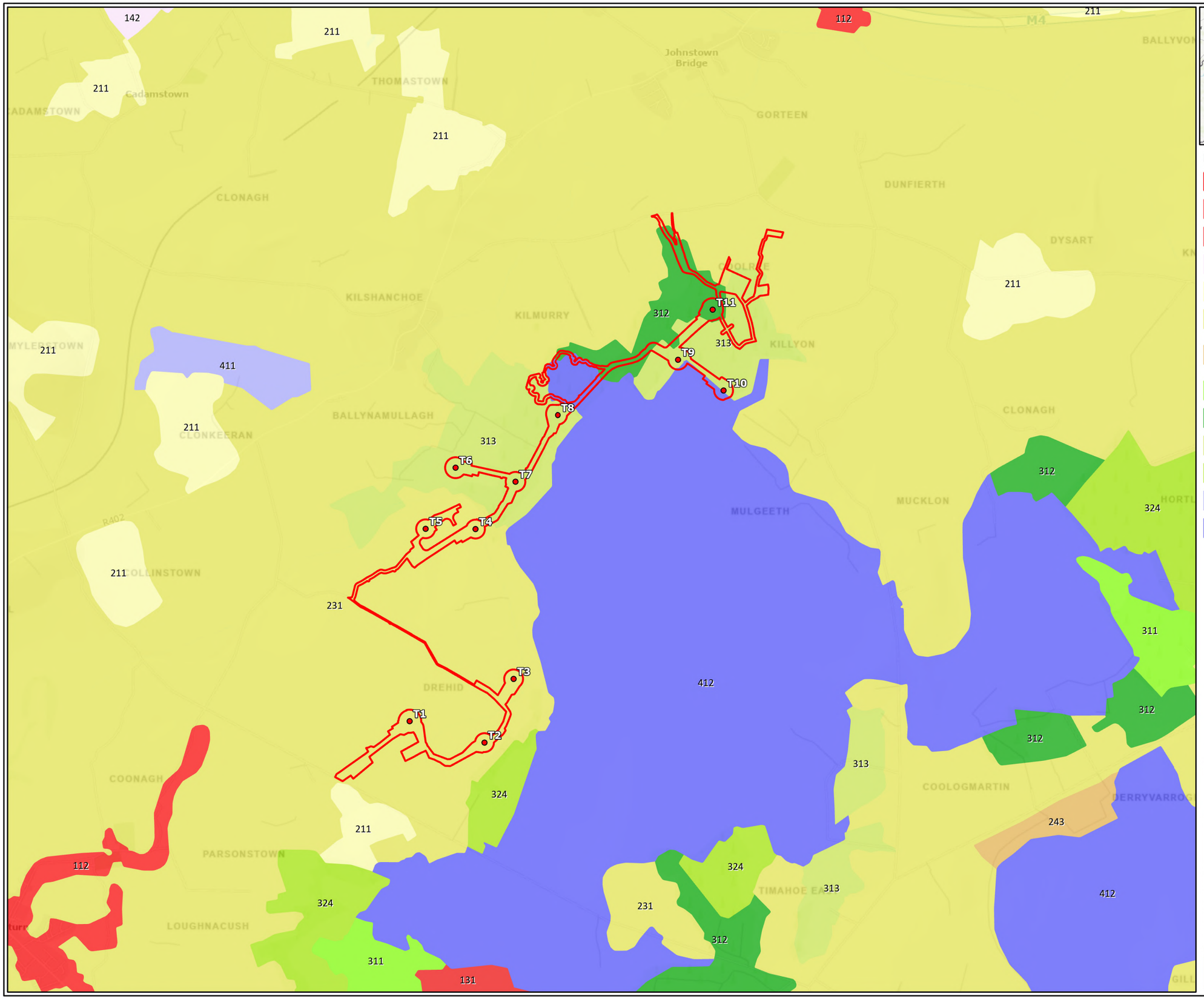

Legend

- Proposed Development Boundary
- 112 Discontinuous urban fabric
- 131 Mineral extraction sites
- 142 Sport and leisure facilities
- 211 Non-irrigated land
- 231 Pastures
- 243 Land principally occupied by agriculture with areas of natural vegetation
- 311 Broad-leaved forest
- 312 Coniferous forest
- 313 Mixed forest
- 324 Transitional woodland scrub
- 411 Inland marshes
- 412 Peat bogs
- Turbine Locations

TITLE:	Site Land Cover
PROJECT:	Drehid Wind Farm and Substation
FIGURE NO:	11.3
CLIENT:	North Kildare Wind Farm Ltd.
SCALE:	1:30,000
REVISION:	0
DATE:	26/05/2025
PAGE SIZE:	A3

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11.5.1 Potential Impacts – Land Use - Construction

The existing land-uses of the lands surrounding the wind turbines, recreational amenity trail and associated infrastructure where no works are proposed will remain as existing. Land use will be temporarily and permanently disrupted during the construction phase of the proposed development.

There are 5 no. proposed wind turbines located within agricultural lands. Existing access tracks will be utilized and upgraded where possible and new tracks will be required at various locations across the site. This will result in temporary interruption to these lands during the construction phase. Details of the TDR can be found in Appendix 13.1 of Volume III.

Felling is required within and around the wind farm infrastructure to accommodate the construction of the turbines (T6,T7,T8,T9,T10 and T11), hardstands and crane pads, access tracks, and on-site substation. This will result in a long-term moderate, negative impact on forestry in the area.

In line with the Forest Service's published policy areas permanently cleared of forestry will have to be replaced by the planting of forestry at an alternative location.

There will be no installation of the grid connection within the public road corridor and thus there is no impact to the road corridor as a result of the proposed grid route.

TDR node upgrade activity has potential for slight, brief to temporary impacts to land use in proximity to each node.

Most works have potential to cause non-significant brief impacts where street furniture, temporary load bearing surfaces and vegetation trimming is required. All overhead utilities should be lowered or relocated to enable the raised blade for the northern turbines to pass along the road. Over-run surfaces are required on a number of grass verges and the central island of the Johnstown Road Roundabout. Tree canopy trimming is required at various locations along the TDR.

Brief impact may also occur to the supply of electricity and telecommunications to homes and businesses as a result of temporary removal of services to accommodate turbine delivery

Turbine delivery will impact on land use temporarily due to the transportation of oversized loads on the public road.

11.5.2 Potential Impacts – Land Use - Operation

Given that the Proposed Development's footprint will occupy a small proportion of the development site area, it is anticipated that there will be minimal effects arising from the proposed use and existing land use.

The wind farm will involve a change of land use in areas where access tracks, wind turbine bases, hardstanding areas, substation, recreational amenity trail and associated drainage works are required.

Therefore, it is envisaged that the existing land uses, and the proposed wind farm use will co-exist within the site area and therefore, there will be no adverse effects on land use.

It is proposed to upgrade existing agricultural and forestry tracks where it is possible to avoid additional land take from roads. The access tracks will be used for operation and maintenance of the proposed wind farm and for forestry and agricultural practice, providing a long-term slight, positive impact to these land uses through provision of upgraded and new roads.

Activity is not expected at the TDR during the operational phase of the proposed project, unless in the unlikely event a turbine component requires to be transported for replacement or repair. In this case, there is potential for slight temporary negative impact on residential land-use as a result.

11.5.3 Potential Impacts – Land Use – Decommissioning

The decommissioning phase of the proposed development is described in Chapter 3 of this EIAR and provides for the removal of turbines and associated infrastructure from the site. The potential impacts associated with the decommissioning phase in relation to land use will be similar to those associated with construction phase but of a reduced magnitude.

Decommissioning works will include removal of all above ground structures including the turbines and met mast. The turbine foundations will be covered over and allowed to re-vegetate naturally and access tracks will be left in situ to continue to be used for agricultural, forestry and recreation land uses.

The decommissioning works will require a construction crew on-site and may cause temporary disruption to surrounding land uses. Removal of infrastructure from the site may temporarily impact on forestry and agricultural practices. Impact to these land uses during the decommissioning phase is expected to be temporary to short-term slight, negative.

Recreational and agricultural activity will also benefit from the upgraded access tracks left in situ throughout the site resulting in a long-term moderate, positive impact on recreational and agricultural activity at the site.

The Proposed Substation element of the project will remain in situ following decommissioning of the Proposed Wind Farm. There is no expected impact on socio-economics, employment and economic activity trends in the Proposed Substation area as a result of the decommissioning phase. Similarly, there is no expected impact on socio-economics, employment and economic activity trends across the TDR as a result of the decommissioning phase.

11.5.4 Mitigation Measures – Land Use

Mitigation measures for land use are primarily related to preliminary design stage, which has allowed for the prevention of unnecessary or inappropriate ground works or land use alterations to occur. The construction and operational footprint of the proposed development has been kept to the minimum necessary to avoid impact on existing land uses as far as possible.

Existing tracks have been incorporated into the design to minimise the construction of new tracks and roads. Where new access tracks are required, these have been sensitively designed in order to minimise impact. Electricity cables will be installed underground in or alongside access tracks to avoid impact on forestry practices.

Furthermore, it should be noted that the clear felling of trees in the State requires a felling license. The associated afforestation of alternative lands equivalent in area to those lands being permanently clear felled is also subject to licensing (afforestation licensing'). The Forest Service of the Department of Agriculture, Food & the Marine is Ireland's national forest authority and is responsible for all forest licensing. In light of the foregoing and for the purposes of this project, the developer commits that the location of any replanting (alternative afforestation) associated with the project will be outside any potential hydrological pathways of connectivity i.e., outside the catchment within which the proposed project is located. On this basis, it is reasonable to conclude that there will be no more than imperceptible indirect, or in-combination effects associated with this replanting. In addition, the developer commits to not commencing the project until both felling and afforestation licenses are in place, and this ensures the afforested lands are identified, assessed and licensed appropriately by the relevant consenting authority. Forestry activity at the site will cease during the construction phase resulting in a short-term slight, negative impact to existing land use at the wind farm site, however, activity in adjacent areas of forestry can continue during the construction phase.

The construction and decommissioning works of both the Wind farms will be planned and controlled by a Construction and Environmental Management Plan (CEMP). The CEMP for the construction phase is included in Appendix 3.2 of Volume 3 of this EIAR. This provides details on day-to-day works and methodologies. As part of these works, the public and other stakeholders will be provided with updates on construction activities which will affect access to lands. This will be communicated to members of the public through a community liaison officer employed for the duration of the construction period.

All proposed works and deliveries along the TDR route will also be controlled by a Construction and Environmental Management Plan to avoid undue impact to adjacent land uses.

11.5.5 Residual Impacts – Land Use

Once mitigation measures are in place and the appropriate design measures are incorporated, as proposed, there will be no significant adverse negative residual effects arising from the Proposed Wind Farm and Proposed Substation on land use. Benefits to agricultural practices as a result of the upgrading of access tracks throughout the site will cause a moderate, positive impact for agriculture and forestry for the Proposed Development.

Other infrastructure that will remain in situ includes turbine foundations and hardstands which will be covered over and vegetated. The residual impact on land use as a result of the in-situ hardstands, and foundations is likely to be permanent, imperceptible and neutral due to the small extent of land affected.

The Proposed Substation will be taken in charge by Eirgrid. The grid route cable will remain in situ and form part of the national grid. The residual impact on land use as a result of the substation and grid connection following decommissioning is likely to be permanent, imperceptible and neutral due to the small extent of land affected.

There is a number of sections within the site where a degree of tree felling will be required as part of the project. The felling area proposed is the minimum necessary to construct the proposed project and also to comply with any environmental mitigation.

The felling will be the subject of a Felling License Application to the Forest Service prior to construction as per the Forest Service's policy on granting felling licenses for wind farm developments.

11.6 Recreation, Tourism and Amenity

This section provides a comprehensive overview of the recreation, amenity and tourism value for the study area, County Kildare, Meath, Offaly and the State in order to assess the potential effects arising from the Proposed Development. Tourism is one of the major contributors to the national economy and is a significant source of full time and seasonal employment. As 2020 and 2021 have experienced an unprecedented negative impact on international tourism due to the COVID-19 epidemic, this section focuses on statistics from 2018 and 2019 as a reasonable scenario for tourism potential for the County. The preparation of this section had regard to Fáilte Ireland's 'Guidelines on the Treatment of Tourism in an Environmental Impact Statement'. Consultation has taken place with local recreation groups, as detailed in Chapter 5 of this EIAR, in order to thoroughly understand potential affects to recreation activity in the area.

11.6.1 Existing Environment – Recreation, Amenity and Tourism

Tourism statistics for 2019 as published by Fáilte Ireland (March 2021) state that overseas tourism grew by 0.7% on 2018 figures with over 9.7 million visitors. Expenditure from overseas tourism was estimated to be down by -0.8% remaining strong at €5.1 billion.

Fáilte Ireland's 2019 survey results indicate the top 5 most popular recreation activity for tourists in Ireland:

1. Hiking and cross-country walking;
2. Cycling;
3. Golf;
4. Equestrian;
5. Angling.

Fáilte Ireland's Regional Tourism performance figures for 2018 and 2019 are set out in Table 11-8 and 11-9 for the Mid-East/Eastern Region which includes Counties Kildare and Meath. As demonstrated in the tables, tourism numbers for the Mid-East/Eastern Region contribute a significant tourism revenue of €1039million and €989million in 2018 and 2019 respectively.

Table 11-8: Mid East/Midlands Regional Performance (Tourists in 2018)

Region		Britain	Mainland Europe	North America	Other Areas	All Overseas	Northern Ireland	Domestic Trips
Mid-East/Midlands	Tourists (000s)	419	356	184	70	1,030	196	1,381
Mid-East/Midlands	Tourist Revenue (€mn)	122	151	76	45	393	51	201

Table 11-9: Mid East/Midlands Regional Performance (Tourists in 2019)

Region		Britain	Mainland Europe	North America	Other Areas	All Overseas	Northern Ireland	Domestic Trips
Mid-East/Midlands	Tourists (000s)	411	335	153	55	954	170	1,513
Mid-East/Midlands	Tourist Revenue (€mn)	117	136	68	28	348	52	240

Thus, with the above figures in mind, tourism is considered a vital industry for Counties Kildare and Meath.

Chapter 13 on Landscape, Recreation and Amenity of the Kildare County Development Plan 2023-2029, identifies an aim for the county on Landscape, Recreation and Amenity:

'To provide for the protection, management, and enhancement of the landscape of Kildare to ensure that development does not disproportionately impact on the unique landscape character areas, scenic routes or protected views; and to support the provision of high quality and accessible recreational facilities, amenities and open spaces for residents and visitors to the County, in recognition of the contribution of all forms of recreation to quality of life, personal health and wellbeing'.

Chapter 4 on Tourism and Recreation of the Meath County Development Plan 2021-2027, identifies a development plan vision for the county by stating:

'The Plan seeks to facilitate the further development of the County as the gateway to Ireland's Ancient East. It is proposed to promote and facilitate the development of sustainable tourism and recreation and support the development of the Boyne Valley Bucket list through the provision of a diverse range of activities, historic sites and accommodation types within the County. Improvements to the tourist experience of the County and increases in overnight stays will positively influence the creation of new and varied employment opportunities throughout the County'.

Top attractions in the Kildare area in 2022, listed by Fáilte Ireland, include Castletown House Parklands, Newbridge Silverware, Irish national Stud & Japanese Gardens, located approx. 20.9 km, 20 km and 22.3 km respectively from the proposed wind farm site. The closest Failte Ireland attractions to the site are Maynooth Castle, Castletown House and Lullymore Heritage and Discovery Park located approx. 16.3 km to the east located approx. 20.9 km to the east and located approx. 9.6 km to the south-west.

Top attractions in the Meath area in 2022, listed by Fáilte Ireland include Tayto park, Battle of the Boyne/Oldbridge Estate, Hill of Tara Grounds, Trim Castle, Bru na Boinne (incl. Newgrage & Knowth) which are located approx. 32.7 km, 47.7 km, 26.8 km, 19 km and 43.6 km respectively from the proposed wind farm site. The closest Failte Ireland attractions to the site are Trim Castle the located approx. 19 km to the north, Hill of Tara Grounds located 26.8 km to the north-east and Tayto Park located approx. 32.7 km to the north-east west.

Other recreation and tourism amenities located in the area (15 km) in Kildare, Meath and Offaly of the proposed wind farm include:

- Carton Equestrian Centre ca. 1 km from the wind farm site
- Greaneys Fear English Bridge ca. 1 km from the wind farm site

- The Raven Junction ca. 1 km from the wind farm site
- Johnstownbridge GAA Club, ca. 1.5 km from the wind farm site.
- Coolree Nature Reserve Ca. 1.8 km from the wind farm site
- Dunfierth Chapel Ruins ca. 2.4 km from the wind farm site
- Carbury GAA Club ca. 3.1 km from the wind farm site
- Cadamstown Hall ca. 3.7 km from the wind farm site
- Cadamstown GAA Club ca. 4.3 km from the wind farm site.
- Knowles Hill ca. 5 km from the wind farm site
- Carbury Castle and Motte ca. 5.5 km from the wind farm site
- Mill Pond 5.7 km from the wind farm site
- Ballynafagh Lake a. 7.2 km from the wind farm site
- Ballynafagh Church (ruin) ca. 7.3 km from the wind farm site
- Donadea Castle ca. 7.5 km from the wind farm site
- Cappagh GAA Club ca. 7.6 km from the wind farm site
- Donadea Forest park ca. 7.7 km from the wind farm site
- Kildare Maze ca. 8.1 km from the wind farm site
- Highfield Golf Club & Footgolf Kildare ca. 8.2 km from the wind farm site
- Rathcore Golf Club ca. 8.5 km from the wind farm site
- Ballyteague Forest 8.7 km from the wind farm site
- Gordon Elliot Racing ca. 8.8 km from the wind farm site
- Little Oak Equestrian Centre ca. 9.1 km from the wind farm site
- Caragh Park 9.2 km from the wind farm site
- Edenderry Town fc ca. 9.2 km from the wind farm site
- Edenderry Golf Club ca. 9.3 km from the wind farm site
- Blundell Aquedact 9.4 km from the wind farm site
- Cullentra Farm Shop& Open Farm ca. 9.4 km from the wind farm site
- Longwood GAA club ca. 9.6 km from the wind farm site
- Allenwood GAA club 9.8 km from the wind farm site
- Ballyteague stables 9.8 km from the wind farm site
- Edenderry Skate Park ca. 10.1 km from the wind farm site
- Blundell park ca. 10.3 km from the wind farm site
- Blundell park ca. 10.4 km from the wind farm site
- Coilog Equestrian Centre ca. 10.4 km from the wind farm site
- Carrickoris Castle ca. 10.7 km from the wind farm site
- Somerton Stud ca. 10.8 km from the wind farm site
- Rahin Woods ca. 10.8 km from the wind farm site
- Summerhill Golf Club ca. 11.3 km from the wind farm site
- Rahin Woods ca. 11.5 km from the wind farm site

- Derry Rovers AFC 11.6 km from the wind farm site
- Rathcoffey GAA Club ca. 11.7 km from the wind farm site
- Kilcock Celtic FC ca. 11.8 km from the wind farm site
- Irish Archery Club ca. 12 km from the wind farm site
- Kilcock Golf Club ca. 12 km from the wind farm site
- Kilgar House Gardend ca. 12 km from the wind farm site
- Kilcock GAA club 12.3 km from the wind farm site
- Mondello Park ca. 12.6 km from the wind farm site
- Hill of Allen ca. 12.7 km from the wind farm site
- Rathmoylon GAA Club ca. 13 km from the wind farm site
- Butter Cup Farm ca. 13.3 km from the wind farm site
- Killyon Manor ca. 13.4 km from the wind farm site
- Clonard GAA Club ca. 13.5 km from the wind farm site
- Clonfert pet Farm ca. 13.5 km from the wind farm site
- Rathcoffey Castle ca. 13.6 km from the wind farm site
- Rathcoffey Ring Fort 13.6 km from the wind farm site
- Dunbryne Equestrian Cente 13.7 km from the wind farm site
- Summerhill fairy tale ca. 13.9 km from the wind farm site

Overall, the most significant recreation activity/attractions in proximity to the Drehid Wind Farm site is trail walking, recreational water facilities, mountain biking, equestrian activity and sports grounds.

There are two recorded archaeological monuments located within the site boundary, this is (KD008-011001- Ringfort) and (KD008-011002- Souterrain) located on the western boundary. One National Monument in State Care (The Mortuary Chapel) is located within 5 km of the site in the Carbury Hill Complex Area which is located 5.2 km west.

None of the recorded monument types in the lands within 2 km of the proposed development typically have visually sensitive ritual alignments, e.g., megalithic tombs, stone rows, stone circles. There are also no National Monuments in State Care with potential visual sensitivities located within this area. Overall, there are 62 Archaeological Sites all located within 2 km of the wind farm site and 20 NIAH structures within 2km. Further information on this is outlined in Chapter 14- Archaeology, Architectural and Cultural Heritage.

Community Facilities & Services Community Facilities & Services

Community facilities and services in proximity to the proposed Wind Farm Site are centred on towns and villages in the area.

The closest settlement is the village of Kilshanchoe which is located approx. 0.8 km to the west. Facilities and services within the village include a school, church and a number of independent commercial businesses.

The next closest settlement is the village of Johnstown Bridge which is located approx. 1.6 km to the north. Facilities and services within the village include a hotel, vet, health centre, school, church, funeral directors and a number of independent commercial businesses.

The next closest settlement is the town of Enfield which is located approx. 3.9 km to the North. Facilities and services within the town include a Supermarket, Sports Clubs, a Castle, Garda Station, a Church, Health Centre, school, a Greenway, Public Houses, Restaurants, Credit Union, Pharmacy, Takeaways, Cafes, Playground, Public Houses and Schools.

The next closest settlement is the village of Derrinturn which is located approx. 4 km to the south. Facilities and services within the village include a Supermarkets, School, Sports Clubs, B&BS, Public House, takeaways, Medical Centre and Schools.

11.6.2 Potential Impacts – Recreation, Amenity and Tourism - Construction

There are no significant tourism attractions located in proximity to the Proposed Development and as such, the construction phase of the proposed development is not expected to impact on major tourism attractions, tourism numbers or tourism revenue.

The proposed works associated with the wind farm site and substation will avoid negative impact on nearby community facilities, town centre services and amenities due to lack of proximity. The proposed works, including the construction haul routes do not interact with nearby recreation and tourism amenities as listed in section 11.6.1 and therefore there are no expected direct impacts on these features.

Mitigation is set out in Chapter 13: Traffic and Transportation in order to avoid indirect impact so far as possible on town and village centre facilities and services during turbine delivery.

11.6.3 Potential Impacts – Recreation, Amenity and Tourism - Operation

In relation to tourism and wind energy development, the Wind Energy Development Guidelines for Planning Authorities (2006) states the following:

"Wind Energy developments are not incompatible with tourism and leisure interests, but care needs to be taken to ensure that insensitively sited wind energy developments do not impact negatively on tourism potential. The results of survey work indicate that tourism and wind energy can co-exist happily"

The Draft Revised Wind Energy Development Guidelines (2019) also maintain that wind energy development "can co-exist happily" with tourism and go on to detail the survey works as also cited in the 2006 guidelines.

The survey work referred to in the guidelines is Sustainable Energy Ireland's (SEI's) Attitudes towards the Development of Wind Farms in Ireland (2003). The SEI (now SEAI) report found that the overall attitude towards wind farms is positive.

"The overall attitude to wind farms is very positive, with 84% of respondents rating it positively or very positively (Chart 2.6). Only 1% rate it negatively ('fairly bad'), with 14% not having an opinion either way, and no one rating wind farms 'very negatively'. Interestingly, this time it is those from Dublin who are most positively disposed; this could arise from the fact that Dubliners are less likely than others to have a wind farm built 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 (SEAI, 2003).

With regard 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. People therefore seem to have little difficulty with the concept of wind energy".

This report concludes that based on the detailed study of attitudes, it is clear that there is *"widespread goodwill towards wind farm developments".*

Independent research conducted by BiGGAR Economics in 2016 entitled 'Wind Farms and Tourism Trends in Scotland', assessed the relationship between wind farm developments and the tourist industry in Scotland. An analysis was carried out on eight local authorities which had witnessed a higher increase in wind energy developments than the Scottish average. Of the eight local authorities, five also witnessed a greater increase in sustainable tourism employment than that of the National Average with just three witnessing less growth than the Scottish average. The research concluded that at local authority level, no detrimental impact occurred on the tourism sector as a result of wind energy development, rather that, in the majority of cases, sustainable tourism employment performed better than other areas.

Fáilte Ireland conducted research titled "Visitor Attitudes on the Environment", which was first published in 2008 and updated in 2012. The research surveyed both domestic (25%) and overseas (75%) holidaymakers to Ireland to determine their attitudes to wind farms. The survey results indicate the following:

Most visitors are broadly positive towards the idea of building more wind farms on the island of Ireland. A minority (one in seven) were negative towards wind farms in any context.

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.

The largest proportion (45%) said 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.

Almost three quarters of respondents claimed that potentially greater numbers of wind farms would either have no impact on their likelihood to visit or would have a positive impact on future visits to the island of Ireland.

The updated survey, 2012, found that over half of tourists surveyed had seen a wind turbine while travelling the country. The survey results were as follows:

- 32% said that the wind turbines enhanced the surrounding landscape.
- 47% said that it made no difference to the landscape.
- 21% claimed wind turbines had a negative impact on the landscape.
- 71% of respondents claimed that potentially greater numbers of wind farms would either have no impact on their likelihood to visit or have a positive impact on future visits to the island of Ireland.

The 2022 Public Attitudes Monitor document produced by Wind Energy Ireland states that in relation to wind farm favourability that 'over 4 in 5 nationally (81%) are in favour of wind power; over half (54%) claim to be strongly in favour, while a further quarter (27%) generally tend to favour wind power. Furthermore, amongst those in Rural areas that 55% of those are strongly in favour with 4 in 5 rural residents registered favourable attitudes while only a very niche minority (3%) claimed to be against wind power. Finally, in terms of openness to local wind farms in rural areas, the survey points out that 21% are strongly in favour and that 35% tend to favour wind farms.

From a review of literature as detailed above, it is concluded that the majority of tourists surveyed had a generally positive view on wind energy development in the landscape. Further analysis of the potential visual impact of the proposed Drehid Wind Farm is described in Chapter 14 – Landscape and Visual.

The most proximate major tourist attractions to the Drehid Wind Farm Site is the Newbridge Silverware and Trim Castle. Furthermore, the most proximate amenity facilities include walking trails, recreational amenities and historical sites associated with historical site all located within 15 km of the site.

Renewable energy projects have also proven to be visitor attractions in their own right. The visitor centre at Whitelee Wind Farm in Scotland, which opened in September 2009, has attracted over 200,000 visitors since its opening.[2]

As such, it is not considered that the operations of the Proposed Development will have an adverse effect on tourism within the vicinity of the proposed development. Further to this, wind farms are an already existing feature within the Irish landscape, of which those have set precedent for the proposed development's assimilation into the receiving environment.

As part of the project, it is proposed to construct a recreational amenity trail, consisting of two parts: one c. 1.2km loop in the northern section of the site, with a second route incorporating this route and other existing tracks and new site roads c. 4km long. The recreational trail will act as a new public walkway and family cycleway which will provide for additional recreation and amenity services to the receiving environment. Activities that are envisaged to occur along the amenity trail include walking, cycling, bird watching, nature and wildlife exploration. Factual information will be shared on signage as well as health and safety information. 10 bicycle spaces will be accommodated within a bicycle rack with a number of picnic tables also provided for along the amenity trail. The trail will give rise to a long-term, positive effect to the recreation, tourism and amenity of the area by way of provisioning for a public amenity.

11.6.4 Potential Impacts – Recreation, Amenity and Tourism - Decommissioning

The potential impacts associated with decommissioning of the Proposed Wind Farm will be similar to those associated with construction but of a reduced magnitude.

Decommissioning works will include removal of all above ground structures including the turbines, mountings, substations, and fencing. The relatively small footprint of the turbines and ancillary structures means that following removal, the site can be substantially returned to its existing condition quite quickly and leave little trace that a wind farm previously existed.

There will be a slight, negative temporary impact to recreation, tourism and amenity in the study area associated with the increase in construction workers and activity within the vicinity of the wind farm and recreational amenity trail during the decommissioning phase of the wind farm.

The Recreational Amenity Trail will be kept in place following decommissioning, ensuring the longevity of the positive effects associated with the trail.

The Proposed Substation element of the project will remain in situ following decommissioning of the Proposed Wind Farm. There is no expected impact on recreation, tourism and amenity trends in the Proposed Substation area as a result of the decommissioning phase. Similarly, there is no expected impact on recreation, tourism and amenity trends across the TDR as a result of the decommissioning phase.

[2] Visit Scotland Position Statement – Wind Farms

11.6.5 Mitigation Measures – Recreation, Amenity and Tourism

Mitigation measures for recreation, amenity and tourism are primarily related to the preliminary design stage of the Drehid Wind Farm, which has allowed for the prevention of unnecessary or inappropriate development to occur that would significantly affect any recreational or tourist amenity. In designing the Drehid Wind Farm, careful consideration was given to the potential impact on landscape amenity.

11.6.6 Residual Impacts – Recreation, Amenity and Tourism

While there may be a short-term negative impact to recreation, amenity and tourism during the construction phase of the development, there will be no significant, adverse impacts in the surrounding area. During the operational phase of the wind farm there will be a positive impact on recreation, amenity and tourism through the provision of an on-site recreation and amenity trail.

10.7 Human Health & Safety

This section provides a comprehensive overview of the health profile of the receiving environment and the State, in order to provide for the assessment of potential impacts that the Proposed Development may have on human health. An assessment of peer reviewed literature has been carried out to provide a sound, scientific basis for the potential impacts arising from the Proposed Development.

11.6.7 Existing Environment – Human Health & Safety

Human health in relation to this assessment refers to the nature and possibility for adverse health effects on humans. In the context of existing human health, The Department of Health (2022) has published a report entitled 'Health in Ireland, Key Trends 2022' which provides statistics relating to human health in Ireland over the last 10 years (2012 to 2022). Generally speaking, Ireland's population has a high level of very good/good health as demonstrated in self-evaluation statistics included in Census data (see Table 11.10 below).

Approximately 88% of the responses recorded for the Study Area in 2022 indicated that they had very good or good health which is above the State response (83%) and Kildare's response (86%) for 2022. 1% of the study area, Kildare and the State responded to have 'bad' general health with an average of 0% of the overall responses identifying as having very bad general health.

Table 11-10: Population by General Health (Census, 2022)

General Health (Census 2022)	State	County Kildare	County Meath	Proposed Wind Farm	Proposed Substation	TDR
Very Good	53.2%	56.8%	57.1%	57.5%	59.1%	57.1%
Good	29.7%	29.2%	29.6%	32.9%	30%	30.6%
Fair	8.6%	7.7%	7.6%	7.1%	7.8%	7%
Bad	1.4%	1.2%	1.2%	0.8%	1.1%	0.9%
Very Bad	0.3%	0.3%	0.3%	0.2%	0.4%	0.2%

General Health (Census 2022)	State	County Kildare	County Meath	Proposed Wind Farm	Proposed Substation	TDR
Not Stated	6.7%	4.7%	4.3%	1.8%	1.6%	4.3%

From a review of the GSI Landslide Susceptibility database, the proposed development and proposed infrastructure locations are located within areas of 'Low' susceptibility. No historical records of landslide activity have been identified within or close to the site, according to the GSI database. According to the OPW (floodinfo.ie), no major flood incidents are recorded at the wind farm site or grid route. Flood events have been recorded along or adjacent to sections of the TDR, however, no flood events have been recorded at the TDR node upgrades where works are required

There is a record of fire that took place at the Bord na Mona Bog in the Drehid bogland in May 2020. While this event took place in close proximity to the Proposed Development site, the event was entirely outside of the site boundary .

11.6.8 Potential Impacts – Human Health & Safety - Construction

Construction of the proposed development will comprise of a construction site, as is the case for wind farm developments of this scale. The construction site and materials utilised on site may give rise to potential health and safety hazards on construction workers and on the general public, if site safety rules are not properly implemented.

The proposed wind energy development will be designed, constructed, operated and decommissioned in accordance with the following:

- Safety, Health & Welfare at Work (Construction) Regulations 2013
- Safety, Health & Welfare at Work Act 2005
- Safety, Health & Welfare at Work (General Applications) Regulations 2007

Aspects of the development that will present health and safety issues, as follows:

- potential impact on construction health and safety
- traffic safety during the transport of oversized loads to the site along the turbine delivery route
- lifting of heavy loads overhead using cranes
- working with electricity during commissioning
- working at heights
- general construction site safety (e.g., slip/trip, moving vehicles etc.)
- substation construction
- electrical cables

A Safety and Health Management Plan covering all aspects of the construction process will deal more fully with these and other related issues. This has been prepared on a preliminary basis at the procurement stage and is included in the Construction and Environmental Management Plan (CEMP) contained in Appendix 3.1 of Volume 3 EIAR Appendices. It will be further developed at construction stage.

Health and safety issues on farmed land are routine for such lands. Access may be restricted to certain parts of the site during the construction phase of the project. For instance, no access will be available to construction compounds or the proposed turbine areas. Access to other areas of the site will be agreed on a one-to-one basis to cater for each individual's requirements.

11.6.9 Potential Impacts – Human Health - Operation

11.6.9.1 Site access and usability of lands

During the operation phase of the Proposed Development, there is potential for impact to human health and safety if appropriate mitigation measures are not put in place.

Potential human safety issues can occur due to the falling ice as a result of the icing of turbine blades in cold weather conditions. This is unlikely to present safety problems as wind turbines are fitted with anti-vibration sensors. These sensors detect any imbalance caused by the icing of the blades. The sensors will cause the turbine to shut down until the blades are de-iced prior to beginning operation again.

Potential impacts to the safety of operation and maintenance staff are associated with working at heights, working at steep gradients or uneven ground, moving vehicles and machinery and working with high-voltage electricity. Properly qualified staff will be employed at the wind farm site and safety protocol will be followed at all times. Therefore, impact to the safety of operation and maintenance staff is unlikely.

Under normal conditions, operational wind turbines do not pose a threat to public safety or the safety of animals. Section 5.7 of the Wind Energy Development Guidelines (2006) states the following:

"*There are no specific safety considerations in relation to the operation of wind turbines. Fencing or other restrictions are not necessary for safety considerations. People or animals can safely walk up to the base of the turbines. There is a very remote possibility of injury to people or animals from flying fragments of ice or from a damaged blade.*"

There are no expected works to take place along the grid route or TDR during the operational phase of the proposed development. Furthermore, there are no works required on any public roads associated with the substation and the associated short GCR. Therefore, impact to human safety on public roads during the operation phase is unlikely.

11.6.9.2 Health and Safety Standards and Procedures

As part of the human health assessment of the Proposed Wind Farm, an analysis of peer-reviewed literature on potential health impacts arising from wind energy projects was undertaken. Anecdotal reports were identified of negative health impacts in people living in close proximity to wind turbines, however, the literature review demonstrates that peer-reviewed research generally does not support these statements.

The review of literature did not find any published, credible scientific sources that link wind turbines to adverse health effects. The key documents that have been taken into consideration with respect of potential effects on human health are as follows:

- 'Wind Turbine Sound and Health Effects - An Expert Panel Review', American Wind Energy Association and Canadian Wind Energy Association, December, 2009.
- '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.
- 'A Rapid Review of the Evidence', Australian Government National Health and Medical Research Council (NHMRC) Wind Turbines & Health, July 2010.
- 'Position Statement on Health and Wind Turbines', Climate and Health Alliance, February 2012.
- 'Wind Turbine Health Impact Study - Report of Independent Expert Panel' – Massachusetts Departments of Environmental Protection and Public Health, 2012.
- 'Wind Turbines and Health, A Critical Review of the Scientific Literature Massachusetts Institute of Technology', Journal of Occupational and Environmental Medicine, Vol. 56, Number 11, November 2014.
- 'Wind Turbine Noise and Health Study', Health Canada, 2014.
- 'Wind Turbines and Human Health', Front Public Health, 2014.
- 'Position paper on wind turbines and public health', Health Service Executive, February 2017.
- 'Environmental Noise Guidelines for the European Region', World Health Organisation, 2018.

'Infrasound' has been cited as a cause of potential health impacts as a result of wind turbine development. This is discussed in detail in Chapter 7: Noise and Vibration under Section 7.2.2.2, it states that infrasound is noise occurring at frequencies below that at which sound is normally audible. In this frequency range, for sound to be perceptible, it must be at very high amplitude. However, wind turbines do not produce infrasound at amplitudes capable of causing annoyance as outlined in the following paragraphs .

The UK Department of Trade and Industry study, 'The Measurement of Low Frequency Noise at Three UK Windfarms' (2006), concluded that:

"*Infrasound noise emissions from wind turbines are significantly below the recognised threshold of perception for acoustic energy within this frequency range. Even assuming that the most sensitive members of the population have a hearing threshold which is 12 dB lower than the median hearing threshold, measured infrasound levels are well below this criterion. "*

It goes on to state that, based on information from the World Health Organisation, *'there is no reliable evidence that infrasound below the hearing threshold produce physiological or psychological effects' and that 'it may therefore be concluded that infrasound associated with modern wind turbines is not a source which may be injurious to the health of a wind farm neighbour'.*

In terms of perceived effects from shadow flicker and noise, a shadow flicker assessment has been conducted and is included in Chapter 12 of this EIAR and a Noise assessment is included in Chapter 7.

In relation to shadow flicker, the developer commits to a "zero shadow flicker policy" (defined in Chapter 12) through the installation of shadow flicker monitoring and software management measures in this regard please refer to Chapter 12. In terms of noise, operational wind farm noise levels meet the derived night and daytime noise limits at all residential properties surrounding the proposed Drehid Wind Farm. However, for some receptors a new source of noise will be introduced into the soundscape, and it is expected that there will be a slight to moderate significance of impact, with dwellings closest to the project with a long-term moderate significance of impact.

Following a review of literature regarding the potential impact of operational wind farms on human health, it is concluded that there is no scientific consensus to support an association between negative health impacts and responsible wind turbine development. The operational phase of the Proposed Wind Farm will therefore likely have a long-term, imperceptible, neutral impact on human health in proximity to the wind farm site. With respect to safety, only trained and licensed employees will be permitted to access the turbines. Appropriate training will be provided for potential emergencies; therefore, the operational phase of the proposed development will have a negligible impact on public health and safety.

11.6.9.3 Potential Health and Safety Impacts from Proposed Cables and Electromagnetic Interference

Wind turbines, like all electrical equipment, produce electro-magnetic radiation. The provision of underground electricity cables similar to the proposed capacity is however commonplace throughout Ireland and the installation to the required specification does not give rise to health concerns. The following research outlines the potential for health impacts caused by electromagnetic interference.

The EirGrid document 'EMF & You: Information about Electric & Magnetic Fields and the electricity transmission system in Ireland' (EirGrid, 2014) provides information on studies which have been carried out on the health impact of electromagnetic fields (EMF). This report notes that since 1979, many scientific studies have been carried out on the possible effects of EMF on people. Agencies include the World Health Organisation (2006), the National Radiological Protection Board of Great Britain (2004), and the International Agency for Research on Cancer (IARC) (2002).

In 2009 the International Commission on Non-Ionising Radiation Protection (ICNIRP) issued guidelines for exposure for members of the public to DC magnetic fields. Other more recent reviews have been performed for the UK's Health Protection Agency (2012) and the European Union's Scientific Committee on Emerging and Newly Identified Health Risks (2015). The Eirgrid (2014) report notes that:

"These agencies concluded that exposure to only very strong DC magnetic fields can cause biological effects. The exposures required to produce such effects, however, are extraordinarily high relative to levels of DC magnetic fields produced by common sources."

The Eirgrid (2014) report concludes that exposure to extremely low frequency (ELF)-EMF from power lines or other electrical sources is not a cause of any long-term adverse effects on human, plant, or animal health. A 2019 Eirgrid report titled 'The Electricity Grid and Your Health' states that:

"The consensus from health and regulatory authorities is that extremely low frequency EMFs do not present a health risk."

To ensure such adverse effects do not occur, the WHO (World Health Organisation) monograph recommended that policymakers establish guidelines for ELF-EMF exposure for both the public and workers, and that the best source of guidance is the ICNIRP guidelines.

In 2010, ICNIRP issued updated guidelines, which reviewed the research since the 1998 report and replaced previous recommendations given by ICNIRP for this frequency range. The revised range is detailed in table 10.11. The underground cable to be installed complies with these ICNIRP guidelines:

ICNIRP Guidelines for limiting exposure to time varying electric and magnetic fields (1Hz–100kHz) Health Physics 99(6):818-836; 2010.

Magnetic flux densities for Alternating Current (AC) magnetic fields are reported using units of microtesla (µt) and electric fields in kilovolts per metre (kV/m). The ICNIRP guidelines formed the basis of the EU guidelines for human exposure to EMF (EU, 1999) and the EU Directive 2013/35/EU on the minimum health and safety requirements regarding the exposure of workers to the risks from EMFs.

Table 11-11: ICNIRP Guidelines

Exposure Characteristics	Electric Field Strength (kV/m)	Magnetic Flux Density (µT)
ICNIRP 2010 General Public Reference Level	5	100

The magnetic fields associated with underground cables decrease rapidly with distance. For underground cables, the fields decrease with the square of distance. The electric field emissions from underground cables are negligible as the ground absorbs the field.

As the proposed cable does not pass under housing, the exposure levels will be extremely low. Most homes have average magnetic field levels in the range 0.2 µT to greater than 0.4 µT. These magnetic fields are attributable to low voltage sources such as wiring, appliances, and distribution circuits (Mastanyi et al, 2007). In dwellings and other properties with electricity, the levels will not exceed the ICNIRP guidelines by a significant margin.

Based on the details of the Proposed Wind Farm, there will be no impact on residential properties at any distance from the proposed development as the ICNIRP guidelines are not exceeded at all relevant distances including directly above the cables. The magnetic field associated with an underground 110kV cable is 2.32 µT directly above ground and 0.15 µT at 10 meters from the cable (EirGrid, 2019), significantly below the ICNIRP Guidelines levels of 100 µT. The ESB state that exposure to electrical fields associated with underground cables are considered negligible (ESB, 2017).

The HSE, in their 2017 report 'Position paper on wind turbines and public health' state the following with regard to Electromagnetic radiation:

"There is no direct evidence from which to draw any conclusions on an association between electromagnetic radiation produced by wind farms and health effects. Extremely low-frequency electromagnetic radiation is the only potentially important electromagnetic emission from wind farms that might be relevant to health. 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 suburban homes."

In the case of the Proposed Substation the electric and magnetic fields expected to be associated with the operation of the substation, underground cable and loop-in connection to the overhead line, fully complies with the ICNIRP and EU guidelines on exposure of the general public to ELF EMF. Therefore, the potential impact to human health as a result of electromagnetic interference associated with the operational phase of the Proposed Development will be negligible and imperceptible.

11.6.9.4 Vulnerability of the Project to Major accidents and Natural Disasters

EU Directive 2014/52/EU which amends Directive 2011/92/EU states the following in relation to vulnerability of a project to major accidents and natural disaster:

'In order to ensure a high level of protection of the environment, precautionary actions need to be taken for certain projects which, because of their vulnerability to major accidents, and/or natural disasters (such as flooding, sea level rise, or earthquakes) are likely to have significant adverse effects on the environment.

For such projects, it is important to consider their vulnerability (exposure and resilience) to major accidents and/or disasters, the risk of those accidents and/or disasters occurring and the implications for the likelihood of significant adverse effects on the environment'.

The following section considers the Proposed Development's vulnerability to major accidents and natural disasters, potential adverse impacts on human health and the environment, the magnitude of potential impacts, the likelihood of potential impacts and considers the preparedness of the project in case of accident, disaster or emergency.

Should a major accident or natural disaster occur, the potential sources of pollution onsite during the construction and operational phases of the Proposed Development are limited. The primary sources with the potential to cause significant environmental pollution and associated negative impacts on human health and the environment include the bulk storage of hydrocarbons, chemicals and wastes. In the case of the Proposed Development site, the storage of chemicals of this kind are strictly limited.

There is limited potential for significant natural disasters to occur at the site as Ireland does not suffer from extreme temperatures like that of many countries at a similar latitude due to the dominant influence of the Gulf Stream. This provides Ireland with a mild temperate climate. Potential natural disasters that may occur are therefore limited to:

- Flooding;
- Fire;
- Major incidents involving dangerous substances;
- Catastrophic events; and
- Landslides.

Flooding

In the event of extreme weather conditions there is potential for the Proposed Development to negatively impact on human health and safety and the surrounding environment due to increased surface water runoff as a result of additional impermeable surfaces such as wind turbine hardstands and new access tracks. This has potential to add to flood risk which may negatively impact on human safety (including traffic), water quality, biodiversity, soil stability, material assets and archaeological or architectural heritage. It is unlikely that a potential increase in flood risk will impact on noise and vibration, air and climate, landscape and visual and telecommunication and aviation. The magnitude of these consequences has potential to be significant, resulting in potential injury or fatality, property damage, infrastructure damage and damage to ecosystems.

The risk of flooding is addressed in Chapter 10: Hydrology and Water Quality, which concludes that the Proposed Development will have a minimal impact on flood risk in the surrounding area. There is no vulnerable infrastructure located within Flood Areas and the project will not create flooding upstream or downstream from the proposed site.

In the event of extreme weather conditions, the proposed surface water drainage will manage storm water avoiding significant negative impact on the project's infrastructure. Therefore, the Proposed Development is not likely result in increased flood risk, which will not likely result in effects on human safety (including traffic), water quality, biodiversity, soil stability, material assets and archaeological or architectural heritage, as the increased flood risk is considered negligible.

Fire

Section 15 of the 2014/52/EU directive which amends the 2011/92/EU directive on the assessment of the effects of certain public and private projects on the environment states:

> *'In order to ensure a high level of protection of the environment, precautionary actions need to be taken for certain projects which, because of their vulnerability to major accidents, and/or natural disasters (such as flooding, sea level rise, or earthquakes) are likely to have significant adverse effects on the environment. For such projects, it is important to consider their vulnerability (exposure and resilience) to major accidents and/or disasters, the risk of those accidents and/or disasters occurring and the implications for the likelihood of significant adverse effects on the environment…'*

Therefore, the vulnerability of the proposed Wind Farm development has been considered with regards to the development's exposure and resilience to such risks. The adverse implications of such accidents and/or disasters on the environment have also been considered and assessed.

In respect of fire, in May 2017 a major gorse/ground vegetation fire incident took place in proximity to the 169 MW Galway Wind Park. Furthermore, in May 2020, a fire also took place at the Bord na Mona Drehid waste management disposal plant located to the south of the Proposed Development. Thus, in order to avoid negative impact from potential wildfires, management plans are in place to control the potential spread of forest fires. This is achieved through the implementation of fire breaks within the lands and the training of staff in firefighting. Fire plans are reviewed and updated and provisions for firefighting are checked annually.

In the event of electrical equipment catching fire at the Proposed Development site, there is potential for negative impact on human health and safety, air quality, water quality, biodiversity, soils, material assets, archaeological or architectural heritage and landscape and visuals. The magnitude of these consequences has potential to be significant and negative, resulting in potential injury or fatality, property damage, infrastructure damage, loss of forested lands and damage to ecosystems. It is unlikely that potential fire at the site will have an effect on noise and vibration and telecommunication and aviation.

The potential for fire at the Proposed Development site is mitigated against by design. Furthermore, the Proposed Wind Farm will be remotely monitored, and potential accidents will be quickly identified and reported.

In line with IWEA Health and Safety Guidelines for the Onshore Wind Industry (2011), Emergency Response Plans will include emergency response procedures for initial actions in the event of a fire. Records will be kept for testing fire alarms and drills and maintenance/inspection of fixed and portable firefighting equipment.

Information will be provided to employees on fire safety and fire prevention, including risks of and control measures to prevent fire outbreak, evacuation procedures and those responsible for their implementation, and the use of firefighting equipment, in line with HSA guidance.

During the construction phase of the Proposed Development, an emergency response plan will be in place as set out in Section 6 of the CEMP, included in Appendix 3.2 of Volume 3 of this EIAR.

Major Incidents Involving Dangerous Substances

Major industrial accidents involving dangerous substances pose a significant risk to human health and to the environment both on and off the site of an accident. The Health and Safety Authority (HSA) of Ireland list all upper and lower tier SEVESO establishments throughout Ireland.

Irish Industrial Explosives Ltd is located at Clonagh, Enfield, Co. Kildare, approximately 2.6 km from the Proposed Development. The site is categorised as an upper tier SEVESO site, with a consultation radius of 1000 m set out section 10.13.1 in the Meath County Development Plan 2021-2027. Thus, the Proposed Development is located outside of the consultation distance of Irish Industrial Explosives Ltd. and therefore, no further consultation is required.

Given the nature of the Proposed Development, coupled with the lack of proximity to established Seveso sites, there is a low risk of negative impact to the Proposed Development and its receiving environment, as set out throughout this EIAR, arising from the occurrence of such a potential accident.

Catastrophic Events

According to the Health and Safety Authority (HSA), operational wind farms are still considered a workplace (albeit not permanently occupied). All persons who have control to any extent over the wind farm have duties to ensure, so far as reasonably practicable, that the wind farm does not pose a risk to those working there or to anyone not employed there but who may be affected by activities on the wind farm.

Each wind turbine, incorporating the tower, blades, gearbox and ancillary equipment in the tower and nacelle are considered to be machines under the European Machinery Directive [2006/42/EC]. The duties on designers and manufacturers of machinery are set out in the Machinery Directive, which has been transposed into national law by the 2008 European Communities (Machinery) Regulations [S.I.No.407/2008]. All wind turbines will be CE marked, which is in effect, a mark of assurance that the wind turbines comply with the essential health and safety requirements (EHSRs) of EU supply law.

In all cases, the manufacturer or the manufacturer's authorised representative must compile information in a technical file confirming how the machine complies with these requirements. The maintenance of turbines and ancillaries must only be carried out by competent, trained and qualified personnel. The system of work for operation and maintenance must be planned, organised, maintained and revised to ensure the safety of personnel.

Potential catastrophic events associated with operational wind turbines include:

- Wind turbine toppling (due to foundation or tower failure);
- Wind turbine rotational failure in extreme wind conditions (due to control system or rotor break failure); and
- Fire.

The primary mitigation against a catastrophic event that may endanger the health and safety of the public has been implemented at design stage through adequate siting of wind turbines which provide sufficient set back distances from occupied buildings and other infrastructure to avoid the risk of negative impact in the event of wind turbine collapse.

The tip height for wind turbines at the Wind Farm is 147.9 m for T1, and 167 m for T2 to T11. A setback distance is applied between wind turbines and existing HV overhead lines.

Turbines have been sited with consideration for existing ground conditions to minimise the risk of turbine foundation failure, toppling and landslide. Intrusive site investigations have been carried out to confirm ground conditions at turbine locations as well as slope stability analysis for turbines located on sloped ground. Other design mitigation measures employed for the siting of wind turbines include the following:

- Areas mapped by GSI as having a high susceptibility to landslides have been avoided;
- Turbine locations have been assessed by site investigation and visually by geotechnical engineers prior to confirmation of final siting;
- Care has been taken in design of road and hard standing alignments, cutting and filling and drainage;
- Peat probing has been carried out at turbine locations. Locating turbines in peat has been carried out in accordance with best practice guidelines and standards as set out in Chapter 9 Land, Soils & Geology.

Wind turbines are fitted with sophisticated remote monitoring and control systems to manage rotational speed. Turbines also have the capability to shut down in storm conditions through adjustment of blade pitch. Turbines are also fitted with emergency power supply (EPS) units to provide backup power in the event of a loss of mains power supply that could impact the control system.

Wind turbines shall be fitted with fire suppression systems and will have emergency escape procedures in place for operational staff in the event of fire in a wind turbine. An emergency response plan is contained in the CEMP included in Appendix 3.2 of Volume 3 of this EIAR.

Landslides

Landslides pose a risk to a range of environmental receptors including human safety (including traffic), hydrology and water quality, biodiversity, land, soil, geology and hydrogeology, material assets and archaeological and cultural heritage. The negative impacts associated with landslides can have a significant to profound effect on environmental sensitivities, depending on the scale of the landslide and the receiving environment.

As detailed in Chapter 9: Land, Soils and Geology, a slope stability assessment was carried out at the Wind Farm site to investigate the lands for potential slope failure. Safety ratios for potential slope failures indicate that the slopes are considered stable in the long-term drainage conditions. Site investigation was conducted to investigate the presence of peat on site and in accordance with the Scottish Executive Best Practice Guide for Proposed Electricity Generation Developments (2017). In terms of slope stability, the proposed development and proposed infrastructure locations are generally located within areas of ‘x' susceptibility.

No evidence of slope instability was observed at the site and there are no historical records of landslide activity within 1 km of the site on the GSI database.

Mitigation by design has been incorporated into the project to avoid potential effects from landslides. Mitigation measures for potential landslide/slope failure are set out in Chapter 9: Land, Soils and Geology. Mitigation measures relating to flood risk which could have a bearing on potential landslides are detailed in Chapter 10: Hydrology and Water Quality.

During the construction phase of the Proposed Development, an emergency response plan will be in place as set out in Section 6 of the CEMP in the unlikely event of a landslide/slope failure.

In relation to potential vulnerability of the project to major accidents and natural disasters it is concluded that the potential susceptibility of the project to major accidents and or natural disaster of the Proposed Development is not significant/slight.

11.6.10 Potential Impacts – Human Health – Decommissioning

The decommissioning phase of the Proposed Development, as described in Chapter 3 of this EIAR, provides for the removal of turbines and associated infrastructure from the site. The potential impacts associated with decommissioning phase in relation to human health will be similar to those associated with construction phase as detailed in Section 11.7.2.

Decommissioning works will include removal of above ground structures including the turbines, mountings, and fencing. During the decommissioning works there is potential for significant impact to human health and safety for construction workers on site. These impacts are similar to those set out in section 11.7.2. Potential impacts to human health and safety on-site will be prevented through best practice methods as per the CEMP and will include staff training and knowledge of the site-specific decommissioning plan. Once mitigation measures and best practice construction site methods are followed, potential negative impact on human health and safety is expected to be imperceptible and temporary.

During the decommissioning works there is potential for negative impact on health and safety of the public. Similar to Section 11.7.2, impacts are associated with the presence of a construction crew, increased traffic, presence of heavy goods vehicles and machinery, potential obstructions on the public road and potential obstruction to recreation and amenity trails. Potential impact to public health and safety during the decommissioning phase is considered temporary moderate and negative.

However, a Construction and Environmental Management Plan for decommissioning works will be followed, clear signage will be utilized on public roads and walkways and the community will be informed of works prior to commencement to avoid any potential negative impact to public health and safety. Once good practice is followed, the potential for negative impact on public health and safety is expected to be temporary and not significant.

The Proposed Substation element of the project will remain in situ following decommissioning of the Proposed Wind Farm. Therefore, there is no expected impact on human health and safety in the Proposed Substation area as a result of the decommissioning phase. Similarly, there is no expected impact on human health and safety across the TDR as a result of the decommissioning phase.

11.6.11 Mitigation Measures – Human Health & Safety

11.6.11.1 Construction Health and Safety Mitigation Measures

A site-specific Safety and Health Management Plan has been prepared on a preliminary basis for the project in accordance with the Safety, Health and Welfare at Work (Construction) Regulations 2013 and is included in the CEMP contained in Appendix 3.2 of Volume 3 EIAR Appendices.

The Safety and Health Management Plan shall be finalised in accordance with this outline plan following the appointment of the contractor for the main construction works.

All hazards will be identified, and risks assessed. Where elimination of the risk is not feasible, appropriate mitigation and/or control measures will be established. The contractor will be obliged under the construction contract and current health and safety legislation to adequately provide for all hazards and risks associated with the construction phase of the project.

Solas (formerly FÁS) Safe Pass registration cards are required for all construction, delivery and security staff. Construction operatives will hold a valid Construction Skills Certificate Scheme card where required.

The developer is required to ensure a competent contractor is appointed to carry out the construction works. The contractor will be responsible for the implementation of procedures outlined in the Safety & Health Plan.

Public safety will be addressed by restricting site access during construction. Appropriate warning signs will be posted, directing all visitors to the site manager.

11.6.11.2 Operational Health and Safety Mitigation Measures

No mitigation measures are required in relation to people and animals during operational stages of the development.

For security purposes, access to the towers and the substation compound will not be obtained without the corresponding keys. The substation will be enclosed by palisade fencing and equipped with intruder and fire alarms in line with ESB and EirGrid standards.

A harness will be provided to allow access to the nacelle and will be connected to a central line running behind the ladder. This will prevent personnel from freefalling more than a few centimetres, hence reducing the potential for injury.

Adequate clearance of structures from overhead lines will be provided. In this case, all on-site electrical connections are carried by underground cable.

There will be lightning conductors on each turbine as all structures standing tall in the sky require protection and turbines in particular to allow surge protection to electrical components.

As no impacts from ELF-EMF have been identified, mitigation measures are not included.

11.6.11.3 Operational Health and Safety Mitigation Measures for the Proposed Recreation Amenity Trail

Signage will be located along the trail at regular locations to clearly define the route of the trail. Safety signage will also be located at regular locations regarding fire prevention and public health & safety awareness.

Regular maintenance and upkeep of the trail will be provided with litter bins located along the trail.

11.6.11.4 Human Health for Operational Stage

No mitigation measures are required in relation to human health during the operational stage of the proposed development.

11.6.12 Residual Impacts

Once construction mitigation measures are put in place, issues of health and safety are also considered to be similar to the normal risks at a typical construction site.

There are no operation risks associated with the operation of the wind turbines and cables and once mitigation measures are implemented, the substation will not have an impact on issues of human health or health and safety during operation.

The 161,885 MWh of electricity produced by the Proposed Wind Farm would be sufficient to supply approximately 38,500 Irish households with electricity per year, based on the average Irish household using 4.200 MWh of electricity (this latest figure is available from the March 2017 CER Review of Typical Consumption Figures Decision).

The 2022 Census of Ireland recorded a total of 88,997 households in Co. Kildare. Per annum, based on a capacity factor of 35%, the Proposed Wind Farm would therefore produce enough electricity for the equivalent of approximately 43% of all households in Co. Kildare.

11.7 Material Assets

This section provides a comprehensive overview of the material assets (renewable and non-renewable resources, and utility infrastructure) of the receiving environment in order to provide an understanding of the potential effects which the proposed development may have on renewable and non-renewable resources, and utility infrastructure. The waste produced as a result of the Proposed Development is also considered in this section.

11.7.1 Existing Environment

According to the GSI there are a number of operational and disused quarries and pits in the vicinity of the site.

It is proposed to haul construction materials, from quarries and pits within the vicinity of the proposed development. The quarries and pits within the vicinity of the proposed development, provide sources of aggregates, hardcore, fill materials; washed sand and gravel, pebble sand aggregates, ready mix concrete, and mortar.

In terms of other non-renewable resources within the site area, there is peat beneath areas of forestry.

11.7.2 Potential Impacts – Construction

11.7.2.1 Non-renewable Resources

The construction of the Proposed Development will impact on natural resources such as aggregates which will be sourced from quarries and pits within the area – please refer to Chapter 9: Land, Soils and Geology for further details. Existing tracks have been used where possible and the layout was designed to minimise the length of new track required in order to reduce the requirement for such stone material. In addition, it is likely that a small amount of granular material may be required to maintain access tracks during operation which could impact the source quarry.

Peat excavation will occur in areas of forestry where tree felling is required to facilitate development works relating to the wind farm.

11.7.2.2 Renewable Resources

The Proposed Development is intended to capture the renewable wind resource at the site. There will be no negative effects on the renewable energy resource of the receiving environment.

It is considered that the proposed development will have an overall long-term positive impact in terms of carbon reduction and climate change. It will assist Ireland in meeting its target of producing 80% of electricity from renewable sources by 2030 as set out in the Climate Action Plan 2024/2025.

Any trees felled for wind farm purposes will be replanted at another unplanted location as set out in Irish Forest Service Guidelines. The proposed development will require the felling of forestry within and around the wind farm infrastructure to accommodate the construction of some turbine foundations, hard stands, crane pads, access tracks and substation. The estimated area of infrastructural tree clearing required for the Proposed Development will be approximately 28.4 hectares. A felling licence will be sought from the Forest Service prior to any tree felling and will include the provision of relevant replant lands to be carried out in lieu of the proposed tree felling on the site. The overall effect of the proposed wind farm development on renewable resources will be neutral.

11.7.2.3 Utilities Infrastructure

There has been no major utility infrastructure identified within the site boundary.

Utilities such as overhead power lines or telephone lines may require diversion or be temporarily disrupted during the construction of the wind farm development to facilitate the delivery of large components to the site. This has the potential to cause a brief to temporary non-significant negative impact on nearby dwellings and commercial/industrial activities along the route. Potential effects are discussed in Chapter 13 Traffic and Transportation .

There will be no requirement to construct or lay cables along the public road as part of this revised proposal as connection to the national grid will be onsite.

11.7.2.4 Waste

During the construction phase of the proposed development, waste will be generated due to the various construction activities and materials required for the installation of infrastructure at the Proposed Development site. Waste will be segregated and stored on site as set out in the CEMP.

A fully authorised waste management contractor will be appointed for the collection of the various waste streams and will ensure the regular emptying/and or collection of these receptacles as set out in the CEMP.

11.7.3 Potential Impacts – Operational

Once the Proposed Development is operational, the potential for negative effects on material assets is minimal. Maintenance of access tracks and infrastructure may require small amounts of fill, however, the impact of this is likely to be slight/imperceptible.

The direct effect of electricity generated by the Proposed Development will give rise to a reduction in the quantity of fossil fuels required for electricity generation across the State. This will give rise to a long-term slight positive impact on renewable energy resource and will contribute to reducing Ireland's dependency on imported fuel resources.

No impact on existing major utility infrastructure is expected at the Proposed Development site during the operational phase.

Significant volumes of waste are not expected to be produced during the operation phase of the Proposed Development. If maintenance works are required at the wind farm site, substation or TDR during the operational phase, a CEMP will be in place, and waste management procedures as set out in section 11.8.2.4 will be followed. Any waste produced during the operational phase of the Proposed Development will have an imperceptible impact on the receiving environment.

11.7.4 Potential Impacts — Decommissioning

The potential impacts associated with decommissioning phase of the Proposed Wind Farm will be similar to those associated with construction but of a reduced magnitude.

Decommissioning works will include removal of above ground structures including the turbines and met masts. Turbine foundations and access tracks will be left in situ.

There will be no significant negative impacts on renewable and non-renewable resources during the decommissioning phase. No likely negative impacts on utility infrastructure are expected during the decommissioning phase.

Waste will be produced as a result of the decommissioning activities.

The CEMP in Appendix 3.2 will be implemented during the decommissioning phase and waste management procedures as set out in section 11.8.2.4 will be followed. Decommissioned turbine components will be reused and recycled where possible and all non-reusable or recyclable materials will be disposed of in a licensed waste facility.

Decommissioning is expected to take place 35-years from commissioning of the proposed wind farm and therefore it is uncertain which facilities will remain operational at this time. Through the use of a waste management plan, similar to that as detailed in the CEMP contained in Appendix 3.2, waste produced during the decommissioning phase will have an imperceptible impact on the receiving environment. Waste produced during the decommissioning phase will likely have a slight negative impact on the capacity of the licenced waste facilities used at the time of decommissioning.

The Proposed Substation element of the project will remain in situ following decommissioning of the Proposed Wind Farm. The Proposed Substation would become a "node" on the grid for EirGrid, representing a valuable asset to the national transmission infrastructure. Therefore, the Proposed Substation will continue to have a long term, slight positive effect on material assets following the decommissioning of the Proposed Wind Farm.

There is no expected impact on material assets across the TDR as a result of the decommissioning phase.

11.7.5 Mitigation Measures

Non-renewable resources of general construction fill will be sourced locally and will be excavated from on-site borrow pits insofar as possible to minimise transportation distances, reducing CO2 emissions.

Where services and street furniture are required to be removed temporarily to accommodate turbine delivery, residents and business in proximity to the works will be informed in advance.

The comprehensive turbine delivery procedure which will be implemented between Dublin Port and the wind farm site will include safety procedures and Garda escort in accordance with the Traffic Management Plan contained within the CEMP in Appendix 3.2.

The Waste Management Plan will be finalised in accordance with the CEMP following the appointment of the contractor for the main construction works and will take cognisance of any newly published waste management policy.

11.7.6 Residual Impacts – Renewable, Non-Renewable Resources and Utility Infrastructure

Non-renewable resources such as aggregates and cement are required onsite during the construction phase. This will result in a permanent negative imperceptible residual impact on non-renewable resources. The Proposed Development will result in a long-term slight positive residual impact on non-renewable resources by offsetting the use of fossil fuels in electricity generation over the lifetime of the project.

The Proposed Substation and underground grid route cable will be taken in charge of by Eirgrid or ESB following decommissioning, providing a long-term slight positive residual impact on electricity infrastructure in the area.

Residual waste from the construction, operation and decommissioning phases will be disposed of in a licensed waste facility. This will result in a permanent slight negative impact to capacity of licenced waste facilities in the area of the proposed development.

11.8 Do-Nothing Scenario

In the event that the Proposed Development does not proceed, the existing land use on the site will continue in its present form consisting of forestry and agricultural land for the foreseeable future.

In the absence of renewable energy development, it is possible that there will likely be a continuance of excessive greenhouse gas emissions and consumption of fossil fuels. The opportunity to harness the wind energy capacity of the site would be lost, further constraining the State from achieving its renewable energy targets of 80% by 2030. The net displacement of c. 37,217 tonnes of CO2 per annum as a result of the operational phase of the proposed development will not be achieved.

In 2022, 85.8% of energy came from fossil fuels indicating Ireland's heavy dependency on the importation of fossil fuels to meet its energy needs in transport, heat and electricity (SEAI, 2023). This dependency on energy imports leaves Irish consumers exposed to fluctuating international oil and gas prices. Harvesting renewable, indigenous resources such as wind will help diversify the Irish generation portfolio and reduce Ireland's dependency on imported fuel resources. In the do-nothing scenario, the proposed 52.8 MW wind farm will not contribute to reducing fossil fuel dependency.

It is also envisaged that if the Proposed Development does not proceed, opportunity for employment relating to the construction, operation and decommissioning of the Proposed Development will be lost, resulting in a lost opportunity for potential economic activity in the County Kildare and Meath Area. Development contributions and considerable commercial rates would not be made payable to both Kildare County Council by the developer, and no Community Benefit Fund Scheme will be put in place in the locality resulting in a lost opportunity for benefit to community infrastructure. The Recreational Amenity Trail proposed as part of this development, would not be constructed, which would potentially affect the recreation and amenity resource of the greater area.

11.9 Cumulative Impacts

As part of the cumulative impact assessment included throughout this EIAR, planned, proposed, consented and existing developments/projects in the area of the Proposed Development were considered for potential cumulative impacts on the receiving environment. Wind farm developments within 20 km, solar farms and other large developments within 5 km of the Proposed Development were considered for potential cumulative impacts. The full list of these projects and proposed developments are presented in Appendix 1.2.

For the purpose of assessing potential cumulative impacts on Population, Human Health and Material Assets specifically, projects and proposed developments intersecting with the electoral divisions have been identified. Therefore, the projects and proposed developments which are understood to have the potential for cumulative impacts on Population and Human health are tabulated in Table 11-12 below.

Table 11-12: Cumulative projects and proposed developments

Development	Direction from Proposed Development site	Distance from Proposed Development site (km)	Status
Timahoe North Solar Farm	E	Adjoining eastern boundary	In construction/nearing completion
The consented development comprises (a) the construction and operation of 2 areas of solar photovoltaic arrays mounted on metal frames over an area of approximately 200ha, and having a maximum overall height of 3 metres over ground level; (b) Internal solar farm underground cabling; (c) 2 no. temporary construction compounds; (d) recreation and amenity works, including looped walk (upgrade of existing tracks and provision of new tracks, car parking and vehicular access); (e) 1 no. Battery Storage compound; (f) upgrade of existing tracks and provision of new site access roads; (g) site drainage; (h) forestry felling and replanting; (i) permanent signage; and (j) all associated site development and ancillary works. The proposed renewable energy development will have an operational life of 35 years from the date of commissioning. The solar farm has been in construction since 2022 and is exporting power to the grid since September 2024. Construction is nearing completion at the time of writing this EIAR and is expected to be minor works at this time such as snagging.			
Mulgeeth Solar Farm	NE	Adjoining eastern boundary	Refused (may be appealed)
Kildare planning reference 2460568. Consent is for a period of 10 years to construct and complete a solar PV energy development with a total site area of 80.9 hectares, comprising of the construction of PV panels mounted on metal frames, transformer stations, GRP units, internal access tracks, perimeter fencing with CCTV cameras and access gates, electrical cabling and ducting, temporary construction compounds, widening of an existing entrance, landscaping and all ancillary infrastructure and associated works. The solar farm would be operational for 35 years. The export capacity to grid is estimated to be c. 56MW MEC.			
Coolcarrigan Solar Farm	SE	3.7 km	Granted consent
Kildare planning reference 2360073. Consent for a 10-year permission, for the construction and operation of a renewable energy development within a site boundary of c. 114 ha. The proposed development will consist of a development area of circa 71.7 ha including solar on fixed on ground mounted frames with a maximum height of 3 metres, 1 No. battery storage compound, 1 No. customer switchgear container, 1 No. 110kv grid connected single storey substation, 1 No. single storey customer substation and all associated electrical plant, inverter units, electrical transformers, battery units, cooling equipment, underground cabling and ducting, boundary fencing, security entrance gates, CCTV, upgrading of existing access road and new internal access roads and all associated ancillary activities. The proposed development will have a 35-year operational life from the date of commissioning. Revised by significant further information which consists of Provision of quantum of energy export (of up to 80MW) in the proposed development and storage capacity of proposed battery compound (of up to 80MWh).			
Hortland Solar Farm	E	3.9 km	Operational since 2022
An existing solar farm with a total site area of 38.08 hectares. The consented development included two electrical substation buildings, six electrical transformer and inverter station modules, solar PV panels ground			

Development	Direction from Proposed Development site	Distance from Proposed Development site (km)	Status
mounted on support structures, vehicular access, access gates and internal access tracks, one spare parts container, security fencing, electrical cabling and ducting, CCTV cameras and other ancillary infrastructure, drainage, temporary construction compound, landscaping and habitat enhancement as required and associated site development works and services.			
Dysart Solar Farm	NE	2.5 km	Granted consent
10 year permission for the construction of an up to 25 MW solar PV farm comprising approximately 86,200 no. photovoltaic panels on ground mounted frames within a site area of 35.6 hectares and associated ancillary development including 20 no. transformer stations, 20 no. auxiliary transformer stations, 20 no. inverters, 1 no. client side substation, 1 no. single storey storage building, 1 no. single storey communications building, 1 no. single storey DNO building, 6 no. CCTV security cameras mounted on 4 metre high poles and perimeter security fencing (2 metres high) and localized improvements to an existing agricultural access from the adjoining L1004 road to the south.			
A number of residential developments	N	2.8 km	Granted consent
There are a number of consented large residential developments in Enfield which have been integrated into one large project. The planning references are Meath Co. Co. Reg Ref. 21/1449, 21/1461, 21/1462, 23/272. The consents include 99 residential units (21/1449), 67 residential units (21/1461) 77 residential units (21/1462) and a further 77 residential units (23/272); all with ancilliary infrastructure such as public open space, car parking, bicycle parking etc.			
Johnstown Estate Renovations	N	2 km	Granted consent
Kildare planning reference 23/613. The proposed works are principally to the existing banquet hall and conference centre located to the south of the main hotel building and associated external landscaped areas. The proposed external works comprise: (i) the provision of a new 210 sq.m. store room extension (5.450m in height) over existing service yard to the rear (east) of the building; (ii) a 136 sq.m. extension to the south east corner of the building to provide a new glazed orangery bar; (iii) demolition of existing single storey draught lobby (30 sq.m.) and construction of a new 60 sq.m. extension (4.050m in height) on the northern side of the building to provide for a bar area (44 sq.m.) and 2 no. store rooms (8sq.m. each); (iv) a new 20 sq.m. entrance lobby with an external canopy to the southern side of the building; (v) 2 no. new external seating areas to the east and west of the proposed entrance lobby; (vi) a new vehicular circulation layout with roundabout and water feature to the front of the proposed entrance lobby, loading bay, access ramp, external stair case, footpaths; (vii) relocation of the approved bike store located in the service yard (Reg. Ref. 22/1089) underneath proposed store building; and, (viii) the provision of a landscaped seating deck to the south of the building. Proposed internal works comprise reconfiguration of existing conference and banqueting accommodation to provide (a) 2 no. conference banqueting suites (320sq.m. and 280 sq.m.), (b) 2 no. meeting rooms (180 sq.m. and 110 sq.m.). (c) reception lobby (135 sq.m.) and (d) associated toilets, storage, cloakrooms and staff areas. Retention permission is sought for 4 no. accessible car parking spaces provided to the front of the hotel (southwest facade) and existing landscaping works comprising an existing timber pergola structure to south of the hotel development. The development also includes all other associated engineering works, landscaping, and ancillary works necessary to facilitate the development.			
Restoration of 5 ha of agricultural land	N	3.2 km	Granted Consent

Development	Direction from Proposed Development site	Distance from Proposed Development site (km)	Status
Meath planning reference TA200121. The development comprises: a) use of existing stockpiles for site restoration (b) importation of inert excavation spoil comprising natural materials of clay, silt, sand, gravel or stone for the purposes of restoration of a previously extracted area (QY/54) to restore the site to a beneficial agricultural and ecological afteruse (5.85 hectares) (c) Temporary Portacabin Offices and Staff Facilities 100sqm. (d) Wheel Wash and weighbridge 134m2 (e) Site entrance and access road (f) Lockable access gate at the pit entrance (g) All other ancillary buildings, plant and facilities for the restoration, and all ancillary site works. The application is accompanied by an Environmental Impact Statement (Environmental Impact Assessment Report) and associated documents. The application relates to a restoration development for the purpose of an activity requiring a Waste Permit to be issued by the Meath County Council. Significant further information/revised plans submitted on this application			
Blackwood Equestrian Centre	SE	2.5 km	Granted consent
Kildare planning reference 191031. Proposed two storey stable block, consisting of 6 no. horse stables & 7 no. pony stables, a wheelchair accessible toilet & two no. stairwells at ground floor level, tack room, kitchen/dining/lounge area for refreshment purposes (for staff and patrons of the livery centre only), male and female changing rooms and toilets and an office at first floor level (total floor area 494.6 sq.m), proposed horse walker (305.8 sq.m) and horse lunge (305.8sq.m) with proposed dungheap/effluent tank (18.5 sq.m). Existing concrete slab to be demolished and removed off site to authorised waste facility and to install proposed exercise area (1732 sq.m) to include 6 no. floodlights & equine fencing along the existing driveway and proposed exercise area. Permission is sought to install a septic tank and percolation area, 8 no. car parking spaces, gravel pathway to forest, proposed signage (2m sq) at existing gate and all associated site works at the above address. Permission is also sought to retain existing storage shed (24sq.m) and existing driveway.			
Drehid Land Fill Extension	S	0.5 km	Granted consent
ABP reference 317292. Increase in waste material at disposal facility at Drehid Waste Management Facility to accept 440,000 tonnes per annum of non-hazardsous waste material.			
Mixed Use Development in Enfield	N	3.9 km	Granted consent

Development	Direction from Proposed Development site	Distance from Proposed Development site (km)	Status
The development will consist of: The construction of a mixed-use development including a 4 storey over ground floor level mixed use building (c.7,953 sq. m) comprising ground floor lobby (c.169 sq. m), bulky goods retail at ground (c.1,062sq,m) and first floor (c.l,219sq.m), ground floor cafe (c.304 sq. m), ground floor gym (c.352sq. m), first floor health centre (c.822 sq. m), second, third and fourth floor office and conference space (c.2,733 sq. m), core, circulation and plant facilities across all levels (c.1,292 sq.m) and 227 no. car and 80 no. cycle parking spaces to serve the building; 80 no. residential units comprising 1 3 no. 2 storey four-bedroom terraced housing units, 67 no. 2 storey three- bedroom terraced housing units with associated private open space in the form of rear gardens and terraces, 164 no. car and 320 no. cycle residential parking spaces plus 60 visitor cycle parking spaces; c.4,224 sq. m of landscaped public open space; a 2 storey creche facility (c.400 sq. m) with 12 no. car parking spaces; green roofs; solar panels; a two-lane access road linking the development to the roundabout where the R148 meets Dublin Road, providing 2 no. multimodal, priority-controlled junctions and segregated pedestrian and cyclist facilities with a controlled crossing; provision of roadway to access the development from the south via the existing roundabout on the Dublin Road; an internal road and shared surface network, including walkways and its associated infrastructure; watermain, foul and surface water drainage, extension to the proposed foul network and connection to the pump station (permitted under ABP-308357- 20), extension to the proposed watermain, connecting to the existing DN 300 HDPE adjacent to the R148 roundabout, an attenuation pond at the north east of the site (1770 sq.m); and all other ancillary site development works including hard and soft landscaping, boundary treatments, lighting, SuDs, and above and below ground services to facilitate the development.			
Royal Oaks Residential Development	N	3.9 km	Granted consent
Meath planning reference 2492, which is an extension of duration of reference SH304296. Construction of 133 no. dwelling units, creche and associated site works			
68 residential units in Johnstown Bridge	N	1.8 km	Granted consent
Kildare planning reference 22488. Development of 68 No residential units comprising 59 No houses (10 No. 2 bed, 31 No. 3 bed and 18 No. 4 bed) and 9 No. maisonette apartments (8 No. 1 bed and 1 No. 2 bed) and a retail unit/cafe measuring 77.2 sq m, with heights ranging from two storeys to two storeys with attic accommodation over. The development also proposes a new vehicular entrance off Johnstown Road, ancillary car-parking; cycle parking; a pump station; hard and soft landscaping; lighting ;balconies; solar panels; boundary treatments; bin storage; ESB substation and all associated site works above and below ground.			

It is clear from Table 11-12 that there is a lot of solar energy development proposed, in construction or operational within 5 km of the solar farm. Operational solar farms will not have any negative cumulative impacts in terms of air quality and climate; in fact these developments will act cumulatively to result in positive impacts on air quality and climate due to the displacement of fossil fuel alternatives. Such developments might have a negative cumulative effect with the Proposed Development if both projects were being constructed at the same time. While there is potential for this to be the case, the majority of the proposed solar farms are located to the east and are likely to utilise different haul routes during the construction phase, so that cumulative vehicular emissions would not be significant. Dust emissions from the construction phase of two projects being constructed together would be unlikely to act cumulatively as dust emissions typically settle out of the air over short distances.

Of the other developments listed above which are not solar farm developments, the projects which represent the most potential to act cumulatively with the Proposed Development in terms of air quality and climate would be the projects which share the same haul route as the Proposed Development. In particular, there is a consented development to construct 68 residential units in Johnstown Bridge, including landscaping, parking and other facilities. There is the potential for significant cumulative effects on dust emissions if both projects are running in tandem with HGV trips through Johnstown Bridge. However, with the implementation of suitable mitigation measures as set out in Section 1.6.5 and within the CEMP, it is not expected that residual effects would be significant.

It is considered that the Timahoe North Solar Farm and Substation; as well as the Dysart Solar Farm and the infill and recontour of lands at Kilmurry will all have completed the construction stage prior to construction of the Proposed Development commencing. Therefore, impacts associated with the construction phase of the Proposed Development will not act cumulatively with the construction phase impacts of these three projects. Construction of the Proposed Development would therefore provide employment opportunities for a similarly skilled workforce who will have completed working on the solar farm projects. Local workers who will have gained skills in the construction of the 110 kV substation at Timahoe North will benefit from continued employment opportunities offered by the construction of the Proposed Substation. They will also likely have transferable skills which would allow them to work in the construction of the Proposed Wind Farm.In addition to the projects and proposed developments listed in Table 10-12 which intersect the electoral divisions associated with the Proposed Development, a number of consented residential and mixed-use developments were identified approximately 3 km northeast of the Proposed Development, at Enfield Town, County Meath; which do not intersect the electoral divisions but are nonetheless considered as potentially acting cumulatively with the Proposed Development. Meath County Council planning refs 211449, 211461, 211462, 22959, 23272, 23488 and 2492 are all associated with consented residential and mixed-use developments in this area. While these projects are likely to bring large numbers of construction workers into the area, it is anticipated that the potential impacts will primarily be centred on Enfield town and therefore sufficiently removed from the Proposed Development so that cumulative impacts are not significant.

Other developments in the planning system within the vicinity of the Proposed Development consisting of one-off housing and agricultural developments were identified for potential cumulative assessment, however, these developments are small in scale and will have an imperceptible cumulative impact with the construction and operation of the Proposed Development, in relation to population, human health and material assets. This is due to the significant setback of the Proposed Development from nearby planned, proposed and existing projects and the brief to temporary nature of the proposed construction works associated with the TDR. Therefore, potential cumulative impacts associated with small scale development were considered to be imperceptible.

The electricity generating capacity of the Proposed Development, in combination with the consented solar farms and existing wind farms in proximity to the site, will have a long-term significant positive cumulative impact on utility infrastructure and renewable energy resource in the greater area and will have a positive impact on national renewable energy resources as well as reduction in requirements for the use of non-renewable fossil fuels. This will increase national savings on fossil fuel imports.

11.10 Conclusion

The assessment of Population, Human Health and Material Assets has established the existing environmental conditions of the study area, including the Proposed Wind Farm, the Proposed Substation and the Turbine Delivery Route (TDR) Area. Potential impacts were considered for the construction, operational and decommissioning phases of the Proposed Development as well as potential residual and cumulative impacts. Mitigation measures have been proposed where relevant.

The population of the local area to the Proposed Development was found to be of low density and dispersed when compared to averages of County Kildare, County Meath as a whole and the State, however, the TDR has a higher population density just below density figures for County Meath.

The construction and decommissioning of the Proposed Development will likely result in a short-term/temporary population growth in the locality of the Proposed Development during working hours due to the influx of construction workers during the construction and decommissioning phases. However, permanent impact on the population of the study area is considered unlikely as a result of the Proposed Development due to the temporary nature of the construction works.

The economic profile of the Proposed Development does not show any major disparities when compared to the National and County-wide average socio-economic statistics. In general, the baseline conditions of the study area shows healthy socio-economic characteristics.

Positive direct and indirect benefits to economic activity are identified during the construction and decommissioning phases due to the creation of construction jobs based in the area which are likely to provide employment opportunities for those living in the study area and surrounding areas of County Kildare and County Meath for those living in nearby towns and villages. The construction and decommissioning phases are likely to have a temporary positive economic impact on local businesses and services.

The operational phase of the Proposed Wind Farm has been identified as having a positive economic and social impact on the local area with the provision of a Community Benefit Fund which will contribute to social infrastructure in the area and financially benefit those in closest proximity to the proposed wind farm.

Other positive economic benefits as a result of the operational phase of the Proposed Wind Farm includes reducing the State's reliance on fossil fuels which will reduce electricity prices, economically benefiting the consumer in the long-term throughout the State. Rates and development contributions will also benefit the local authority.

With respect to Recreation, Amenity and Tourism, trail walking, equestrian activity and sports grounds are the main activities and attractions in the greater area of the Proposed Development. There are no major tourist attractions in proximity to the site. It is expected that the construction, operational and decommissioning phases of the Proposed Development will have a non-significant neutral impact on recreation and tourism in the area due to the distance of the proposed turbines from significant features.

The provision of the community benefit fund and amenity trail will likely have a moderate positive long-term impact on the amenities of nearby villages and the surrounding area.

Potential impacts on human health and safety have been identified for both construction workers and the general public as a result of the construction and decommissioning of the Proposed Wind Farm. Best practice construction methods and improved safety measures on public roads have been identified as measures to prevent potential accidents during the construction and decommissioning works. Potential health impacts from noise and electromagnetic fields during the operational phase are considered negligible.

Furthermore, the Proposed Wind Farm's potential susceptibility to major accidents and natural disaster is considered negligible.

It is anticipated that the Proposed Wind Farm will avoid significant negative impact on renewable and non-renewable resources by sourcing local building materials where possible, therefore reducing the requirement of transport, reducing CO2 emissions. The Proposed Wind Farm was found to have an overall positive impact on utility infrastructure providing clean energy to the national grid and reducing dependency on fossil fuels. Furthermore, the proposed development will have no impact on existing telecommunications signals during the operational phase of the project as confirmed through consultation with telecommunications providers.

Cumulative impacts have also been considered in relation to proposed, consented and constructed projects located nearby the Proposed Development site. Any significant in-combination impacts identified in relation to population, human health and materiel assets are mitigated against in Chapters such as Traffic and Transportation.

In conclusion, once mitigation measures set out throughout this EIAR are implemented, it is unlikely that significant negative impacts to population, human health and material assets will occur as a result of the Proposed Development.

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