



Chapter 5: Population and Human Health

Coolglass Wind Farm Vol. 2 EIAR

Coolglass Wind Farm Limited

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Acronyms and Abbreviations

ABP	An Bord Pleanála
AWEA	American Wind Energy Association
BAI	Broadcasting Authority Ireland
CAP23	Climate Action Plan 2023
CCC	Carlow County Council
CDP	County Development Plan
CEMP	Construction Environmental Management Plan
CSO	Central Statistics Office
DOEHLG	Department of the Environment Heritage and Local Government
EDs	Electoral Divisions
EHSRs	Essential Health and Safety Requirements
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
ELF	Extremely Low Frequency
EMF	Electromagnetic Field
EMP	Emergency Response Plan
EPS	Emergency Power Supply
ESB	Electricity Supply Board
EU	European Union
EWC	European Works Council
EWEA	European Wind Energy Association
FWD	Falling Weight Deflectometer survey
GSI	Geological Survey Ireland
GVA	Additional Gross Value
HSA	Health and Safety Authority
HSE	Health Service Executive
HV	High Voltage
IARC	International Agency for Research on Cancer
ICNIRP	International Commission on Non-Ionising Radiation Protection
IFI	Inland Fisheries Ireland
IR	Infra-Red
IW	Irish Water
IWEA	Irish Wind Energy Association
LCC	Laois County Council



LCDP	Laois County Development Plan
LVIA	Landscape and Visual Impact Assessment
NESC	National Economic and Social Council
PCE	Pre Connection Enquiry
PCS	Pavement Condition Survey
PPE	Personal Protective Equipment
RESS	Renewable Energy Support Scheme
SAC	Special Area of Conservation
SEAI	Sustainable Energy Authority of Ireland
SEI	Sustainable Energy Ireland
SLR	SLR Consulting Limited
SWMP	Surface Water Management Plan
TBC	To be Confirmed
TDR	Turbine Delivery Route
WEI	Wind Energy Ireland
WFD	Water Framework Directive
WHO	World Health Organisation



5.0 Population Human Health, Material Assets

5.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) examines the potential effects of the Proposed Development on Population, Human Health and Material Assets.

This chapter assesses the Proposed Development in accordance with section 3.1 and 3.1.1 of chapter 3 in this EIAR. Minimum and maximum hub height and rotor diameter parameters being proposed and all design permutations within that range as set out in Table 3.1 of Chapter 3 in this EIAR are being applied for.

Two cable connection route options (Options 1 and 2) which are part of the “Project” but not part of the Proposed Development that are being applied for are also assessed as part of this EIAR.

All elements of the Project are described in Section 3.5 of this EIAR and the description of the Proposed Development is found in section 3.8.1 of this EIAR.

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 headings:

- Population, Population Density, Household Statistics and Age Structure;
- Socio-economics, Employment, Economic Activity, and Investment
- Land Use Patterns, Settlement Patterns, Baseline Population and Demographic Trends;
- Recreation, Amenity and Tourism;
- Human Health and Safety, and;
- Material Assets including renewable, non-renewable resources and utility infrastructure.

5.1.1 Statement of Authority

This chapter of the EIAR was prepared Gerald O’Reilly and Crystal Leiker of SLR Consulting.

- Gerald is a qualified Town Planner (MIPI) with 14 years’ experience. He holds a Bachelor of Science degree in Spatial Planning from Technical University Dublin and a Postgraduate Diploma in Public Management from the University of Ireland. Gerald has several years in experience authoring EIA and ES chapters in the jurisdictions of Ireland and Northern Ireland.
- Crystal is a qualified (MIPI) Town Planner with 8 years’ experience. She holds a Bachelor of Social Science and a Masters Planning and Sustainable Development, both from University College Cork. Crystal has 8 years of experience in the preparation of EIA chapters for Irish projects in renewables, infrastructure and tourism projects.



5.2 Summary of Proposed Development

All elements of the Project are described in Section 3.5 of this EIAR and the description of the Proposed Development is found in section 3.8.1 of this EIAR.

5.3 Proposed Development Consultation

Consultation responses of relevance to the population, human health and material assets assessment were received from relevant bodies as well as from the wider community through public consultation. The consultation responses received have been given due consideration in the formation of this chapter. **Table 5-1**.

Table 5-1 Scoping Responses

Prescribed Body	Comment
Irish Water	<p>IW does not have capacity to respond to individual projects but in general, has provided the following comments:</p> <ul style="list-style-type: none"> • ensure no negative impact/ measures on drinking water. • mitigation for any negative impact on water sources. • assess all potential impacts on nearby reservoir or public water supply. e) consider whether impacts of the development on the capacity of water services. If a development will require a connection to either a public water supply or sewage collection system, the developer is advised to submit a Pre Connection Enquiry (PCE) enquiry to IW to determine the feasibility of connection to the Irish Water network. • any upgrade in water services infrastructure required. • In relation to a development that would discharge trade effluent – any upstream treatment or attenuation of discharges required prior to discharging to an IW collection network. • Management of surface water impacts. • any physical impacts to Irish Water assets. • potential impacts to receiving waters. • potential impact on the contributing catchment of water sources. • conservation objectives of site • mitigation measures. This is not an exhaustive list. • Where connection(s) to the public network is required as part of your development proposal, applicants are advised to complete the Pre Connection Enquiry process and have received a Confirmation of feasibility letter from Irish Water ahead of any planning application. • Irish Water will not accept new surface water discharges to combined sewer networks.
Kilkenny County Council	<p>Wind Energy Development Strategy:</p> <ul style="list-style-type: none"> • On 15th October 2021, the Minister of State at the Department of Housing, Local Government and Heritage, consequent to a recommendation made to him by the Office of the Planning Regulator under section 31AM(8) of the Planning and Development Act 2000 (as amended), notified Kilkenny County Council of his intention to issue a Direction to the Kilkenny City and County Development Plan 2021-2027. • In accordance with Section 31(4) of the Planning and Development Act 2000, those parts of the Kilkenny City and County Development Plan 2021 – 2027 Plan



Prescribed Body	Comment
	<p>referred to in the notice shall be taken not to have come into effect, been made or amended; namely;</p> <ul style="list-style-type: none"> Chapter 11, Renewable Energy Section 11.4 Kilkenny Targets, Section 11.5.1 Current status and targets and Figure 11.4 Wind Strategy areas. <p>Visual impacts:</p> <ul style="list-style-type: none"> The visual impacts of the Proposed Development and cumulative visual impacts with existing and permitted wind farms shall also be taken into account in the overall assessment of the Proposed Development.
Department of Defence	<p>Based on the information supplied and having consulted with the subject matter experts in the Irish Air Corps, the Department of Defence wishes to make the following observation:</p> <ul style="list-style-type: none"> Single turbines, structures, or turbines delineating the wind farm should be illuminated by Type C, Medium intensity, Fixed Red obstacle lighting with a minimum output of 2,000 candela to be visible in all directions of azimuth and to be operational H24/7 days a week. Obstacle lighting should be incandescent or of a type visible to Night Vision equipment. Obstacle lighting must emit light at the near Infra-Red (IR) range of the electromagnetic spectrum, specifically at or near 850 nanometres (nm) of wavelength. Light intensity to be of similar value to that emitted in the visible spectrum of light.
Broadcasting Authority Ireland	<p>The BAI does not perform an in-depth analysis of the effect of wind turbines on FM networks. They are not aware of any issues from existing wind farms into existing FM networks. Also, the Proposed Development is not located close to any existing or planned FM transmission sites.</p>
Laois County Council	<ul style="list-style-type: none"> Ensure inclusion of regional context in addition to both national and local context in the Introduction chapter. Consider it necessary to consider alternative turbine numbers in Site Selection and Alternatives. Noise - EIAR should have regard to LCC Noise Action Plan 2018. Water (Hydrology, Flood Risk and Hydrogeology) 1) Storm Water Management - Manage storm water runoff from the Proposed Development in a sustainable nature-based way. Storm water runoff calculations to be included. If sediment/ silt runoff is a potential risk, identify all mitigation measures that are proposed to prevent the contamination to surface and groundwaters. 2) Surface Water Quality - A baseline water quality analysis for each watercourse identified to be carried out. Surface water quality monitoring points to be identified on a drawing and the proposed surface water monitoring regime to be employed. 3) Groundwater Quality - The EIAR shall include for any potential impact on the groundwater quality of the Kyle Spring Public Water Supply. Clarification is required as to whether the proposed substation will contain any transformers and associated oils. Details on bunding etc. to be included if relevant. Groundwater quality monitoring points to be identified on a drawing and the proposed groundwater monitoring regime to be employed. All mitigation measures to safeguard against the contamination of surface waters and groundwater shall be included in the EIAR. Scoping report does not detail Record of Protected Structures as per Appendix 1 of LCC DP 2021 - 2027, EIAR should provide detail of Protected Structures. Access, Traffic and Transport information needs to be updated with regard to Laois Roads and Parking Standards 2007 Document. It is limited to access arrangements. Additional listed requirements include 1) measures to prevent flow of surface water from the site onto public road(s). 2) Wheel washes to prevent dirt and debris onto public road(s). 3) Details relating to haulage routes, the number of traffic movements per day together with the weights and types of vehicles. 4) The



Prescribed Body	Comment
	<p>locations of quarries from which stone and concrete will be sourced , and associated traffic movements shall be incorporated into a transport Impact Assessment. 5) A road opening licence for the route of the ESB grid connection will be required. 6) A precondition survey identifying bridges and culverts on haulage routes and the ESB grid connection route. This shall include tests such as visual video inspections and FWD tests and Pavement Condition Survey (PCS). Post road video inspection and post PCS surveys will need to be carried out for a number of years post construction. Bridge inspection surveys (preconstruction and post construction). Heavy load permits for the delivery of the wind turbines will be required. Any alterations that may be required to bridges, signs , road junctions will need to be identified.</p> <ul style="list-style-type: none"> • Landscape and visual - requests clarity with respect to exact locations of preliminary viewpoints due to issue with scale of map. LVIA should be robust and consider cumulative impact. Must consider Map 11.8 of CDP in EIAR. • Population, Human Health and Material Assets - should consider waste management for construction and operational phases. The construction phases shall also include for the transport and disposal of surplus material off-site, if relevant. • Other matters - EIAR should refer to the Guidelines for Planning Authorities and ABP on carrying out EIA (August 2018) and include Planning Policy, telecommunications and Aviation and Interactions. • Planning Policy - 1) Must have regard to European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No.296 of 2018). These Regulations transpose the requirements of Directive 2014/52/EU into planning law. Consider this along with Guidelines for Planning Authorities and An Bord Pleanala on carrying out EIA and EPA Guidelines on the Information to be contained in EIARs (2022). 2) With respect to AA, refer to DOEHLG AA of Plans and Projects in Ireland Guidance for Planning Authorities (2009) and Court Ruling (case C-323/17 People Over Wind and Peter Sweetman v Coillte) whereby CJEU ruled that mitigation measures could not be taken into account at screening stage of an AA. 3) National Policy - Project Ireland 2040; NDP 2018 - 2027; CAP 2019/2021; National Mitigation Plan 2017; Climate Action and Low Carbon Development Act 2015. 4) Review LCDP and its appendices in full. Highlights that as per Wind Energy Map, the Site is an " Area Not Open for Consideration" to wind farm development. Refers to Ministerial Direction and requested changes. k) Any forthcoming EIAR should outline clear proposals in relation to public consultation initiatives (proposed or undertaken). <p>Engagement with Laois County Council Roads department is ongoing. A meeting was held on 18th January and a site visit and drive of the Turbine Delivery Route was undertaken on 17th February by Laois County Council, SLR and the client.</p>
Minister for housing, Local Government, Heritage	The issue (Request for response to scoping report) you raise comes under the remit of the Minister of State Peter Burke. I have, therefore, forwarded your correspondence to his Office for attention and direct reply. No further response was received.
Minister for Tourism, Culture, Arts, Gaeltacht, Sport and Media	Planning matters in general fall within the remit of the Department of Housing, Local Government and Heritage. Please note that following the coming into force of the Planning and Development, Heritage and Broadcasting (Amendment) Act 2021 (Act 11 of 2021) all Heritage functions previously held by the Department of Culture, Heritage and the Gaeltacht are now held by that Department. The Development Applications Unit may be contacted at Manager.DAU@housing.gov.ie (copied above).
Inland Fisheries Ireland	IFI notes that the Proposed Development is in the Nore and Barrow catchments and notes that it is in the catchment areas of the following surface water bodies Clogh 010 (WFD Status - Good; Risk Status - At Risk), Owveg (Nore) 010 (WFD Status - Good, Risk Status - Not at Risk), Crooked (Stradbally) 010 (WFD Status - Good; Risk Status -



Prescribed Body	Comment
	<p>Not at Risk), Stradbally (Laois) 020 (WFD Status - Good, Risk Status Not at Risk), Douglass (Laois) 010 (WFD Status - High, Risk Status - not at Risk).</p> <ul style="list-style-type: none"> • Article 28(2) of the Surface Water Regulations (SI 272 of 2009) states that a surface water body whose status is determined to be less than good shall be restored to at least good status. Furthermore, Article 5 states that there should be no deterioration in Ecological Status. • The proposed surveys / reports must demonstrate how this project would cause no deterioration to the above surface water bodies within the third cycle of the national River Basin Management Plan. • a comprehensive map of all aquatic habitats potentially affected by the project should be provided in the reports. Include assessment of all potential adverse effects on all relevant aquatic receptors, including fish. The cumulative effects of the Proposed Development along with other existing or approved projects should also be considered. This should include an assessment of the impact on the conservation objectives of species listed as qualifying interests in the Barrow – Nore SAC, which include Lamprey species and Atlantic Salmon. • Baseline ecological assessments of water courses potentially affected by the Proposed Development, including biological and physico-chemical surveys, should also be provided. Following the commencement of works, field testing and laboratory analysis of parameters should be undertaken at agreed sites. The reports should include locations, timing and frequency of the proposed monitoring of biological and physico-chemical parameters. A full list of parameters should also be provided. • Records should be kept of biological and chemical monitoring of undertaken before, during and after the works. Records should also be kept of inspections of proposed surface water mitigation measures. These records should be made available upon request to any authorised person as defined under the Local Government (Water Pollution) Acts. • Must adhere to Guidelines on Protection of Fisheries during Construction Works in and adjacent to Waters 2016. • Instream works may only take place during the period 1 July to 30 September. There should be no interference with the bed, gradient, profile or alignment of watercourses without prior notification and the agreement of Inland Fisheries Ireland. Proposed instream works must be accompanied by a site-specific method statement provided to IFI. • The number of new water crossings should be minimised. Where existing crossings must undergo alteration, IFI request that these crossings are upgraded in the interests of habitat improvement and biodiversity net gain. IFI should be consulted at the design phase to maximise favourable outcomes. Where works on water crossings are proposed, method statements must be provided. • The number of new water crossings should be minimised. Where existing crossings must undergo alteration, IFI request that these crossings are upgraded in the interests of habitat improvement and biodiversity net gain. IFI should be consulted at the design phase to maximise favourable outcomes. Where works on water crossings are proposed, method statements must be provided. • SuDS principles should be incorporated into surface water management plans to attenuate any run-off of suspended solids or other deleterious matter. Drainage infrastructure should be installed during dry ground conditions. • Any EIAR, NIS and/or application for planning should include a Construction Environmental Management Plan (CEMP), a Surface Water Management Plan (SWMP), and an Emergency Response Plan (EMP) in case of an emergency incident. Provision should be made for the appointment of a suitably qualified Project Environmental Manager and Ecological Clerk of Works.



Prescribed Body	Comment
Development Applications Unit	No Response received
DECC	Auto-response received with new contact details. No further response received despite forwarding scoping response to above referenced contact.

5.4 Assessment Methodology

5.4.1.1 Evaluation of Likely Effects

Criteria for the determination of sensitivity (e.g. 'high', 'medium', or 'low') or of importance (e.g. 'international', 'national', 'regional', or 'authority area') have been established based on prescribed guidance, legislation, statutory designation and/ or professional judgement.

The statutory criteria (EPA, 2022) for the assessment of impacts require that likely impacts are described with respect to their magnitude, nature (i.e. negative, positive or neutral), transboundary nature (if applicable), intensity and complexity, probability, duration, frequency, reversibility, cumulation and possibility of reducing the effects). The descriptors used in this chapter are those set out in *Guidelines on the information to be contained in Environmental Impact Assessment Reports (2022)*.

5.4.1.2 Likelihood of Effects

This assessment focuses on the probable or likely effects of the Proposed Development as set out in the *Guidelines on the information to be contained in Environmental Impact Assessment Reports (2022)*.

5.4.1.3 Significance of Effects

The significance of effects is defined by the EPA Guidelines (2022).

Significance of Effects	
Imperceptible	An effect capable of measurement but without significant consequences.
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight Effects	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate Effects	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant Effects	An effect which, by its character, magnitude, duration or intensity, alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration or intensity, significantly alters most of a sensitive aspect of the environment
Profound Effects	An effect which obliterates sensitive characteristics.



5.4.2 Site Visit

A site visit was undertaken to inform this chapter in November of 2021. A follow-up site visit was undertaken in May 2022 and November 2022 and changes to the area have been noted and included where relevant. The Study Area the site visit comprised was a 2km radius from the Site to identify sensitive receptors (hospitals, community facilities, schools) and other receptors such as telecommunications masts, amenities, recreation trails, tourism areas and to identify socio-economic considerations in the area such as visible agriculture, minerals, manufacturing and service industry. Additionally, the settlements of Timahoe, Swan and Wolfhill were investigated to ascertain what sensitive and other receptors were present within each.

5.4.3 Desk Based Research

This chapter has been prepared following a review of:

- The National Planning Framework 2040;
- The Regional Spatial and Economic Strategy for the Eastern and Midland Region;
- Laois County Development Plan 2021 – 2027;
- Central Statistics Office (CSO);
- Pobal Profiling GIS Data (<https://maps.pobal.ie/>);
- A Strategic Plan for Tourism in Laois 2018 – 2023
- Laois Local Economic and Community Plan 2016 – 2021

This chapter has also been carried out in accordance with to the following guidelines:

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (Environmental Protection Agency, August 2022);
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning and Local Government, August 2018).

Demographic data has been sourced¹ from the Central Statistics Office (CSO)'s Census of Ireland (2016) records. Demographic information relating to the State, County Laois, and the 'Study Area'² has been assessed to establish the existing demographic trends. The 'Study Area' for the demographic analysis of this chapter is defined in terms of Electoral Divisions (EDs) and is focused on a 2km buffer surrounding the Site and its associated red line boundary, with the inclusion of three nearby settlements of Timahoe, Swan and Wolfhill area and 500m from each cable route.

Geodirectory data (2022), and planning application lists from An Bord Pleanála, the EIA Portal, Laois County Council and Carlow County Council within the Study Area have been reviewed on a monthly basis for the duration of the assessment to identify receptors in

¹ Date accessed March 2023, reviewed 2nd June 2023

² The Study Area is defined as a 2km from the operational turbines and the Electoral Divisions within this buffer, for comparison with County Laois and the State – see section 5.4.1 for more details.



proximity to the Proposed Development. The data gathered has informed the assessment of existing populations within the immediate environs of the Proposed Development and allows for a comprehensive assessment of the likely effects on population trends which may occur during the construction, operation, and decommissioning, of the existing wind farm. The Study Area and relevant EDs are illustrated in **Figure 5-1**.

A socio-economic profile of the existing environment was established using Census 2016 data to outline an employment profile of the Study Area.

Land use in the area was examined, using Corine Land Cover data (2018)³, to determine the likely effects on existing land use patterns which may arise as a result of the Proposed Development.

The assessment on human health and safety has had regard to CSO data (2016) and reports published by the Department of Health were examined to establish a baseline health profile of the Study Area. Peer reviewed literature (See section 5.9.3) was also assessed in considering likely effects on human health.

Finally, a monthly desktop based planning search spanning 10 years within a radius of 20km was undertaken. Sources consulted included the EIA portal, An Bord Pleanála, Laois County Council and Carlow County Council planning lists. The list was refined by eliminating all single homes from 2km outside the red line boundary of the Proposed Development and focused on planning applications of over 50 houses and planning applications which contained an EIAR or an NIS. This formed our cumulative long list of developments. Further discussion on the refinement of this planning search is discussed in Section 5.13 of this chapter.

5.4.4 Study Area

The Proposed Development site and surrounding environment are typical of an upland landscape with hiking trails present and extensive tracts of commercial forestry plantations dominating the surrounding undulating, landscape. Other agricultural activities in the wider environs of the Proposed Development site tend to be farming enterprises.

The Study Area has been defined by a 2km buffer zone from the Site and a 500m buffer from each of the two cable routes. Areas within the study area which have been covered include the Electoral Divisions (EDs) located within this buffer zone, which incorporates the EDs of Doonane, Dysartgallen, Fossy, Luggacurren, Rathaspick, Timahoe, and Timogue in County Laois.

5.4.5 Community Benefit Scheme

An important part of wind farm development is the Community Benefit Scheme. The main benefits of the scheme include support for local community groups and support for local educational funds. The concept of directing benefits from wind farms to the local community is promoted by the Department of Environment, Climate and Communications (DECC), the Sustainable Energy Authority of Ireland (SEAI), the National Economic and Social Council (NESCC) and the Wind Energy Ireland (WEI) among others.

³ Data accessed 2nd June 2023



As set out in the terms of the Renewable Energy Support Scheme (RESS), all renewable energy projects applying for RESS will require a Community Benefit Fund prior to commercial operations of the Proposed Development. RESS requires a contribution of €2/MWh for all projects. Furthermore, the Community Benefit Fund will provide a minimum payment of €1,000 to all dwellings located within a one-kilometre radius from the project and sets out that 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. Coolglass Wind Farm supports and endorses this approach to the delivery of community benefit funding and endeavours to work with local communities in a proactive and engaging way to deliver early and tangible benefits for the local areas.

At the earliest stages of the development process, Statkraft seek to obtain positive engagement from the community in terms of considering what associated Community Benefit funds could mean to the area. Given that local people understand the needs and requirements of the local community best, consultation with those in the local community on the form that the community benefit package should take has formed an integral part of developing this proposal. As detailed in Chapter 2, public consultation and engagement with the local community and businesses began at a very early stage in the development process and feedback was actively sought on ideas regarding the form the community benefit fund should take and how best to achieve maximum potential benefit from the available funding.

During public consultation, the local community clearly expressed a strong view that part of this fund should be ring-fenced to provide support to the residences in closest proximity to the Proposed Development through initiatives including the provision of a Near Neighbour scheme and support for adopting low carbon technologies which would reduce household energy usage and bills. Details of how the funds would be allocated would be developed in line with the RESS requirements which require community involvement in the decision-making processes.

5.4.6 Predicted Fund Value

The total fund per annum will depend on the power output of the Proposed Development overall which may vary due to the installed turbine output and the number of permitted/constructed turbines.

The Community Benefit Fund for the local area, assuming the export capacity will be approximately 85.8MW to 93.6MW (based on the proposed layout and working assumptions) which if developed under RESS will be approximately €470,000 per year for the local area for the duration of the scheme. To put this in perspective, €2.35 million would become available within the first 5 years of operation and €4.7 million within 10 years with a total funding allocation of in the region of €7million being delivered within 15 years of operation. The value of this fund will be directly proportional to the energy output of the wind farm, on the project being successful in securing RESS support and the duration of that support. It should be noted that the funding available through the Community Benefit Fund has the potential to increase based on the MW output of the Proposed Development.



The development of renewable energy to replace conventional fossil fuels is considered essential and represents a positive move for Ireland given the role that it plays in effective climate action. The Developer also believes that it is important to provide the positive benefits of renewable energy to local communities. The Proposed Development Community Benefit Fund will provide a meaningful new investment into the local community directly targeting and passing on the benefit of renewable energy development to those in the immediate locality.

5.5 Population, Population Density, Household Statistics and Age Structure

Population relates to the people living in an area. Assessing the demographic makeup of an area can reveal relevant information to help guide environmental considerations of a Proposed Development. This section provides a comprehensive overview of the population profile of the Study Area and compares these with corresponding topics within the administrative area of Laois County, and the State, in order to create a baseline demographic profile of the receiving environment and identify likely effects on demographic trends arising as a result of the Proposed Development.

For the purpose of assessing population within the Study Area, a review of the seven EDs located within the Study Area was carried out and is included in Section 5.5.1. the EDs include the towns of Timahoe, Swan and the settlement of Luggacurren.

5.5.1 Existing Environment

5.5.1.1 Population

In the years between the 2011 and the 2016 Census, the population of Ireland increased by 3.8% (see **Table 5-2**). During this time, the population of Laois County grew by 5.1% to 84,697 persons. In the same period, the population of the Study Area grew slightly by 0.9%.

Table 5-2 Population 2011 – 2016 (Source CSO)

Area	2011	2016	% Change
State	4,588,252	4,761,865	3.8
Laois County	80,559	84,697	5.1
Study Area	2,655	2,678	0.9

The population of the Study Area has grown at a far lesser rate than that of the above stated comparators. Four of the seven EDs experienced a population increase between the two Census years; the largest being Fossy, which increased by 12.6%. However, of the seven EDs, Fossy has the smallest population and has increased from 146 no. persons in 2011 to 167 no. persons in 2016. Three EDs experienced population decline over the same period including Dysartgallen, Luggacurren, and Rathaspick, by 4.3%, 8.0%, and 7.1%, respectively.

In total, there are 256 no. residences within the Study Area. This can be categorised as follows:



- Within 1 km of both Option 1 and Option 2 cable routes: 190 residences.
- Within 500 m of both Option 1 and Option 2 cable route: 171 residences.
- Within 1 km of the development site area (excluding cable route): 85 residences.
- Within 1 km of both the site boundary and cable route: 256 residences.

The closest residence is 702m from a proposed wind turbine.

5.5.1.2 Population Density

The population densities recorded within the State, Laois County, and the Study Area during the 2011 and 2016 Census are set out below in **Table 5-3**. The population density of the Study Area has increased from 19 no. persons per square kilometre in 2011 to 21 no. persons per square kilometre in 2016; representing an overall increase in population density of 7%.

Table 5-3 Population Density 2011–2016 (Source: CSO)

Area	Population (Persons per km ²) 2011	Density (Persons per km ²) 2016
State	67	70
Laois County	47	49
Study Area	19	21

Although the population density of the Study Area has experienced a slightly higher proportional increase, compared to Laois County at 5% and the State at 4%, it remains a far less densely populated area than the rest of County Laois, or the state. For instance, the average population density per square kilometre within the state was recorded at 70 no. persons in 2016 and 49 no. persons in Laois County.

5.5.1.3 Household Statistics

Table 5-4 sets out the number of households and average household size (in persons) for the State, Laois County and the Study Area for 2011 and 2016.

Table 5-4 Number of Household and Average Household Size 2011–2016 (Source: CSO)

Area	2011		2016	
	No. of Households	Average Size (persons)	No. of Households	Average Size (persons)
State	1,654,208	2.7	1,702,289	2.8
Laois	28,020	2.9	29,107	2.9
Study Area	888	3.0	907	3.0

The total number of households within the Study Area has increased slightly from the years 2011 to 2016, from 888 no. households to 907 no. households -an increase of 19 no. households. Five of the seven EDs in the Study Area experienced a slight increase in the



number of households within. Luggacurren and Dysartgallen experienced a slight decrease. In percentage terms and among the above stated comparators, Laois County experienced the largest increase in terms of total number of households at 3.7%, while the Study Area experienced the lowest rate of increase at 2.1%. With respect to average household size in persons, that of the Study Area is only slightly higher than the aforementioned comparators at 3 persons per household.

5.5.1.4 Age Structure

The age structure of the Study Area recorded in 2011 and 2016 is largely in line with that of the national age structure and age structure of Laois County as detailed in **Table 5-5**, **Plate 5-1**, **Table 5-6**, and **Plate 5-2**.

In 2011, the Study Area was composed of a higher percentage of persons in the 45 – 64 age cohort, at 28.74%, compared to that of the State and Laois County, recorded at 23.84% and 23.25%, respectively. Compared to the other three age cohorts, as highlighted in **Plate 5-1** below, the Study Area was composed of a higher percentage of persons in the 45 – 64 age cohort, at 28.74%, compared to that of the State and Laois County, recorded at 23.84% and 23.25%, respectively. Compared to the other three age cohorts, as highlighted in **Error! Reference source not found.** below, the Study Area was composed of a similar or lower population distribution in percentage terms. However, it should be noted that the population of the Study Area is far less than that of the State and Laois County in absolute numbers, as highlighted in **Table 5-5**.

Table 5-5 Population Distribution by Age Category - 2011 (Source: CSO)

Area	0 - 14	15 - 24	25 - 44	45 - 64	65+
State	979,590	580,250	1,450,140	1,042,879	535,393
Laois County	19,913	9,374	26,036	17,136	8,100
Study Area	644	324	763	615	309



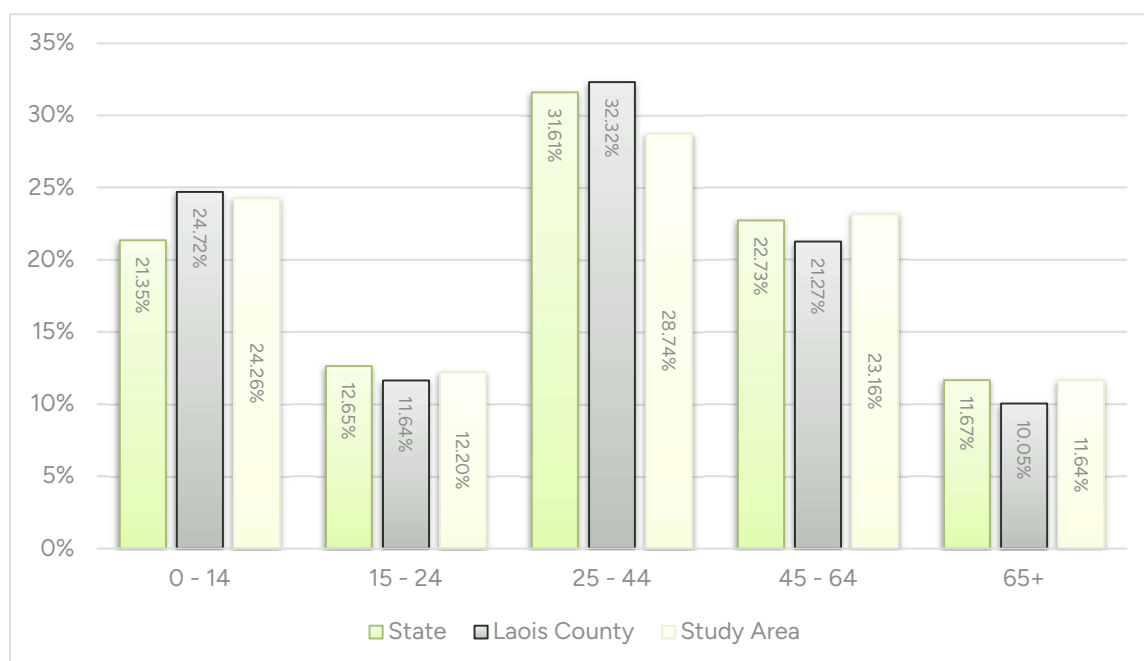


Plate 5-1 Population Distribution by Age Category in Percentage Terms - 2011 (Source: CSO)

In 2016, the Study Area was also composed of a higher percentage of persons in the 45 – 64 age cohort, at 25.84%, compared to that of the State and Laois County, recorded at 23.84% and 23.25%, respectively.

Table 5-6 Population Distribution by Age Category - 2016 (Source: CSO)

Area	0 - 14	15 - 24	25 - 44	45 - 64	65+
State	1006552	576,452	1406291	1135003	637567
Laois County	20,812	9,435	25,148	19,694	9,608
Study Area	643	299	703	692	341



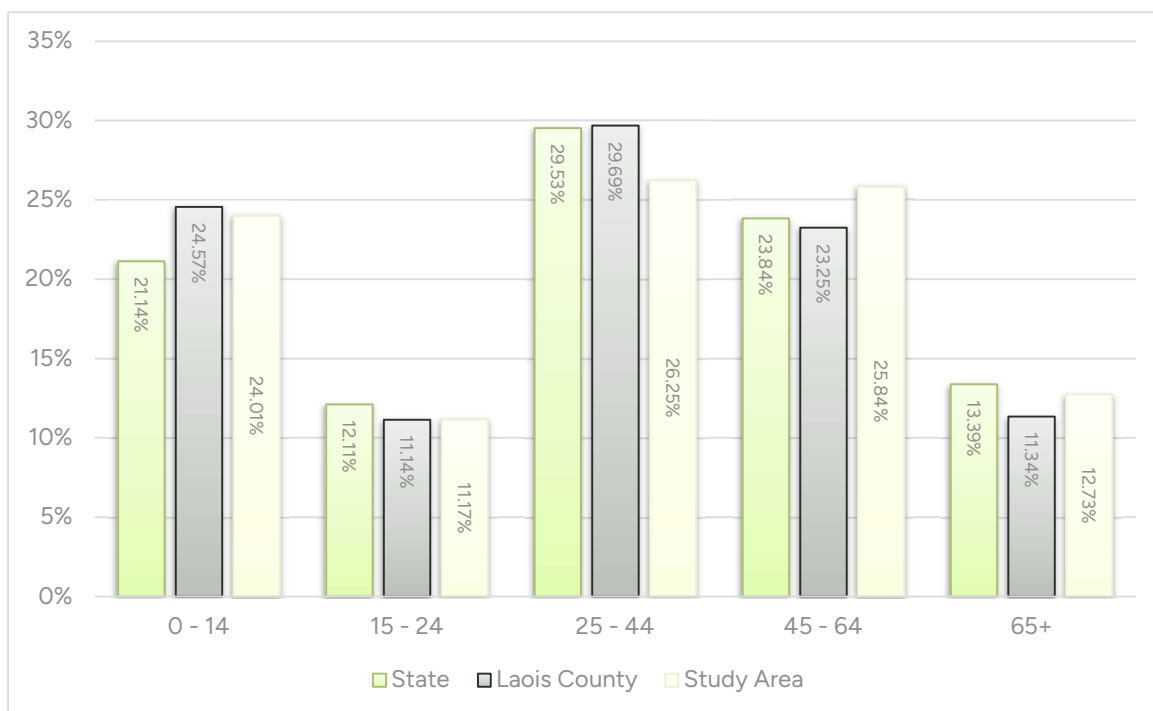


Plate 5-2 Population Distribution of Age Category in Percentage Terms – 2016 (Source: CSO)

In summary, it is noted that the population characteristics of the Study Area vary to that of the State and Laois County, in some instances. Most notably, the area has experienced a significantly lower level of population growth from 2011 – 2016, recorded at 0.87%. The Study Area is sparsely populated in comparison, which recorded a population density in 2016 of 21 no. persons per square kilometre, compared to 70 no. and 49 no. persons respectively, when viewed alongside the above stated comparators. Overall, the household statistics and age distribution of the Study Area correlate, composing of a higher percentage of persons in the 45 - 64 age cohort and an average household size of 3.0 persons.

5.5.2 Potential Effects- Construction

5.5.2.1 Wind Farm and TDR

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 Proposed Development and turbine delivery route, it is likely that many of the workers travelling to the site will do so from outside of the Study Area. This is due to the large numbers expected to be employed at the site.

It is expected that workers from the locality within the Study Area will be employed, however, the relatively low population available in the Study Area, combined with a high percentage of employed persons, as identified in **Table 5-7**, indicates that there is a limited



available work force in the Study Area and therefore many workers employed at the construction site are likely to travel from the surrounding towns and city.

Table 1.1 of Chapter 1 of this EIAR sets out a range of turbine and hardstanding dimensions associated with the Proposed Development. This assessment considers the effects of the range between these dimensions: Hub Heights of 99m to 102.5m, rotor diameters of 155m to 162m and a MW output between 6.6MW to 7.2MW. Additionally, it considers the permutations of the turbine foundation and hardstand dimensions: 25m in diameter for both turbine types and 50mx20m and 80m x 30m.

With respect to the potential construction impacts of the Proposed Development on population density, household statistics and age structure, construction works will give rise to brief/short-term population growth in the Study Area during working hours. It is unlikely that workers will take up residence in the Study Area, however, it is possible that some workers will stay in accommodation within the Study Area. Workers may also stay in accommodation in the Laois County area during the construction phase resulting in potential temporary population increases in these areas. This is associated with the direct employment of construction workers, trades people, labourers and specialised contractors. The construction phase of the Proposed Development has potential to create between approximately 104 and 274 jobs⁴. These employment projections are set out in section 5.6.2.

Table 5-7 Economic Status of the Total Population Aged 15+ in Percentage terms - 2016 (Source CSO)

	State (%)	County Laois (%)	Study Area (%)
At Work	53	53	54
Looking For First Job	1	1	1
Unemployed having Lost or Given Up Previous Job	7	9	7
Student	11	10	10
Looking After Home/Family	8	9	10
Retired	15	13	14
Unable To Work due to Sickness or Disability	4	5	4
Other	0	1	0

The population of the Study Area recorded in the 2016 Census was 2,678 persons. An estimate of between 104 and 274 jobs (See section 5.6.2) associated with the construction works has potential to increase the population of the Study Area by between 62% and 107%. However, this increase is associated with daily construction work and therefore the population of the Study Area will increase daily during construction hours and return back to normal outside of working hours. As construction work is temporary it is unlikely that workers will take up residence in the Study Area, however, it is likely that some workers will

⁴ Please see section 5.6.2 of this assessment for further details



stay in accommodation within the Study Area. Workers may also stay in accommodation in the Laois County area resulting in potential temporary population increases in this area also. There will be a slight increase in age structure between the ages of 20-55. Overall, this will result in a slight, temporary increase in population resulting in a slight temporary effect.

The permutation of sizes between the turbine types, foundations and turbine hardstandings will have a slight measurable effect on population, population density, household statistics or age structure. However, the effect of the output of 6.6-7.2MW may result in slight and short term (18 months) increase in workers (3.2 jobs per MWh as set out in Section 5.6.2).

5.5.2.2 Cable Routes and Recreational Amenity Trail

The construction works associated with either Option 1 or Option 2 cable routes will be undertaken on a rolling basis with short sections of road closed for short periods before moving onto the next section. It is expected that these works will be conducted over a 12-month period. The population of the Study Area along the cable routes will receive a slight increase in population numbers during working hours. However, due to the transient nature of the cable route works, this is expected to have an insignificant and temporary impact on the population of the Study Area.

The construction works associated with the recreational amenity trail will be undertaken once the wind farm is constructed and the cable route installed. It is expected that these works will be conducted over a 12 month period. Population of the Study Area nearest to the amenity trail will receive a slight increase in population numbers during working hours, however, given the targeted areas of construction, duration and nature of works which will involve largely improving existing trails, this is expected to have an insignificant and temporary impact on the population of the Study Area.

It is unlikely that permanent impact to population in the Study Area will occur, in terms of changes to population trends, density, household size, or age structure as a result of the construction phase. The effects are considered to be not 16mperceptible and short term.

5.5.3 Potential Effects- Operational

5.5.3.1 Wind Farm and TDR

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 Proposed Development will arise.

It is expected that the operational phase of the Proposed Development could create approximately 8-10 long term jobs⁵ (with an installed capacity of 85.8MW to 93.6 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.

⁵ Please see section 5.6.2 of this assessment for further details



Although only a small proportion of these jobs are likely to be based in the Study Area, the operational phase will give rise to temporary, slight population increase in population within the Study Area during working hours as a result of operations and maintenance. This effect is expected to be slight and medium term.

5.5.3.2 Cable Routes and Recreational Amenity Trail

As both of the Option 1 or Option 2 cable routes would be located underground, there are no potential effects envisaged during the operational period.

Once the recreational amenity trail is completed, the local population and modest visitors will utilise the trail, resulting in a positive slight, and permanent impact on the existing population.

5.5.4 Potential Effects – Decommissioning

5.5.4.1 Wind Farm and TDR

The decommissioning phase of the Proposed Development is described in Section 3.11 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 population and demographics will be similar to those associated with 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 Proposed Development is expected to be less intensive than the construction phase, it is likely that less construction workers than the 104-274 construction jobs noted in section 5.5.2 will be required for this phase. During the decommissioning phase, the population of the Study Area will increase daily during working hours and return back to normal outside of working hours.

As removal works will be of relatively short duration, it is unlikely that workers will take up residence in the Study Area, however, it is possible that some workers will stay in accommodation within the Study Area. Workers may also stay in accommodation in the Laois County area during the decommissioning phase resulting in potential temporary population increases in these areas also. The decommissioning phase is therefore likely to result in a slight, temporary increase in population within the Study Area, producing a slight temporary effect 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, density, household size, or age structure. The permutation of sizes between the turbine types, foundations and turbine hardstandings will have no measurable effect on population, population density, household statistics or age structure. However, the output of 6.6-7.2MW may have a slight increase in workers attending the site (3.2 jobs per MWh as set out in Section 5.6.2).

5.5.4.2 Cable Routes and Recreational Amenity Trail

Either Option 1 or Option 2 cable routes linking the site to the off-site substation once constructed will remain in situ following decommissioning. There is no expected impact on population trends, density, household size, or age structure along either of the cable routes as a result of the decommissioning phase.



The recreational amenity trail will remain in situ following the decommissioning of the Proposed Development. There is no expected impact on population trends, density, household size or age structure along the recreational amenity trail as a result of the decommissioning phase.

5.5.5 Mitigation Measures

5.5.5.1 Wind Farm and TDR

As there will be no significant effect on population trends, density, household size or age structure, no mitigation measures are required.

5.5.5.2 Cable Routes and Recreational Amenity Trail

As there will be no significant effect on population trends, density, household size or age structure, no mitigation measures are required for either Option 1 or Option 2 cable routes or the recreational amenity trail.

5.5.6 Residual Effects

5.5.6.1 Wind Farm and TDR

The residual effects of the Proposed Development with respect to population are associated with operation and maintenance jobs during the operational phase of the Proposed Development. This is likely to result in a temporary slight population increase in the Study Area during working hours. As per the assessment of operational effects, any impact to the population of the Study Area in terms of changes to population trends, density, household size, or age structure will be imperceptible and long term. It is therefore unlikely that long term residual effects will occur to population and demographic trends as a result of the Proposed Development.

5.5.6.2 Cable Routes and Recreational Amenity Trail

There are no residual effects predicted as a result of either the Option A or Option B cable routes as both will be located underground.

With respect to the recreational amenity trail, there will be a slight increase in the population of recreational users of the trail during the operational phase of the Proposed Development. This is likely to result in a temporary slight population increase in the Study Area for recreation. As per the assessment of operational effects, any impact to the population of the Study Area in terms of changes to population trends, density, household size, or age structure will be imperceptible. It is therefore unlikely that long term residual effects will occur to population and demographic trends as a result of the Proposed Development.

5.6 Socioeconomics, Employment and Economic Activity

This section provides a comprehensive overview of the socio-economic, employment and economic activity associated with the receiving environment ('Study Area'), Laois County, and the State, in order to provide an understanding of the overall socio-economic profile of



the receiving environment and the potential effects arising from the Proposed Development.

5.6.1 Existing environment

Employment and Economic Activity

Socio-economic grouping divides the population into categories depending on the level of skill or educational attainment required. **Plate 5-3** illustrates the percentages of those employed in each socio-economic group in the State, Laois and the Study Area, as per the 2016 Census.

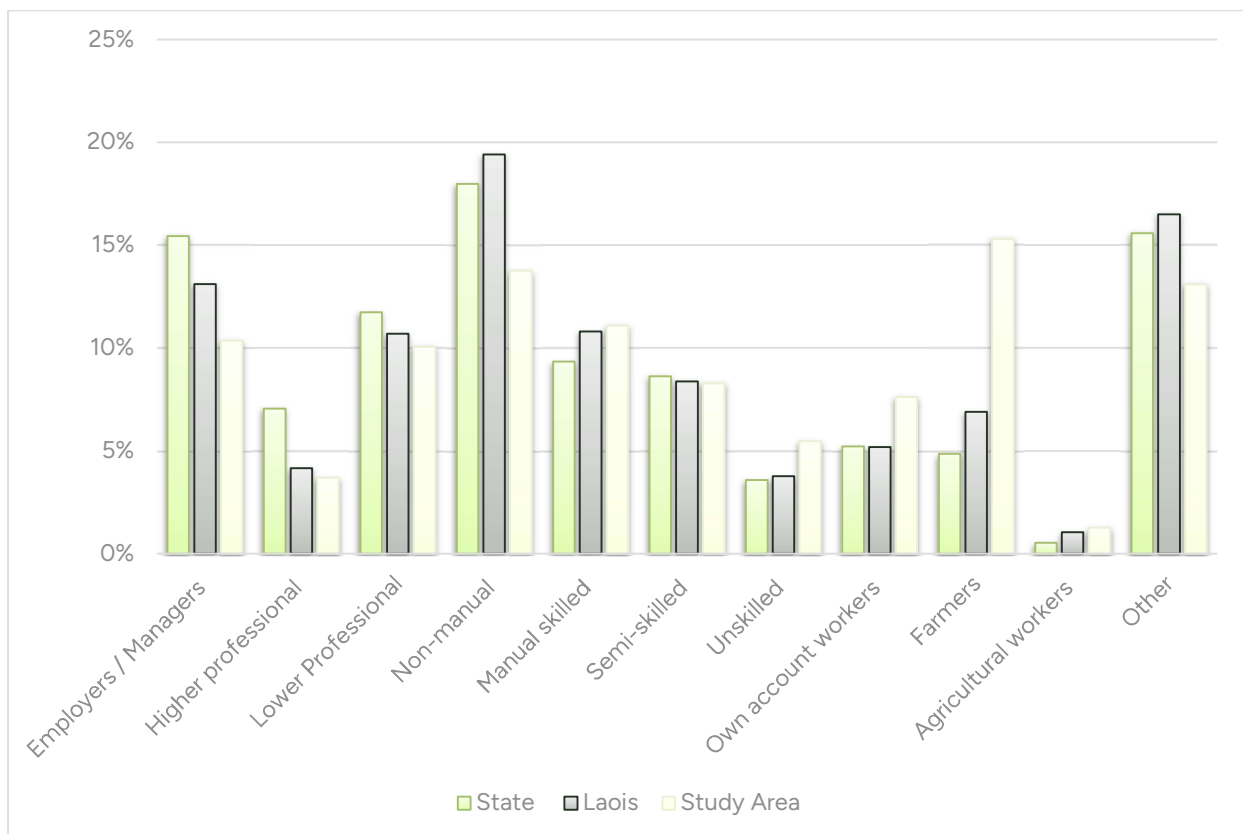


Plate 5-3 Employment by Socio-Economic Group – 2016 (Source: CSO)

The highest level of employment within the Study Area was recorded in the Farmers category at 15.31%, accounting for 414 no. persons. The Study Area also comprises of a higher level of workers in relative percentage terms in the Manual Skilled, Unskilled, Own Account Workers, and Agricultural recorded at 11.09%, 5.47%, 5.19%, and 1.05%, respectively. It should be noted that the CSO employment figures grouped by socio-economic status includes the entire population for the Study Area. As such, the socio-economic category of 'Other' includes those who are not in the labour force. However, it should also be considered that in 2016 there were 643 no. persons recorded in 0-14 age cohort, which are generally considered too young to work.



Employment and Investment Potential in the Irish Wind Energy Industry

The Sustainable Energy Authority of Ireland (SEAI) estimates, in their *Wind Energy Roadmap 2011-2050*⁶, that onshore and offshore wind could create 20,000 direct installation and operation/maintenance jobs by 2040 and that the wind industry would also have an annual investment potential of €6-12 billion by the same year.

A 2014 report titled *The Value of Wind Energy to Ireland*⁷, published by Pöyry, stated that growth of the wind sector in Ireland could support 23,850 jobs (construction and operational phases) by 2030. If Ireland instead chooses to not develop any more wind, by 2030 the country will be reliant on natural gas for most of its electricity generation, at a cost of €671 million per annum in fuel import costs.

Siemens, in conjunction with the WEI, published a report in 2014 titled *An Enterprising Wind: An economic analysis of the job creation potential of the wind sector in Ireland*⁸, which concluded, "a major programme of investment in wind could have a sizeable positive effect on the labour market, resulting in substantial growth in employment."

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

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

Wind Energy Ireland (WEI) released a report in March 2021 *Our Climate Neutral Future Zero by 50*⁹ in light of the Government's announcement of new, ambitious energy targets in the same month. The report outlines the potential for 50,000 jobs to be created in the renewable energy industry in order to meet the build out requirements to achieve net-zero carbon emissions by 2050. The report estimates that at least 25,000 jobs will be in the onshore and offshore wind energy sector.

⁶Sustainable Energy Authority of Ireland (2011) *Wind Energy Roadmap to 2050*, Available at: https://www.seai.ie/publications/Wind_Energy_Roadmap_2011-2050.pdf

⁷Poyry Management Consulting (2014) *The Value of Wind Energy to Ireland: A report to Irish Wind Energy Association 2014*. Available at: <https://windenergyireland.com/images/files/9660bd6b05ed16be59431aa0625855d5f7dca1.pdf>

⁸Siemens, IWEA (2014) *An Enterprising Wind: An economic analysis of the job creation potential of the wind sector in Ireland*. Available at: <https://www.esri.ie/system/files/media/file-uploads/2015-07/BKMNEXT250.pdf>

⁹Wind Energy Ireland, MaREI (2021) *Our Climate Neutral Future Zero by 50*. Available at: <https://windenergyireland.com/images/files/our-climate-neutral-future-0by50-final-report.pdf>



KPMG released a report with WEI in April 2021 titled *Economic impact of onshore wind in Ireland*¹⁰ which states that the wind sector currently supports 5,130 jobs (not including employment in grid development) and further emphasises that this includes “a strong foothold in rural Ireland”. It states that through its direct and indirect activities and employment, the sector supports payment of labour incomes totalling €225 million.

Economic Value

A 2009 Deloitte report in conjunction with the Irish Wind Energy Association (now Wind Energy Ireland, WEI) titled ‘*Jobs and Investment in Irish Wind Energy – Powering Ireland’s Economy*’ states that the construction and development of wind energy projects across the island of Ireland would involve approximately €14.75 billion of investment from 2009 up to 2020, €5.1 billion of which would be retained in the Irish economy (€4.3 billion invested in the Republic of Ireland and €0.8 billion in Northern Ireland).

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

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

A 2022 report by Baringa, ‘*Bridging the Gap: Towards a Zero-Carbon Power Grid*’¹¹, has analysed the financial impact for end consumers of the deployment of wind generation in Ireland over the period 2022-2030. The report calculates how the costs and benefits for consumers would have differed if no wind farms had been built. The analysis indicated that the deployment of 5 GW of wind generation capacity (and 3 GW solar) in Ireland between 2022-2030 will result in a total net cost saving to consumers of €600 and exceed the 2 million tonnes of CO₂ displacement set out in the Climate Action Plan 2021. . As such, the economic benefit of renewable energy to consumers is greater than what would have been if Ireland did not invest in wind power.

The April 2021 KPMG report¹² introduced above states that by 2030, the onshore wind industry along will bring an Additional Gross Value (GVA) of €550million per annum to the Irish economy, will contribute €305million total payment in incomes across the supply chain and has the potential to contribute approximately €100million to local authority rates,

10 KPMG, Wind Energy Ireland (2021) Economic impact of onshore wind in Ireland. Available at: <https://windenergyireland.com/images/files/economic-impact-of-onshore-wind-in-ireland.pdf>

11 Baringa (2022). Bridging the Gap: Towards a Zero-Carbon Power Grid. Online. Available at: <chrome-extension://efaidnbnmnibpcjpcglclefindmkaj/https://windenergyireland.com/images/files/bridging-the-gap-a4-report-final.pdf>. Date Accessed 30/1/2023

12 KPMG (2021). Economic Impact of Onshore Wind in Ireland. Wind Energy Ireland. Available at: <https://windenergyireland.com/images/files/economic-impact-of-onshore-wind-in-ireland.pdf>. Date Accessed 31/01/2023



if 2030 targets are reached. Furthermore, it is estimated that €2.7billion in capital would be invested in the country through to 2030 if Climate Action Plan targets are reached.

Energy Targets

In March 2021, the Government of Ireland approved the Climate Action and Low Carbon Development (Amendment) Bill 2021 which aims for net-zero emissions by 2050 and an Interim Target of 51% reduction to be reached by 2030, relative to a baseline of 2018. The Government is required to adopt a series of economy-wide five-year carbon budgets, with the first two five-year carbon budgets correlating to the Interim Target. The Bill also provides the framework for Ireland to meet its international and EU climate commitments and to become a leader in addressing climate change. The Bill states that Local Authorities must prepare individual Climate Action Plans which will include both mitigation and adaptation measures and must be updated every five years. Local Authority Development Plans must align with their Climate Action Plan.

The Climate Action Plan 2023¹³ (CAP23) is the second update to the original 2019 plan and the first to be prepared under the Climate Action and Low Carbon Development (Amendment) Act 2021. CAP23 is a progress report on achieving the initial targets set out in CAP19, with more specific targets outlined following on with the progress report. Key targets from now to 2030 of relevance to the Proposed Development include:

- 75% reduction in emissions through large scale deployment of renewable energy by 2030
- 45% commercial / 40% residential reduction in emissions via increasing energy efficiency in existing buildings / building new zero emissions buildings by 2030
- 50% reduction in travel related emissions

Among the most important measures in the plan is to increase the proportion of renewable electricity to up to 80% by 2030 and a target of 9 GW from onshore wind, 8 GW from solar, and at least 5 GW of offshore wind energy by 2030.

5.6.2 Potential Effects- Construction

5.6.2.1 Wind Farm and TDR

The site preparation and installation of Proposed Development will provide employment for technical consultants, contractors and maintenance staff.

Table 1.1 of Chapter 1 of this EIAR sets out a range of turbine and hardstanding dimensions associated with the Proposed Development. This assessment considers the effects of the range between these dimensions: Hub Heights of 99m to 102.5m, rotor diameters of 155m to 162m and a MW output between 6.6MW to 7.2MW. Additionally, it considers the permutations of the turbine foundation and hardstand dimensions: 25m in diameter for both turbine types and 50mx20m and 80m x 30m.

13 Government of Ireland (2023). Climate Action Plan 2023: Changing Ireland for the Better. (online). Available at: <https://www.gov.ie/pdf/?file=https://assets.gov.ie/243585/9942d689-2490-4ccf-9dc8-f50166bab0e7.pdf#page=null>. Date Accessed 31/1/2023



According to Institute for Sustainable Futures document (2015)¹⁴, 3.2 job years are created per MW of wind energy development during the construction and installation phase. Based on this employment estimate and an approximate ten-year construction phase, approximately 104-274 jobs¹⁵ could be created during the construction phase (for an installed capacity of approximately 85.8 to 93.6MW.).

According to the European Wind Energy Association's (EWEA) Report 'Wind at Work' (2009), 1.2 jobs per MW are created during installation of wind energy projects. Using this figure, a projection of approximately 104 -274 jobs could be created as a result of the construction of the Proposed Development (for an installed capacity of 85.8 to 93.6MW.).

Therefore, it is considered that between approximately 104 and 274 staff/contractors could be employed during the construction phase of the Proposed Development. The employment of tradespeople, labourers, and specialised contractors for the construction phase will have a direct short-term, positive impact on the local economy, bringing significant benefits to local service providers and businesses with a direct and indirect financial benefit to the local community.

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 locality where possible. This will assist in sustaining employment in the local construction trade. As a result, the construction phase of the Proposed Development will have a beneficial albeit short term, slight and short-term effect on the employment profile of the area and a short-term, slight effect on local businesses and services in the Study Area and in nearby towns located in County Laois.

The permutation of sizes between the turbine types, foundations and turbine hardstandings will have no measurable effect on Socio-economics, Employment and Economic Activity during the construction phase. However, the output of 6.6-7.2MW may have a slight increase in workers attending the site as noted above.

The turbine delivery route will undergo targeted works along the route to facilitate the delivery of turbines and substation components. Once all components are delivered to the site, these works will be reinstated where available. The potential effects on socioeconomics in terms of increased employment and economic activity, and are considered to be beneficial albeit short term, slight and temporary in nature.

5.6.2.2 Cable Routes and Recreational Amenity Trail

The site preparation and installation of either Option 1 or Option 2 cable routes and the proposed recreational amenity trail will also provide employment for technical consultants, contractors and maintenance staff. However, the construction phase of the Proposed Development will be c. 12 months in duration.

14 Calculating Global Energy Sector Jobs: 2015 Methodology Update.. Available at <https://opus.lib.uts.edu.au/bitstream/10453/43718/1/Rutovitzetal2015Calculatingglobalenergysectorjobsmethodology.pdf>. Date Accessed 14/3/2023

15 'Employment factors', or the number of jobs per unit of capacity, separated into manufacturing, construction, operation and maintenance, and per unit of primary energy for fuel supply – Source: Calculating Global Energy Sector Jobs: 2015 Methodology Update.



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 locality where possible. This will assist in sustaining employment in the local construction trade. As a result, the construction phase of the associated cable routes and amenity trail will have a beneficial albeit short-term, slight and temporary effect on the employment profile of the area and a short-term, positive effect on local businesses and services in the Study Area and in nearby towns located in County Laois.

5.6.3 Potential Effects- Operational

5.6.3.1 Wind Farm and TDR

Economic Value and Employment Potential

The proposed development will contribute to achieving Ireland's energy target as set out in the Climate Action Plan 2023, which has a target of a 75% emission reduction in the Electricity Sector by 2030. With a target increase in onshore wind capacity of up to 9GW by 2030, the Proposed Development has the potential to contribute to these ambitious targets.

Once the Proposed Development is 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 Proposed Development will arise.

According to the European Wind Energy Association's (EWEA) Report 'Wind at Work' (2009¹⁶), 0.4 long-term jobs are created per MW of total installed capacity. 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 6-7 studies. Based on this estimate, the Proposed Development (with an installed capacity of approximately 85.8MW to 93.6 MW) could be expected to contribute to approximately 8-10 long term direct and indirect jobs.

Although only a small proportion of these jobs are likely to be directly based in the Study Area, 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 benefit the economy of Laois County. 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 a slight positive indirect impact on employment in

¹⁶ European Wind Energy Association (EWEA) (2009). Wind At Work. Online. Available at: http://www.ewe.org/fileadmin/files/library/publications/reports/Wind_at_work.pdf. Date Accessed 22/3/2022



the Study Area, County Laois for all permutations listed in Table 1.1 of Chapter 1 of this EIAR.

Rates and development contributions paid by the developer will contribute significant funds to Laois County Council which will be used to improve the services available to the people of the County. The Laois County Council General Development Contribution Scheme (2017-2023) indicates a charge of €10,000 per 1 MW of output with the following add-ons: €25,000 for each turbine in the height range of 75-100 metres and €50,000 for each turbine in the height range of >100 metres. This suggests that a Development Contribution of approximately €1.5 million will be made payable by the applicant prior to construction (with an installed capacity of approximately 85.8MW to 93.6 MW). Business rates will also contribute significantly.

General council services will benefit from rates and development contributions including road upkeep, fire services, environmental protection, street lighting, footpath works etc., along with other local community initiatives and supports. Local landowners will also benefit from lease agreements and wayleave agreements associated with the lands of the Proposed Development. The payment of rates and development contributions is likely to have a significant benefitting effect on service provision in the County Laois Area.

The terms of the Renewable Energy Support Scheme (RESS) notes 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.

Proposed Community Benefit Scheme

An important part of renewable energy development is its Community Benefit Scheme. The concept of directing benefits from renewable energy developments to the local community is promoted by the National Economic and Social Council (NESC) and the Irish Wind Energy Association (IWEA) among others.

As set out in the terms of the Renewable Energy Support Scheme (RESS), all renewable energy projects applying for RESS will require a Community Benefit Fund prior to commercial operations of the Proposed Development. The contribution for RESS 3 (2022), the third renewable energy auction under the support program, requires a contribution of €2/MWh for all projects. Furthermore, as part of RESS 3, the Community Benefit Fund will provide a minimum payment of €1,000 to all dwellings located within a distance of 1 kilometre radius from RESS 3 projects and 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. The characteristics of the Community Benefit Fund are not expected to change significantly in future RESS auctions.

As detailed in Chapter 2 of this EIAR, public consultation with the local community began at an early stage in the development process, with engagement commencing during the initial feasibility and scoping stages of the Proposed Development. Through this process, feedback was actively sought on ideas regarding the form that the Community Benefit Scheme should take and how best to achieve maximum potential benefit from the available funding. This will pave the way for the establishment of a local committee to ensure dispersal of the fund throughout the community.



Assuming that the export capacity of the Proposed Development will be approximately 85.8MW to 93.6 MW and is contracted under the RESS, it is anticipated that the community benefit fund for the Proposed Development could deliver approximately €470,000 per year (based on the 6.6MW per turbine scenario) for the duration of the Renewable Energy Support Scheme which is expected to be for the first 15 years following the commissioning of the Proposed Development. It should be noted that the funding available through the Community Benefit Fund has the potential to increase based on the MW output of the Proposed Development.

Following public consultation, it was made clear that part of this fund should be ring-fenced to provide support to the residences in closest proximity to the Proposed Development, a Near Neighbour scheme. The extent of the overall benefit fund to be allocated to the Near Neighbour scheme and the distribution of the balance of community benefit funds is to be further discussed and agreed with the community in future engagement. The total fund per annum will depend on the power output of the Proposed Development overall which may vary due to the installed turbine output and the number of permitted/constructed turbines.

The permutation of sizes between the turbine types, foundations and turbine hardstandings will have no measurable effect on Socio-economics, Employment and Economic Activity during the operational phase of the Proposed Development. However, the output of 6.6-7.2MW per turbine has the potential to increase the export capacity of the Proposed Development, resulting in increases to the contributions to the Community Benefit Fund as noted above.

The Proposed Development Community Benefit Fund will provide a meaningful new investment into the local community directly targeting and passing on the benefit of renewable energy development to those in the immediate locality. This effect will be long-term and have a significant beneficial effect for the community.

5.6.3.2 Cable Routes and Recreational Amenity Trail

As both the Option 1 and Option 2 cable routes would be located underground, there are no potential effects envisaged during the operational period beyond ensuring that the Community Benefit Fund as outlined in Section 5.6.3.1 is achievable.

Once the recreational amenity trail is completed, the local population and modest visitors will utilise the trail, resulting in a positive slight, and permanent impact on the socio-economics for the local population.

5.6.4 Potential Effects – Decommissioning

5.6.4.1 Wind Farm and TDR

The potential impacts associated with the decommissioning phase in relation to socio-economics, employment and economic activity 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 Proposed Development 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 in the Study Area and outlying areas of County Laois. The influx of construction workers to the Study Area will have an indirect impact on local businesses and services contributing to the local economy, similar to that of the construction phase but of lesser magnitude.

The permutation of sizes between the turbine types, foundations and turbine hardstandings will have no measurable effect on Socio-economics, Employment and Economic Activity during the decommissioning phase of the Proposed Development. The output of 6.6-7.2MW per turbine has the potential to increase the export capacity of the Proposed Development, which may result in a slightly larger increase in the size of the construction crew responsible for decommissioning works.

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

The Turbine Delivery Route will have been reinstated during the decommissioning phase of the Proposed Development. Therefore, no impacts are foreseen in relation to socio-economics, employment and economic activity.

Cable Routes and Recreational Amenity Trail

The associated cable routes will be left in situ within the road corridor during the decommissioning phase. The potential impacts associated with the decommissioning phase of the cable route in relation to socio-economics, employment and economic activity will be similar to those associated with the construction phase of the Proposed Development .

5.6.5 Mitigation Measures

Given that the potential impacts of the Proposed Development at construction, operation and decommissioning phases are predominantly positive, and there are no significant adverse effects, in respect in respect of socio-economics, employment and economic activity, no other mitigation measures are considered necessary for the wind farm, turbine delivery route, cable routes or recreational amenity trail.

5.6.6 Residual Effects

The residual effects of the development with respect to socio-economics is considered to be slight positive impact 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 slight positive economic effect from income spent by construction and operations workers in the local area.

As detailed in Section 5.6.3, the community benefit fund associated with the Renewable Energy Support Scheme (RESS) will provide a long-term significant positive impact to the Study Area and wider community. As set out in the terms of the second RESS auction (RESS 2, 2022), the Community Benefit Fund provides for payments to near-neighbours of the RESS 2 projects and will provide funding to benefit the surrounding community as a whole, in support of UN Sustainable Development Goals, in particular education, energy



efficiency, sustainable energy and climate action initiatives. While the RESS 3 auction has not occurred yet, it is anticipated that a similar payment scheme will be utilised.

The permutation of sizes between the turbine types, foundations and turbine hardstandings will have no measurable effect on Socio-economics, Employment and Economic for the Proposed Development.

The output of 6.6-7.2MW per turbine has the potential to increase the export capacity of the Proposed Development, which may result in a slightly larger increase in the size of the construction crew responsible for decommissioning works and the potential to increase the Community Benefit Fund available to the local community. As a result, it is considered that the effects of the Proposed Development on Socio-Economics, Employment and Economic Activity in terms of the Community Benefit Fund are considered to be long-term and have a significant beneficial residual effect for the community in terms of the Community Benefit Fund and insignificant and short term in relation to the employment in the area.

Rates payments and development contributions have potential to improve service provision throughout County Laois and in the local area. This is considered a significant positive residual effect.

The recreation amenity trail will be left in situ once constructed, resulting in a slight positive residual effect.

This EIAR assesses two potential cable routes to connect the Proposed Development to the National Grid. For both Option 1 or Option 2 cable routes, the cable route chosen for the Proposed Development will be left in situ once constructed, becoming part of the National Grid infrastructure. This is considered an insignificant and neutral residual effect.

5.7 Landuse, Settlement Patterns Baseline Population and Demographic Trends

This section assesses the compatibility of the proposed use with the current land use at the Proposed Development site. The determination of the potential effects on the existing land use is assessed for the construction, operation and decommissioning phases of the Proposed Development.

5.7.1 Existing environment

The Proposed Development site and surrounding environment are typical of an upland landscape with hiking trails present and extensive tracts of commercial forestry plantations dominating the surrounding undulating, landscape. Other agricultural activities in the wider environs of the Proposed Development site tend to be extensive (i.e. non-intensive) cattle and sheep enterprises.

The Proposed Development site covers an area of approximately 731 ha and primarily comprises of commercial forestry and small areas of agricultural pasture lands, interspersed with of hiking and walking trails. The site has elevations ranging from 196 - 325 m above sea level.



The CORINE land cover data for the Proposed Development site is illustrated in **Figure 5-2**. According to the CORINE land cover data (2018¹⁷) the land cover is classified as 243 Land principally occupied by agriculture, with significant areas of natural vegetation; 211 Non-irrigated arable land; 231 Pastures; 242 Complex cultivation patterns; 312 Coniferous forest; 324 Transitional woodland-shrub; and 313 Mixed forest.

The land use along the Option 2 cable route and TDR runs along the R426. The area is generally made up of Land Principally Occupied By Agriculture, With Significant Areas Of Natural Vegetation and dispersed single-rural dwellings.

5.7.2 Potential Effects- Construction

5.7.2.1 Wind Farm and TDR

The existing land-uses in proximity to the Proposed Development will remain broadly unchanged during the construction phase of the Proposed Development. However, some land use in close proximity to the site (>500m) may be temporarily disrupted during the construction phase of the Proposed Development. This is likely to occur on agricultural and forestry lands. The small proportion of agricultural lands supporting access tracks and turbine hardstands will result in a slight, temporary negative impact to this land use as access may be restricted to areas of the land for all permutations of turbine options and their associated hardstandings.

Eleven turbines are located within forestry and consequently tree felling will be required to facilitate the development of the Proposed Development. All elements of the Project are described in Section 3.5 of this EIAR and the description of the Proposed Development is found in section 3.8.1 of this EIAR.

Table 1.1 of Chapter 1 of this EIAR sets out a range of turbine and hardstanding dimensions associated with the Proposed Development. This assessment considers the effects of the range between these dimensions: Hub Heights of 99m to 102.5m, rotor diameters of 155m to 162m and a MW output between 6.6MW to 7.2MW. Additionally, it considers the permutations of the turbine foundation and hardstand dimensions: 25m in diameter for both turbine types and 50mx20m and 80m x 30m.

Felling of approximately 54.36 ha (52.78 ha permanent; 1.58 ha temporary) of largely coniferous forestry is required within and around the wind farm infrastructure to accommodate the Proposed Development. However, it is worth noting that the felling requirement listed above is the worst case scenario (modelled on the maximum permutation of 102.5m hub height, 162 rotor diameter and 80mx30m hardstanding including bat buffers). Smaller amounts of forestry would be impacted for lesser sized permutations. This will result in a moderate, permanent impact to forestry in the area, for all permutations of turbine options and their associated hardstandings if unmitigated.

TDR node upgrade activity has potential for non-significant, temporary effects to agricultural activity along the TDR route as accommodation works will be required at a number of points. This is likely to have non-significant impact due to the small extent of

¹⁷ Corine Landcover 2018: <https://www.eea.europa.eu/data-and-maps/data/copernicus-land-monitoring-service-corine> Date Accessed 22nd March 2023



the works and may cause temporary inconvenience due to traffic restriction measures. Turbine delivery may impact on land use temporarily due to the transportation of oversized loads on the public road. This is likely to have a slight temporary negative impact on residential land-use due to noise nuisance as a result of machinery. The impact of noise is further considered in Chapter 10 – Noise and Vibration. The impact of traffic is further considered in Chapter 12.

5.7.2.2 Cable Routes and Recreational Amenity Trail

The land use, settlement patterns and baseline population will remain largely unchanged for either of the associated cable routes and amenity trail.

The construction works associated with either Option 1 or Option 2 cable routes will be undertaken on a rolling basis with short sections of road closed for short periods before moving onto the next section. It is expected that these works will be conducted over a 12 month period. Temporary effects on land use will arise as a result of the installation of the 110kV cable route connection which will be constructed partially on existing forestry access tracks, with the majority to be installed within the public road corridor. This may temporarily affect access to forestry and agricultural lands. This effect for both options is likely to be slight, temporary as the installation works for cable trenching will be completed quickly and in sections, resulting in limited disruption.

5.7.3 Potential Effects- Operational

5.7.3.1 Wind Farm and TDR

Given that the footprint of the Proposed Development will occupy a small proportion of the Site when operational - approximately 5%. It is anticipated that there will be minimal impact on existing land uses arising from the operational phase.

The Proposed Development will involve a change of land use in areas where access tracks, wind turbine bases, hardstanding areas, substations, met mast bases, battery storage, borrow pits, and associated drainage works are required. The lands impacted are currently in use as commercial forestry and agriculture. A replanting scheme is proposed as detailed in Chapter 03 of this EIAR. This will offset the loss of forestry assets and will result in an overall temporary insignificant impact on forestry land use.

Some turbines are proposed to be located on agricultural land, and other turbines located in forestry areas will also require access tracks and hard standing areas which will occupy agricultural lands. This will have a slight, negative impact on agricultural land use due to the removal of small areas of grazing lands for the operational period of the Proposed Development.

The operational phase of the Proposed Development is not expected to negatively effect on agricultural practices on lands adjacent to the site. There are no peer reviewed studies which indicate that wind energy development has a negative effect on the health of livestock.

There are numerous examples of renewable energy developments throughout the country and internationally where livestock coexist and routinely graze in the same fields as wind turbines (AWEA, 2019). Existing land-use, such as grazing livestock or crops can continue



on the site as normal. As such, there will be no significant impact to livestock farming practice as a result of the Proposed Development.

5.7.3.2 Cable Routes and Recreational Amenity Trail

The landuse, settlement patterns and baseline population will remain largely unchanged for either of the associated cable routes and amenity trail during the operational phase.

As the cable route will be located underground, there are no potential impacts envisaged during the operational period.

Once the recreational amenity trail is completed, the local population and modest visitors will utilise the trail, resulting in a positive slight, and permanent impact on the landuse, settlement patterns and baseline population.

5.7.4 Potential Effects – Decommissioning

5.7.4.1 Wind Farm and TDR

The decommissioning phase of the Proposed Development is described in Section 3.11 of Chapter 3 of this EIAR and provides for the removal of turbines and associated infrastructure from the site. The potential effects 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, mountings and fencing. Substations are likely to be taken in charge by EirGrid or ESB and become part of the national grid and will therefore remain in situ. The turbine foundations will be covered over and allowed to re-vegetate naturally if required and access tracks will be left in situ. These 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 practices. During decommissioning works forestry access tracks may be in use by construction crews which may temporarily prohibit access to certain areas of forestry. these effects are considered to be short term, slight and temporary.

Following decommissioning, areas of the site cleared of forestry may be replanted if suitable. Forestry practices will also benefit from the upgraded access tracks left in situ throughout the site resulting in a moderate, positive impact on the forestry industry in the site area.

The underground cable route will remain in situ following decommissioning and form part of the national grid. Therefore no significant effects on land use are predicted during the decommissioning phase.

5.7.4.2 Cable Routes and Recreational Amenity Trail

The final cable route will remain in situ following decommissioning. There is no expected impact on landuse, settlement patterns and baseline population along either of the cable routes as a result of the decommissioning phase.



The recreational amenity trail will remain in situ following the decommissioning of the Proposed Development. There is no expected impact on land-use, settlement patterns and baseline population along the recreational amenity trail as a result of the decommissioning phase.

5.7.5 Mitigation Measures

5.7.5.1 Wind Farm and TDR

The Proposed Development will alter the land use of undeveloped land where proposed works will take place. 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 footprint has been kept to the minimum necessary to avoid effects on existing land uses in so far as possible.

Existing forestry, agricultural and hiking tracks have been incorporated into the design in order to minimise the construction of new tracks and roads and minimise the removal of forested areas. Where new access tracks are required, these have been sensitively designed in order to minimise impact on forestry and agricultural lands.

The construction and decommissioning works will be planned and controlled by a Construction and Environmental Management Plan (a CEMP has been included in Technical Appendix 3.2 found in Volume III of this EIAR but may be amended by the contractor prior to construction), which 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 may impact on their properties or agricultural practices. This will be communicated to members of the public through a community liaison officer.

Prior to the cable route installation works within public roads, it is proposed that all access points (domestic, business, farm) are considered when finalising the temporary road closures and diversions, to maintain local access as much as possible and avoid impacts on various land uses. 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.

As it is proposed to fell approximately 54.36 ha (52.78 ha permanent; 1.58 ha temporary) of largely coniferous forestry for the Proposed Development, replant lands of the same area are required.

5.7.5.2 Cable Routes and Recreation Amenity Trail

One of the two cable routes assessed will be installed underground to avoid impact on agricultural and forestry practices. In either Option 1 or Option 2 cable routes the cable and its joint bays be installed along forestry tracks and the public road. Once the cable is laid, the sections of forestry track and public road will be reinstated. Upon decommissioning, the cable will remain in situ and form part of the national grid, thus avoiding further excavation which would cause temporary impacts on adjacent land uses as described in Section 3.11 of Chapter 3 of this EIAR.

As there will be no significant impact on land-use, settlement patterns baseline population and demographic trends, no mitigation measures are required.



5.7.6 Residual Effects

The permutation of sizes between the turbine types, foundations and turbine hardstandings will have no measurable effect on Landuse, Settlement Patterns, Baseline Population and Demographic Trends. The output of 6.6-7.2MW per turbine has the potential to increase the export capacity of the Proposed Development, which may result in a slightly larger increase in the size of the construction crew responsible for decommissioning works and the potential to increase the Community Benefit Fund available to the local community. As a result, it is considered that the effects of the Proposed Development in terms of the Community Benefit Fund are considered to be long-term and have a significant beneficial effect for the community.

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 turbines and their infrastructure, turbine delivery route, either Option 1 or Option 2 cable routes or the 33kV collector cable on Landuse, Settlement Patterns, Baseline Population and Demographic Trends. Benefits to forestry practices as a result of the upgrading of access tracks throughout the site will cause a moderate, positive impact for forestry.

Other infrastructure that will remain in situ includes turbine foundations and hardstands which will be covered over and vegetated. The on-site substation is likely to be taken in charge by EirGrid or ESB and the cable route will remain in situ and likely become part of the national grid. The recreational amenity trail will also remain in situ for use of the general public once constructed. This will result in a slight, imperceptible residual impact on land use as the presence of the substations and underground cable will unlikely impact on exiting land use.

5.8 Recreation, Amenity and Tourism

5.8.1 Existing environment

This section provides an overview of the recreation, amenity and tourism value for the Study Area, County Laois and the State in order to assess the likely effects arising from the Proposed Development. As 2020 - 2022 have experienced an unprecedented negative impact on international tourism due to the COVID-19 pandemic, this section focuses on statistics from 2018 and 2019 as a reasonable scenario for tourism in County Laois. This section had regard to Fáilte Ireland's *Guidelines on the Treatment of Tourism in an Environmental Impact Statement* in accordance with the recommendations of the scoping response received.

Of note from Fáilte Ireland's Guidelines in respect of the assessment of potential effects arising from a Proposed Development on tourism, the following has been considered:

- Indicate the numbers of premises and visitors likely to be directly and indirectly affected by the Proposed Development.
- Identify and quantify, where possible, their potential receptors of impacts, noting in particular transient populations, such as drivers, walkers, seasonal and other non-resident groups.



- Describe any significant trends evident in the overall growth or decline of these numbers, or of any changes in the proportion of one type of activity relative to any other.
- Indicate any commercial tourism activity which is likely to be directly affected, with resultant environmental impacts.

Tourism is one of the major contributors to the national economy and is a significant source of full time and seasonal employment. During 2019, total tourism revenue generated in Ireland was approximately €9.5 billion, an increase on the €9.1 billion revenue recorded in 2018. Overseas tourist visits to Ireland in 2019 grew by 0.7% to 9.7 million (‘Key Tourism Facts 2019, Fáilte Ireland, March 2021). Ireland is divided into seven tourism regions. The Study Area is located within the Mid-East/Midlands Region which comprises counties Kildare, Louth, Laois, Longford, Meath, Offaly, and Westmeath. **Table 5-8** provides total revenue and breakdown of visitor numbers for the region during 2019.

Table 5-8 Tourism Revenue and Numbers (Source: Key Tourism Facts 2019, Fáilte Ireland, 2021)

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

Section 8.3 of Chapter 8 Tourism of the Laois County Development Plan 2021 – 2027 details that there is significant potential to grow the tourism sector in County Laois. In 2018, Laois welcomed <0.5% of the 9.6 million overseas tourists who came to Ireland, spending <0.5% of the €5.2bn overseas tourism expenditure in Ireland. This figure is down from the 2015 figures, where approximately 57,000 overseas visitors came to Laois. Irish residents took 237,000 trips to Laois and Offaly (2% of the 10.9million domestic trips in 2018) spending €30mn (1% of domestic tourist spend).

Key tourism and amenity related policies from the Laois County Development Plan 2021 – 2027, also include:

TM 2

Continue to support the implementation of the Strategic Plan for Tourism in Laois 2018 – 2023, in line with national and regional policy, tourism trends and identified challenges, in collaboration with Fáilte Ireland, Waterways Ireland, Coillte, Bord na Mona, tourism businesses and communities and other supporting agencies.



TM 4

Facilitate the implementation of the Laois Local Economic Community Plan Economic and Community Actions related to tourism development such as the development of a Laois Walking and Cycling App with navigation functions, the translation of existing heritage audio guides and the development of an artisan food proposition associated with Ireland's Ancient East Programme

TM 8

Work in collaboration with Coillte, neighbouring local authorities, Fáilte Ireland, community organisations and other interested parties to [bring forward development proposals for] develop new forest accommodation, with required ancillary facilities, access, signage and trails for walking, cycling, mountain-biking and horse-riding at suitable locations such as that of Emo Park, whereby it can be demonstrated that any such proposal complies with the Tourism Infrastructure Development Management Standards of this plan;

5.8.2 Tourist Attractions

Chapter 8 Tourism of the Laois County Development Plan 2021 – 2027 provides the following aim with respect to tourism:

"To support the development of the tourism sector as an economic driver for the County, identify and develop key destination towns and visitor attractions and activities for the prioritisation of investment and to encourage the increase of tourism product development."

The chapter further states that:

"Tourism plays an important role in the economic development of the Country as it generates significant employment opportunities and business development opportunities in more rural areas. Fáilte Ireland has identified that our landscape and heritage are the key driver for the promotion of Ireland's tourism, followed by its people, its safe environment and its range of attractions. There is an inextricable link between the Region's landscape, agriculture and tourism offer. Central to the development of an integrated ecotourism experience is the provision of quality cycling, walking and hiking routes connecting strategic tourism infrastructure, towns and villages."

The County Development Plan identifies 'top attractions' within County Laois which include:

- Emo Court and Parklands;
- the Round Tower Timahoe;
- the Rock of Dunamase;



- Donoghmore Workhouse;
- Aghaboe Abbey;
- Old Fort, PortLaoise;
- Mountmellick Embroidery Museum;
- Killeshin Church; and
- Heywood Gardens and Estate.

Only one of the listed 'top attractions' can be considered somewhat proximate to the Site. The Round Tower of Timahoe is approximately 2.4km away at its closest point.

The chapter also identified further amenities and grouped them under the following categories:

- Lakes/ Fishing;
- Gardens;
- Golf; and
- Trails – Looped Walks.

None of the amenities listed within these categories are proximate to the development site area.

Map 10.1 of the Laois County Development Plan 2021 - 2027 also provides a map of proposed and existing walking trails. There are no proposed walking trails proximate (.500m) to or within the development site area. However, the following existing walking trails are:

- The Swan Loop – passes directly through development site;
- Fossy Mountain – passes directly through development site;
- The Esker Walk – passes directly through the Option A cable route; and
- Timahoe to Clopooch public right of way – passes directly through the Option A cable route.

It is noted that the above walking trails are currently used by walkers for recreation purposes. Timahoe to Clopooch is also listed as a public right of way. The Swan Loop also connects to the Slieve Margy Way (Wolfhill to Maganey), further south. Taking into account the number of walking and forestry tracks open to the public, and the most proximate recreation amenities to the site as listed above, it is considered that the main tourism and recreation potential for the area is trail walking and hiking. Western Riding ranch is also approximately 820m away a from the development site boundary, northwest of turbine no. 1.

As per the National Monuments Service Historic Environment Viewer¹⁸, the following features are within the Study Area:

¹⁸ <https://maps.archaeology.ie/HistoricEnvironment/> Accessed 22 March 2023



- Ringfort – rath - Record Number: LA025-006.
- Burial - Record Number: LA025-003
- Ringfort – rath - Record Number: LA025-002
- Moated site - Record Number: LA019-018
- Enclosure - Record Number: LA019-017
- Church - Record Number: LA019-016
- Graveyard - Record Number: LA019-016001
- Cross-slab - Record Number: LA019-016002
- Ecclesiastical site - Record Number: LA018-031001
- Church - Record Number: LA018-031002
- Graveyard – Record Number: LA018-031003
- Burial - Record Number: LA018-031004
- Shrine - Record Number: LA018-031008
- Burial - Record Number: LA018-031009
- Round tower - Record Number: LA018-031005
- Castle - tower house – Record Number: LA018-031006
- Sheela-na-gig - Record Number: LA018-031007
- Urn burial – Record Number: LA018-062
- Exhibitionist figure – Record Number: LA018-031010
- Megalithic structure - Record Number: LA025-013
- Fulacht fia - Record Number: LA025-014
- Fulacht fia - Record Number: LA025-024
- Fulacht fia - Record Number: LA031-023
- Fulacht fia - Record Number: LA031-024
- Fulacht fia - Record Number: LA031-025
- Enclosure – Record Number: LA031-021
- Standing stone - Record Number: LA031-027
- Barrow - ring-barrow – Record Number: LA031-020
- Barrow – unclassified - Record Number: LA031-019
- Ringfort – rath - Record Number: LA031-001
- Enclosure - Record Number: LA025-031
- Enclosure - Record Number: LA018-060
- Ring-ditch - Record Number: LA018-072



As per the National Inventory of Architectural Heritage¹⁹, the following features are within the Study Area:

- Church of the Holy Rosary - Registration No: 12,802,501
- Willie Headon Memorial Library (Timahoe Church) - Registration No: 12,801,802
- Saint Mary's Catholic Church - Registration No: 12,802,505

It is noted that the Coillte forestry tracks throughout the site are currently used by walkers for recreation purposes. Taking into account the large amount of forestry tracks open to the public, and the most proximate recreation amenities to the site as listed above, it is considered that the main tourism and recreation potential for the area is trail walking and hiking. The Western Riding ranch also provides a horse-riding amenity within the Study Area. Existing walking trails are demonstrated in **Figure 3-6** in Chapter 3 of this EIAR.

Further information on the archaeological and cultural heritage assets within the Study Area can be found in Chapter 11 of this EIAR.

5.8.3 Potential Effects- Construction

5.8.3.1 Wind Farm and TDR

During the construction phase of the Proposed Development, construction works have potential to cause impacts on recreation, amenity and tourism activities within the vicinity of the site. This is likely to occur within 500m of the construction site and has potential to impact on:

- The Swan Loop – passes directly through development site
- Fossy Mountain - passes directly through development site

It is therefore likely that the construction phase of the Proposed Development will directly impact on the above recreation trails.

It is understood that walkers and hikers use Coillte forest tracks as part of Coillte's Open Forest Policy. The construction phase of the Proposed Development will involve the temporary closure of forestry tracks within the site known as the Fossy Mountain Loop in the northern cluster and the Swan Loop in the southern cluster. This is expected to last intermittently over an 18 month period during the construction phase of 10 years. Therefore, a moderate, temporary impact to these trails will occur due to closure during the construction phase of the Proposed Development. As such, the predicted significance of the effect applies to all permutations with the range.

Other recreation trails in proximity to the site include the Swan Loop which passes directly through the Site, the Slieve Margy Way, Esker Walk, and Timahoe to Clopook which are located between 1.3 and 1.5 km from the Site. Although the tracks associated with these trails will not be closed to the public, there is potential for indirect impact due to increased construction traffic which may cause dust and noise nuisance in proximity to these recreation trails.

¹⁹ <https://maps.archaeology.ie/HistoricEnvironment/> date accessed 22 March 2023



Transport and haul routes have been proposed so construction related traffic approaches the site from appropriate routes. These transport routes are outlined in Chapter 12: Traffic and Transportation and are illustrated in **Figure 3-6** in Chapter 3 Description of Development. The transport routes come in close proximity to the Derries Forest walks, Fishertown walk, Vicarstown to the Derries, the Derries Rathdare Lake, Emo Court Walks, Emo Slí, Portlaoise Slí na Sláinte, the Mass Rock, the Cobbler's walk, and Stradbally to Clopook. These transport routes have potential to carry more traffic than usual during the construction stage of the Proposed Development which may cause heightened noise. However, this is not expected to cause significant impact to the amenity of the trails. Impact on these trails as a result of the construction phase of the Coolglass Wind Farm is expected to be insignificant and temporary during 18 month works programme within 10 year construction period. As such, the predicted significance of the effect applies to all permutations with the range.

The forestry area and associated tracks surrounding the Fossy Mountain trail site is a popular walking trail used by the local community. This area will be closed to the public during the construction period of the Proposed Development. This will cause an intermittent moderate and temporary impact to the amenity of this area for 18 months of the 10 year construction period. As such, the predicted significance of the effect applies to all permutations with the range.

Detail in relation to potential traffic impacts as a result of the construction of the Proposed Development is provided in Chapter 12: Traffic and Transportation. Detail of potential visual impacts during construction phase are addressed in Chapter 7: Landscape and Visual, and potential noise and vibration effects discussed in Chapter 10: Noise & Vibration.

5.8.3.2 Cable Routes and Recreational Amenity Trail

The construction works associated with either of the cable routes will be undertaken on a rolling basis with short sections of road closed for short periods before moving onto the next section. It is expected that these works will be conducted over a 12-month period. This is expected to have an insignificant and temporary effect on Recreation, Amenity and Tourism, by way of traffic disruption.

The Option 2 cable route passes directly through the Esker walking trail, the Timahoe to Clopook public right of way and the Western Riding horse riding amenity. The installation of the cable route will not likely effect on the enjoyment of these recreation facilities, however, access to these facilities may be impacted for a temporary period during the construction phase if mitigation is not put in place.

The works will consist largely of improving existing trails, this is expected to have an insignificant and temporary impact on the population of the Study Area.

The construction works associated with the recreational amenity trail will be undertaken once the wind farm is constructed and the chosen cable route installed. It is expected that these works will be conducted over a 6-month period.

The effects to population in the Study Area will be beneficial in terms of the provision of the recreational amenity trail, but slight and long term, in terms of changes to Recreation, Amenity and Tourism as a result of the construction phase.



5.8.4 Potential Effects- Operational

5.8.4.1 Wind Farm and TDR

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 results also cited in the 2006 guidelines. The survey work referred to in the guidelines is the 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 (SEI, 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”*.

The SEAI have recently published new insights on the attitudes towards commercial wind and solar energy farms in Ireland titled *‘Irish National Survey of Households Near New*



Commercial Wind and Solar Farms²⁰ in May of 2023. Key findings from their research are demonstrated in **Plate 5-4** and summarised below.



Plate 5-4 People's Attitudes Towards Wind Farms

(Source: SEAI²¹)

This study is part of a greater long term socio-economic study on the effects of RESS on communities. The SEAI conducted in person interviews across Ireland, surveying 1,764 households in rural communities who live within 10km of one of 50 new solar or wind farm projects across Ireland. Other key findings are set out in **Table 5-9** and **Table 5-10**.

Table 5-9 People's Attitudes Towards Wind Farms (SEAI 2023)

Survey Statement	Agree	Disagree	Don't Know
If I want, I can have a say in the planning process of a local wind project.			
Less than 1km	71%	24%	5%
1-5km	53%	33%	14%
Project developers and the planning authorities take account of the opinions of communities close to wind projects.			
Less than 1km	63%	30%	7%
1-5km	45%	40%	15%

The SEAI also examined people's opinions on the Community Benefit Fund, noting that new wind and solar projects (estimated over a 15 year period). The key information is set out in **Table 5-10**.

²⁰ <https://www.seai.ie/publications/SEAI-RESS-National-Survey.pdf> . Date Accessed 14/6/2023

²¹ <https://www.seai.ie/publications/SEAI-RESS-National-Survey-Key-Findings.pdf>. Date Accessed 14/6/2023



Table 5-10 People's Attitudes to Community Benefit Funds (SEAI, 2023)

Distance	Positive	Neutral	Negative	Don't Know
Less than 1km	84%	7%	7%	2%
1-5km	77%	11%	7%	5%
Less than 10km	78%	10%	8%	4%
Overall	78%	10%	8%	4%

Recent 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.



In 2011, Fáilte Ireland's guidelines on tourism and environmental impacts stated in Chapter 4 titled

'Project factors affecting tourism' that 'some types of new or improved large scale infrastructure – such as roads – can improve the visitor experience – by increasing safety and comfort or can convey a sense of environmental responsibility – such as wind turbines.'

Further research has been undertaken in Scotland in 2011 by Visit Scotland who have produced a Wind Farm Consumer Research report which showed that 83% of those surveyed said a wind farm would not affect their decision about where to stay when on a holiday or short break in Scotland. Also, against a backdrop of increased wind farm deployment, Visit Scotland's statistics showed the number of visits to Scotland last year and the amount of spending by visitors both increased while their 'Scotland National Visitor Survey 2011' made no mention of the issue of wind farms affecting tourism in Scotland.

Renewable energy projects have also proven to be visitor attractions in their own right. Since opening in September 2009, the visitor centre at Whitelee Wind Farm in Scotland, the largest on-shore wind farm in the United Kingdom, attracts 200,000 visitors per year (Scottish Power, 2019).

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. Furthermore, when considering sensitive landscape in the area, the Laois County Development Plan 2021 – 2017 details a landscape character assessment for the county. The Site is located in an area characterised as 'hills and upland'. The Wind Energy Strategy describes that although lacking in terms of dramatic peaks, hills and uplands are a prominent feature of the county, particularly in the north-west and south-east. From the tops of these hills, panoramic views of the lowland landscapes of Laois and adjacent counties are gained. The hills also act as orientating features. Fossy Mountains and the upland areas around Swan, Luggacurren and Wolfhill are noted as prominent. In designing the Proposed Development, careful consideration was given to the potential impact the proposed turbines may have on this landscape. Further details of potential landscape impact are set out in Chapter 7: Landscape and Visual.

During the early design stages of the Proposed Development, key landscape and visual constraints were identified including tourist attractions as detailed in section 5.6.1. The most sensitive of these were deemed to be the Timahoe Round Tower, for reasons of both landscape character and its tourism, heritage and amenity value to Timahoe Town. Following an initial high level visual impact assessment, the design of the Proposed Development was altered to minimise the number of turbines from view and limit the visual exposure of those remaining turbines so as to minimise landscape and visual impacts on the tower. This is detailed in Chapter 7 of this EIAR. Furthermore, an assessment of impact on cultural heritage resource was carried out in Chapter 11. No significant impact to recorded monuments was identified.

5.8.4.2 Cable Routes and Recreational Amenity Trail

As the cable route will be located underground, there are no potential impacts envisaged during the operational period.



Due to the low magnitude of impact on the landscape, the temporary impact on walking trails and the availability of other walking trails in the wider area, the Proposed Development is expected to have a temporary, non-significant effect on recreation and amenity in the Proposed Development area, maintaining the area's strengths in trail walking and hiking in the long-term.

Once the recreational amenity trail is completed, the local population and modest visitors will utilise the trail, resulting in a positive slight, and permanent impact on the Recreation, Amenity and Tourism of the area.

5.8.5 Potential Effects– Decommissioning

5.8.5.1 Wind Farm and TDR

The decommissioning phase of the Proposed Development is described in Section 3.11 of Chapter 3 of this EIAR and provides for the removal of turbines and associated infrastructure from the site. The potential effects associated with the decommissioning phase in relation to recreation, amenity and tourism will be similar to those associated with construction phase but of a reduced magnitude.

Decommissioning works will include removal of above ground structures including the turbines, mountings and fencing. Similar to the construction phase, this is expected to have a moderate temporary impact on recreational trail walking and hiking at the Proposed Development site.

Furthermore, the increased traffic associated with decommissioning works has the potential to create an indirect impact on the nearby Swan Loop which passes directly through the wind farm site, the Slieve Margy Way, Esker Walk, and Timahoe to Clopook which are located between 1.3 and 1.5 km from the site. Although the tracks associated with these trails will not be closed to the public, there is potential for indirect impact due to increased construction traffic which may cause dust and noise nuisance at the amenity trail locations. The use of designated transport routes and haul routes will avoid significant impact on these locations. Impact on nearby amenity trails as a result of the decommissioning phase of the Proposed Development is expected to be insignificant and temporary.

Due to the temporary nature of both the construction and decommissioning phases, the overall development of the Proposed Development is expected to have an insignificant and temporary impact on recreation, amenity and tourism.

5.8.5.2 Cable Routes and Recreational Amenity Trail

The decommissioning phase of the Proposed Development is described Section 3.11 of Chapter 3 of this EIAR and provides for the removal of turbines and associated infrastructure from the site. The proposed cable route and the amenity trail will be left in place post decommissioning of the wind farm.

The potential effects associated with the decommissioning phase in relation to recreation, amenity and tourism will be similar to those associated with construction phase but of a reduced magnitude. The residual impacts are likely to be associated with the increase level of construction traffic. As with the overall decommissioning it is expected to have a



moderate temporary impact on recreational trail walking and hiking at the Proposed Development site.

As with the impacts outlined above, the increased traffic associated with decommissioning works has the potential to create an indirect impact on the nearby Swan Loop which passes directly through the wind farm site, the Slieve Margy Way, Esker Walk, and Timahoe to Clopook which are located between 1.3 and 1.5 km from the site. Although the tracks associated with these trails will not be closed to the public, there is potential for indirect impact due to increased construction traffic which may cause dust and noise nuisance at the amenity trail locations. The use of designated transport routes and haul routes will avoid significant impact on these locations. Impact on nearby amenity trails as a result of the decommissioning phase of the Proposed Development is expected to be insignificant and temporary.

Due to the temporary nature of both the construction and decommissioning phases, the overall development of the Proposed Development is expected to have an insignificant and temporary impact on recreation, amenity and tourism.

5.8.6 Mitigation Measures

5.8.6.1 Wind Farm and TDR

Mitigation measures for recreation, amenity and tourism are primarily related to the preliminary design stage of the Proposed Development, which has allowed for the prevention of development to occur that would adversely affect any recreational or tourist amenity. In designing the Proposed Development, careful consideration was given to the potential impact the proposed turbines may have on the of value landscape located in Timahoe round tower. As such, the design was reconfigured to remove views from certain sensitive receptors of the development from the landscape, which includes designated walking trails and tourism and heritage sites, in order to protect its high value amenity. The magnitude of visual impact on the Timahoe round tower is considered to be low, as set out in Chapter 7.

The area's potential for tourism and amenity was identified as trail walking and hiking. The development of the Proposed Development has the potential to increase the amenity value of the area by making the area more accessible to recreational users than at present, providing both new and improved tracks in and around the site which can be used for walking, hiking and educational uses. This provision is in keeping with the character of recreational activities popular in the area.

In providing for public safety, appropriate signage and safety measures will be put in place where forestry tracks will be closed to the public due to construction and decommissioning activities of the Proposed Development.

Once construction activities are completed, no further mitigation measures will be required.

5.8.6.2 Cable Routes and Recreational Amenity Trail

Given that the potential impacts of the Proposed Development at construction, operation and decommissioning phases are predominantly positive in respect of Recreation, Amenity



and Tourism, no other mitigation measures for either the cable routes or the recreational amenity trail are considered necessary.

In relation to the recreational amenity trail, it is noted that the proposed trail will encompass largely existing trails within the northern cluster of the Proposed Development. Appropriate signage and safety measures will be put in place where forestry tracks will be closed to the public due to construction and decommissioning activities of the proposed recreational amenity trail.

For sensitive receptors which utilise the existing trails in the northern cluster, temporary diversions to other trails will be communicated during the duration of construction and decommissioning works in the interest of public safety.

Once the Proposed Development is decommissioned, the recreational amenity trail will remain in situ.

No mitigation measures are envisaged during the operational period of the Proposed Development.

5.8.7 Residual Effects

5.8.7.1 Wind Farm and TDR

While there is potential for a slight, temporary impact to recreation, amenity and tourism due to the intermittent closure of existing forestry tracks over an 18 month period during the construction and decommissioning phases of the Proposed Development, there will be no significant, adverse impacts to recreation, amenity and tourism in the surrounding area as a result of the Proposed Development. As such, the predicted significance of the effect applies to all permutations with the range.

A long-term positive residual impact to recreation, amenity and tourism will occur as a result of the Proposed Development, with the provision of new and improved tracks throughout the Site. The new trail, originating from Timahoe Town will improve walking and hiking infrastructure in the area as part of Coillte's open forestry policy.

5.8.7.2 Cable Routes and Recreational Amenity Trail

The residual effects of the either Option 1 or Option 2 cable routes and recreational amenity trail with respect to Recreation, Amenity and Tourism are associated with the users of the recreational amenity trail during the operational phase of the Proposed Development. No residual effects are predicted during the construction period. The residual impact as a result of the amenity trail is likely to result in a slight positive impact to recreation, amenity and tourism allowing increased access to the Coillte trails.

Given that the final cable route is to be left in situ following construction and that the impacts of this are envisaged to be insignificant and temporary, there will be no residual impact in terms of recreation, amenity and tourism as a result of either Option 1 or Option 2 cable routes.



5.9 Human Health

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 effects of 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. In relation to accidents and safety, this section of the chapter should be read in conjunction with Chapter 16 Vulnerability of the Project to Major Accidents and Natural Disasters in this EIAR.

5.9.1 Existing environment

This section provides the health profile of the receiving environment, in comparison with Laois County and the State, in order to provide for the assessment of likely effects on human health that may arise as a result of the Proposed Development.

Human health in relation to this assessment refers to the nature and possibility of adverse health effects on humans. In the context of existing human health, the Department of Health has published a report titled *Health in Ireland, Key Trends 2016*²², which provides statistics relating to human health in Ireland over the last 10 years. Generally speaking, Ireland has a high level of good/very good health as demonstrated in self-evaluation statistics included in Census data, which has been provided below in **Table 5-11**.

Table 5-11 Population by General Health – 2016 (Source: CSO)

Area	Very good	Good	Fair	Bad	Very bad	Not stated
State	59%	28%	8%	1%	0%	3%
Laois County	59%	28%	8%	1%	0%	4%
Study Area	62%	28%	7%	1%	0%	2%

Approximately 90% of the responses recorded for the Study Area in 2016 indicated that they had very good or good health, which is above average when compared to the State, recorded at 87%; and greater than Laois county's response, recorded at 87%, respectively, for 2016. 1% of the Study Area, Laois County and the State is reported to have 'bad' general health. The Census data indicates that the population of the Study Area is generally in good health.

With respect to health and safety, the Health and Safety Authority of Ireland monitor fatal workplace injuries throughout Ireland. In relation to construction activities, in the past 10 years (2010 to 2019) an average of 8.1 fatal workplace injuries have occurred per year throughout Ireland. It is likely that there is a reduction in reported incidents 2020 and 2021, largely due public health measures introduced as a result of the COVID-19 pandemic, therefore incidents pertinent to 2020 and 2021 were not considered.

This is above average in relation to other economic sectors. The average number of fatal workplace injuries throughout all economic sectors over the same period in Ireland has

²²Department of Health (2016), Health in Ireland, Key Trends 2016. Available at: <https://assets.gov.ie/19006/a4a0ace510564a0f91489f8f527d0482.pdf>



been 4.5 fatal workplace injuries per year. This indicates the above average danger levels which workers are exposed to on construction sites.

5.9.2 Potential impacts- Construction

5.9.2.1 Wind Farm and TDR

The construction phase of the Proposed Development has potential to create health and safety hazards for both construction workers and the general public. This is as a result of construction activities and the associated impacts including increased traffic, transport of heavy or bulky materials, noise emissions, dust emissions, construction on public roads, excavation and general site-safety.

Aspects of the construction works that may present health and safety issues, are as follows:

- General construction site safety (e.g., slip/trip, moving vehicles etc.);
- Lifting of heavy loads overhead using cranes;
- Working with electricity during commissioning;
- Working at heights;
- Working in confined spaces;
- Ground conditions and soil stability;
- Substation construction;
- Road safety due to increased traffic numbers and transport of oversized loads to the site along turbine delivery routes and proposed haul routes;
- Pedestrian and recreation user safety;
- Installation of electrical cables on-site and in the public road corridor;
- Potential emissions impacting air quality and noise;

The works proposed as part of the Proposed Development will pose a risk to construction workers on-site especially during adverse weather conditions. This has potential to cause significant impact on human health if proper construction and safety protocols are not followed.

At the time of preparation of this chapter, the COVID-19 virus represents a significant risk to human health. Similar to any construction site, potential for spread of the virus during the construction phase of the Proposed Development may occur due to potential transmission from worker to worker due to construction activities and potential for close quarter working conditions. Up to date HSE guidance will be consulted regularly in line with HSA recommendations and all reasonable on-site precautions will be taken if COVID-19 remains a significant health issue during the construction phase.

Potential health and safety hazards may occur on public roads and adjacent land uses including agricultural lands and forestry lands and associated recreation uses (forestry tracks). Existing forestry tracks within the site will be intermittently closed to the public during the construction stage which may cause confusion for recreation users.



Construction works taking place on the public road and the delivery of heavy/bulky goods (TDR) and machinery on narrow roads may lead to temporary limited access to farmlands and forestry lands creating a potential hazard. This may cause a potential moderate, temporary impact on public safety.

The delivery of turbines will require transport of heavy/bulk goods from Dublin Port to the wind farm site via the M50, N7, M8, N72, the R426 and local roads approaching the Site. Due to the abnormal size of the turbine components, there is potential human safety risks associated with their delivery including traffic safety and pedestrian safety at special manoeuvring points. This has potential for significant effects to human safety if unmitigated and is addressed in Chapter 12 of this EIAR.

Potential impacts on air quality have the potential to affect human health. This has been assessed in Chapter 6: Air and Climate Change. No significant impacts on air quality have been identified with regard to the emissions of construction related traffic. The impact on air quality due to emissions from construction works (construction machinery) has been identified as negligible. Therefore, the construction phase of the Proposed Development will not have a significant impact on air quality. Due to the distance between the nearest receptor and source of emissions at the wind farm site, the impact on air quality at nearby dwellings will be imperceptible.

Construction works associated with the cable route have potential to impact on nearby dwellings with regard to air quality. Due to the nature of construction along the proposed cable route, which works as a “rolling” construction site, meaning that these works will not be concentrated in any one area of the route, these effects are considered to be short term, temporary and slight. Therefore, the construction phase of the development will not have a significant impact on air quality.

The potential impacts from noise during the construction phase are expected to have a slight and temporary impact on nearby residential receptors. The works will remain below the construction noise limit of 65dB as detailed in Chapter 10: Noise and Vibration. Vibration is not expected to be perceived at nearby residences.

Potential effects on human health associated with land, soils and geology during the construction phase relate to potential contamination of ground water which can be caused by hydrocarbon spills, siltation and landslide/slope failure. Furthermore, trench collapse and landslides/slope failure have the potential to cause injury and fatality if unmitigated. Considering the mitigation measures as set out in Chapter 8: Land, Soils and Geology, the impact on human health during construction works is expected to be negligible.

Potential impacts on human health associated with hydrology during the construction period relate to standing water caused by blocked drains, water collecting in excavated areas or diverted water resting in an undrained area. This has potential to cause drowning with particular risk to on-site staff. There is also potential for blockage of roadside drains causing potential hazard to traffic. A Stage 1 flood risk assessment has been carried out and a drainage design has been incorporated into the Proposed Development as detailed in Chapter 9: Hydrology and Water Quality. As a result, the Proposed Development is expected to have a minimal impact on flood risk in the surrounding area. The increased surface water runoff due to development is negligible and these flows are further reduced with the proposed drainage system. Mitigation measures have been set out in Chapter 9:



Hydrology and Water Quality to avoid impacts to human health and safety and avoid negative impacts on water quality.

Overall, if unmitigated, the construction phase of the Proposed Development has potential for significant impact to human health and safety for construction workers and members of the public in proximity to the site, if proper construction safety protocols and traffic management are not applied. This applies to all permutations with the range. Mitigation measures to prevent potential impact to human health and safety are set out in section 5.9.4.

5.9.2.2 Cable Routes and Recreational Amenity Trail

The construction works associated with the cable route has been detailed previously. Construction will be undertaken on a rolling basis with short sections of road closed for short periods before moving onto the next section.

The construction phase of the cable route has potential to create health and safety hazards for both construction workers and the general public. This is as a result of construction activities and the associated impacts including increased traffic, transport of heavy or bulky materials, noise emissions, dust emissions, construction on public roads, excavation and general site-safety.

- Aspects of the construction works that may present health and safety issues, are as follows:
- General construction site safety (e.g., slip/trip, moving vehicles etc.);
- Working with electricity during commissioning;
- Working in confined spaces;
- Ground conditions and soil stability;
- Road safety due to increased traffic numbers and transport of oversized loads to the site along turbine delivery routes and proposed haul routes;
- Pedestrian and recreation user safety;
- Road/lane closures due to the installation of electrical cables on-site and in the public road corridor;
- Potential emissions impacting air quality and noise

The works proposed as part of the Proposed Development will pose a risk to construction workers on-site especially during adverse weather conditions. This has potential to cause significant impact on human health if proper construction and safety protocols are not followed.

At the time of preparation of this chapter, the COVID-19 virus represents a significant risk to human health. Similar to any construction site, potential for spread of the virus during the construction phase of the Proposed Development may occur due to potential transmission from worker to worker due to construction activities and potential for close quarter working conditions. Up to date HSE guidance will be consulted regularly in line with HSA recommendations and all reasonable on-site precautions will be taken if COVID-19 remains a significant health issue during the construction phase.



The potential health and safety hazards may occur on public roads and adjacent land uses including agricultural lands and forestry lands and associated recreation uses (forestry tracks). Construction works taking place on the public road and machinery on narrow roads may lead to temporary limited access to farmlands and forestry lands creating a potential hazard. This may cause a potential moderate, temporary impact on public safety.

Potential impacts on air quality has the potential to affect human health. This has been assessed in Chapter 6: Air and Climate Change. Construction works associated with the cable route have potential to impact on nearby dwellings with regard to air quality. Due to the nature of construction along the proposed cable route, which works as a “rolling” construction site, meaning that these works will not be concentrated in any one area of the route, these effects are considered to be short term, temporary and slight. Therefore, the construction phase of the development will not have a significant impact on air quality.

The potential impacts from noise during the construction phase are expected to have a slight and temporary impact on nearby residential receptors. The works will remain below the construction noise limit of 65dB as detailed in Chapter 10: Noise and Vibration. Vibration is not expected to be perceived at nearby residences.

Potential effects on human health associated with land, soils and geology during the construction phase relate to potential contamination of ground water which can be caused by hydrocarbon spills, siltation and landslide/slope failure. Furthermore, trench collapse and landslides/slope failure have the potential to cause injury and fatality if unmitigated. Considering the mitigation measures as set out in Chapter 8: Land, Soils and Geology, the impact on human health during construction works is expected to be negligible.

Potential impacts on human health associated with hydrology during the construction period relate to standing water caused by blocked drains, water collecting in excavated areas or diverted water resting in an undrained area. This has potential to cause drowning with particular risk to on-site staff. There is also potential for blockage of roadside drains causing potential hazard to traffic. A Stage 1 flood risk assessment has been carried out and a drainage design has been incorporated into the Proposed Development as detailed in Chapter 9: Hydrology and Water Quality. As a result, the Proposed Development is expected to have a minimal impact on flood risk in the surrounding area. The increased surface water runoff due to development is negligible and these flows are further reduced with the proposed drainage system. Mitigation measures have been set out in Chapter 9: Hydrology and Water Quality to avoid impacts to human health and safety and avoid negative impacts on water quality.

The potential impacts as a result of the construction of the amenity trail will be the same as above, however, this is predominately the formalisation of existing tracks within the forest lands. The impacts of this element are considered to be low.

Overall, if unmitigated, the construction phase of the Proposed Development has potential for significant impact to human health and safety for construction workers and members of the public in proximity to the site, if proper construction safety protocols and traffic management are not applied. This applies to both Option 1 and Option 2 of the proposed cable routes. Mitigation measures to prevent potential impact to human health and safety are set out in section 5.9.4.



5.9.3 Potential impacts- Operational

5.9.3.1 Site Access and Usability of the Lands

The Proposed Development is designed to last a minimum of 35 years. During the operational period, there is potential impacts to human health and safety if appropriate mitigation measures are not put in place.

Under normal conditions, turbines do not pose a threat to public safety or the safety of animals. With respect to safety aspects, Section 5.7 of the Wind Energy Development Guidelines (2006) state 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.”

Throughout the operational phase of the Proposed Development, trails within Coillte lands will be open for recreational walking and hiking. Many of these tracks will be upgraded during the construction phase improving amenity for walkers. The trails will not come in proximity to electrical infrastructure. The off-road trails will provide a safe area for children and adults to exercise. No likely significant effect to public safety will occur due to the use of forest trails.

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 will be 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.

Appropriate site safety measures will be utilised during the operational phase by all permitted employees. High visibility clothing, hard hats and safety boots will be worn at all times to avoid potential injury. Access to the turbines inner structure will be locked at all times and only accessed by licenced employees for maintenance.

Considering the inherently low risk of fire associated with the Proposed Development, and the quality and extent of the proposed facility and fire suppressions system, the potential risk posed to public safety and air emissions is considered negligible.

There are no expected works to take place along the cable route or TDR during the operational phase of the Proposed Development. If maintenance works are required in these areas or bulk equipment is required to be delivered, proper safety protocols will be put in place in line with the mitigation measures set out in the Mitigation Measures section outlined in this chapter.

5.9.3.2 Health and Safety Standards and Procedures

Rigorous statutory and engineering safety checks imposed on the turbines during design, construction, commissioning and operation will ensure the risks posed to humans are negligible. 24-hour remote monitoring and fault notifications are included as standard in the Turbine Operations and Maintenance Contracts. In addition to scheduled maintenance,



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

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

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 protocols will be followed at all times.

As part of the human health assessment of the Proposed Development, 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 has not supported 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 Syndrome – An independent review of the state of knowledge about the alleged health condition', Expert Panel on behalf of Renewable UK, July 2010.
- 'Wind Turbine Sound and Health Effects - An Expert Panel Review', American Wind Energy Association and Canadian Wind Energy Association, December, 2009.
- '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.

An Expert Panel undertook a review on behalf of Renewable UK in July 2010 to assess the available scientific evidence relating to infrasound generated by wind turbines. This report was entitled 'Wind Turbine Syndrome – An Independent Review of the State of Knowledge about the Alleged Health Conditions'. This report followed a previous publication by Dr. Pierpont entitled 'Wind Turbine Syndrome' in 2009. The 2010 report assesses the impact of low-frequency noise from wind turbines on humans. The principle conclusions drawn by this expert panel are:



“The scientific and epidemiological methodology and conclusions drawn (in the 2009 book) are fundamentally flawed;

The scientific and audiological assumptions presented by Dr. Pierpont relating infrasound to ‘wind turbine syndrome’ are wrong; and

Noise from Wind Turbines cannot contribute to the symptoms reported by Dr. Pierpont’s respondents by the mechanisms proposed”

‘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 10: Noise and Vibration, Section 10.2.4. It states that infrasound is noise occurring at frequencies below that at which sound is normally audible, that is, less than about 20 Hz, due to the significantly reduced sensitivity of the ear at such frequencies. In this frequency range, for sound to be perceptible, it must be at very high amplitude, and it is generally considered that when such sounds are perceptible then they can cause considerable annoyance. However, wind turbines do not produce infrasound at amplitudes capable of causing annoyance.

Research was published in 2020 by the Finnish Government aimed at assessing whether wind turbine infrasound has harmful effects on human health. The study found that scientific evidence on the potential association or studies focusing directly on the health effects of wind turbine infrasound are lacking. The study included a questionnaire, sound measurements, and provocation experiments. The study found that participants who had previously reported wind turbine infrasound related symptoms were unable to perceive infrasound in noise samples and did not find samples with infrasound more annoying than those without previous wind turbine infrasound related symptoms. Further, wind turbine infrasound exposure did not cause physiological responses in either participant group (Maijala et al, 2020).

The UK Department of Trade and Industry study, ‘The Measurement of Low Frequency Noise at Three UK Wind farms’²³, 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’.

²³ Hayes, Malcolm D. (2007). The measurement of Low Frequency Noise at Three UK Wind Farms. (Online). Available at: <https://windfarmrealities.org/wp-content/uploads/wfr-docs/hayes-measurement-low-freq-3-farms.pdf>. Date Accessed 31/1/2023



Health Canada published findings of a study in 2014 titled: 'Wind Turbine Noise and Health Study'²⁴. The study considered physical health measures that assessed stress levels using hair cortisol, blood pressure and resting heart rate, as well as measures of sleep quality. More than 4,000 hours of wind turbine noise measurements were collected and a total of 1,238 households participated. The results of the study did not support a link between wind turbine noise and illness or chronic conditions. No association was found between the multiple measures of stress and exposure to wind turbine noise. However, an association was found between increased levels of wind turbine noise and individuals reporting being annoyed.

The HSE published a report in 2017 titled '*Position paper on wind turbines and public health*'²⁵. The paper discusses case studies which describe a range of health effects that have been associated with wind turbine development as a result of shadow flicker, noise and electromagnetic radiation. The paper highlights the lack of high-quality scientific evidence to support adverse impacts on health as a result of wind turbine development, and states that current scientific evidence connecting wind turbines to health impacts is weak, inconsistent or absent. The paper recommends appropriate set-back distances and meaningful community engagement to mitigate against potential health impacts, in line with the Wind Energy Development Guidelines 2006.

The Proposed Development has been designed in compliance with the Wind Energy Development Guidelines (2006). We note that the Draft Revised Wind Energy Development Guidelines (2019) is currently at draft stage and has not yet been formally adopted by the government. However, the design and assessment of the Proposed Development has had regard to the draft guidelines and has provided for key elements as set out in the guidelines such as the provision of 4-times the tip height setback distance between turbines and the nearest point of curtilage of nearby residential properties. The Wind Farm provides a minimum 720m setback between turbines and dwelling structures allowing for 4-times the tip height of the proposed turbines and additional distance to allow for curtilage. Extensive community engagement was also conducted as recommended by the HSE report and is detailed in Chapter 2: Screening and Scoping. Chapter 10: Noise and Vibration sets out mitigation measures to maintain appropriate noise levels and avoid potential impact to human health at nearby receptors.

With regards to turbine infrastructure, the Department of the Environment, Heritage and Local Government's Wind Energy Development Guidelines for Planning Authorities, 2006 identifies no specific safety considerations in respect of the operations of wind turbines. The DoEHLG's Guidelines note a limited possibility for injury arising from flying ice fragments or a damaged blade. Turbine technology will prevent the infrastructure from operating in the event that ice is present or in the event that a blade is damaged, minimising the potential for possible injury.

In terms of perceived effects from shadow flicker, a shadow flicker assessment has been conducted and is included in Chapter 14 of this EIAR. In relation to shadow flicker, there will

²⁴ Health Canada (2014). Wind Turbine Noise and Health Study. (Online). Available at: https://www.canada.ca/content/dam/hc-sc/migration/hc-sc/ewh-semt/alt_formats/pdf/noise-bruit/turbine-eoliennes/pamphlet-brochure-eng.pdf. Date Accessed 31/1/2023

²⁵ HSE (2017). Position Paper on Wind Turbines and Public Health. (Online). Available at: <https://www.lenus.ie/bitstream/10147/621467/3/HSE+PHMEHG+Wind+Final+PP+Feb+2017.pdf>. Date Accessed: 31/1/2023



be no exceedances to the 2019 Wind Energy Guideline limits. The turbines will be programmed to cease operating when there is a potential for shadow flicker. In terms of noise, operational wind farm noise levels meet the derived night and daytime noise limits at all residential properties surrounding the Proposed Development.

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

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

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. With respect to safety, only trained and licenced 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.

5.9.3.3 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.

In 2020 the International Commission on Non-Ionising Radiation Protection (ICNIRP) issued guidelines for '*Limiting Exposure to Electromagnetic Fields*²⁶. Table 2 (pg. 491) in this document sets out the basic restrictions for Electromagnetic Field Exposure (from 100kHz to 30 GHz).

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

²⁶ International Commission on Nonionising Radiation Protection (2020). ICNIRP Guidelines for Limiting Exposure to Electro9magnetic Fields. (Online). Available at: <https://www.icnirp.org/cms/upload/publications/ICNIRPrfgdl2020.pdf>. Date Accessed 31/1/2023



The ICNIRP defines high-power radiofrequency EMFs as those emitting greater than 100 V m⁻¹ within the frequency range 100 kHz to 100 MHz at their source (p. 500).

The EirGrid document '*EMF & You: Information about Electric & Magnetic Fields and the electricity transmission system in Ireland*²⁷' 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).

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. An 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."*

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 Development, 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 0.13 µT directly above ground (ESB, 2017), 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."

27 Eirgrid (2014). EMF & You: Information about Electric & Magnetic Fields and the Electricity Transmission System in Ireland. (Online). Available at: <https://www.eib.org/attachments/registers/126630877.pdf>. Date Accessed: 13/1/2023



EU Directive 2013/35/EU on the minimum health and safety requirements regarding the exposure of workers to the risks from EMFs was transposed into Irish law on 1st July 2016 by the Safety, Health and Welfare at Work (Electromagnetic Fields) Regulations 2016 (S.I. No. 337 of 2016). The regulations impose a number of duties on employers to maintain safety during work procedures. This includes the carrying out of risk assessment, avoiding and reducing risk, employee information, training and consultation and health surveillance where appropriate. The Proposed Development will comply with both EU and Irish law and will result in a negligible impact to human health on employees at the Proposed Development. This applies all design permutations as set out in Table 1-1 of this EIAR.

5.9.3.4 Cable Routes and Recreational Amenity Trail

The proposed underground cables 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.

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 .

In the case of the proposed cable route between the Proposed Development and the off-site substation, the electric and magnetic fields expected to be associated with the operation of the proposed cable 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 either Option 1 or Option 2 cable routes, the operational Proposed Development will be negligible and imperceptible.

Once the recreational amenity trail is completed, the local population and modest visitors will utilise the trail, resulting in a positive slight, and permanent impact on health.

5.9.4 Potential Impacts – Decommissioning

5.9.4.1 Wind Farm and TDR

The decommissioning phase of the Proposed Development is described in Section 3.11 of Chapter 3 of this EIAR provides for the removal of turbines and associated infrastructure from the site. The potential effects associated with decommissioning phase in relation to human health will be similar to those associated with construction phase as detailed in Section 5.9.2.



Decommissioning works will include removal of above ground structures including the turbines, mountings, and fencing. The proposed substations will likely be taken in charge by EirGrid or ESB following decommissioning. 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 5.6.4. Potential impacts to human health and safety on-site will be prevented through best practice methods 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 impact on human health and safety is expected to be non-significant and temporary.

During the decommissioning works there is potential for impact on health and safety of the public. Similar to Section 5.6.4, 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 moderate and temporary. However, Phase 4 (Demobilisation) of the Construction and Environmental Management Plan (or subsequent Decommissioning Plan required prior to commencement) for decommissioning works will be followed, clear signage will be utilised on public roads and walkways and the community will be informed of works prior to commencement to avoid any potential impact to public health and safety. Once good practice is followed, the potential for impact on public health and safety is expected to be temporary and non-significant.

5.9.4.2 Cable Route and Recreational Amenity Trail

The decommissioning phase of the Proposed Development is described in Section 3.11 of this EIAR provides for the removal of turbines and associated infrastructure from the site. The potential effects associated with decommissioning phase in relation to human health will be similar to those associated with construction phase as detailed in Section 5.9.2.

In both instances, Option 1 and Option 2 cable routes will remain in situ following decommissioning. There is no expected impact on population trends, density, household size, or age structure along the cable route as a result of the decommissioning phase.

During the decommissioning works there is potential for impact on health and safety of the public. Similar to Section 5.9.2, 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 moderate and temporary. However, Phase 4 (Demobilisation) of the Construction and Environmental Management Plan (or subsequent Decommissioning Plan required prior to commencement) for decommissioning works will be followed, clear signage will be utilised on public roads and walkways and the community will be informed of works prior to commencement to avoid any potential impact to public health and safety. Once good practice is followed, the potential for impact on public health and safety is expected to be temporary and non-significant.

The recreational amenity trail will remain in situ following the decommissioning of the Proposed Development. There are no expected negative impacts on human health.



5.9.5 Mitigation Measures

5.9.5.1 Health and Safety Mitigation Measures – Construction & Decommissioning

To maintain safety and avoid health impacts on construction workers and the general public, best practice site safety and environmental management will be maintained. The Proposed Development will be designed, constructed, operated and decommissioned in accordance with the following:

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

The following mitigation measures will be implemented::

- All construction staff will be adequately trained in health and safety and will be informed and aware of potential hazards. Furthermore, a Construction and Environmental Management Plan will be implemented and is included in Technical Appendix 3.2 found in Volume III of this EIAR, will be circulated to all construction workers which will detail safety protocol and methodology. Furthermore, site investigation has been completed and mitigation has been proposed as detailed in Chapter 8: Lands, Soils and Geology and Chapter 10: Hydrology and Water Quality.
- A site-specific Safety and Health Management Plan has been prepared for the Proposed Development in accordance with the Safety, Health and Welfare at Work (Construction) Regulations 2013 and is included in the CEMP contained in Technical Appendix 3.2 of Volume III of this EIAR. The Safety and Health Management Plan will be implemented in accordance with this plan following the appointment of the contractor for the main construction works. The contractor may add to it, or it may be revised with approval from the local authority. Similarly, a site-specific Safety and Health Management Plan will be prepared for the decommissioning works.
- All hazards will be identified, and risks assessed as set out in the CEMP found in Technical Appendix 3.2 of Volume III of this EIAR. 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 Proposed Development.
- 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 Management Plan.
- Up to date HSE guidance will be consulted regularly in line with HSA recommendations and all reasonable on-site precautions will be taken to reduce the



spread of COVID-19 on construction sites if COVID-19 remains a significant health issue during the construction phase.

- Public safety will be addressed by restricting access to the public in the vicinity of the site works during the construction stage. Appropriate warning signs will be posted at the construction site, directing all visitors to the site manager. Appropriate signage will be provided on public roads approaching site entrances and along haul routes. Extra safety measures will be employed when large loads are being transported, for instance, Garda escort will be requested for turbine delivery and a comprehensive turbine delivery plan will be utilised to avoid potential impact to human safety for road users and pedestrians.
- For the installation of the cable route in the public road, a detailed traffic management plan will be developed in discussion with locals who will be directly impacted by the works. and the local authority. Public consultation will be conducted along the cable route to inform local residents ahead of construction works. A Construction Traffic Management Plan has been prepared and is found in Technical Appendix 12.3 of Volume III of this EIAR.
- Appropriate safety measures, traffic management, signage and communication with the public will be utilized to maintain safety and mitigate against potential danger. A traffic and transport assessment has been completed and is detailed in Chapter 12: Traffic and Transportation.
- Once mitigation measures and health and safety measures are followed to all permutations, the potential for impact on human health for members of the public during construction and decommissioning of the Proposed Development is expected to be not significant and temporary.

5.9.5.2 Health and Safety Mitigation Measures - Operational

- For operation and maintenance staff working at the Proposed Development, appropriate site safety measures will be utilised during the operational phase by all permitted employees. All personnel undertaking works in or around the turbines will be fully trained and will use appropriate Personal Protective Equipment (PPE) to prevent injury.
- Access to Coillte lands will remain open to the general public during the operational phase, however, access to the towers and the substation compound will be restricted to approved and appropriately trained personnel. The substation and battery storage area will be enclosed by palisade fencing and will be remotely monitored and equipped with intruder and fire alarms, in line with ESB and EirGrid standards.
- Adequate clearance of structures from overhead lines will be provided. All on-site electrical connections are carried by underground cable and will be marked out above ground where they extend beyond the track or hardstanding surface. Details of cables installed in the public road will be available from ESBN.
- Lightning conductors will be installed on each turbine as all structures standing tall in the sky require this protection. Turbines specifically require this to prevent power surges to electrical components.



- Turbines will be fitted with ice detection systems which will stop the turbine from rotating if ice is forming on a turbine blade. This aims to prevent ice throw which can cause injury.

5.9.5.3 Human Health Mitigation Measures - Operational

- Rigorous statutory and engineering safety checks imposed on the turbines during design, construction, commissioning and operation will ensure the risks posed to humans are negligible. 24-hour remote monitoring and fault notifications are included as standard in the Turbine Operations and Maintenance Contracts. In addition to scheduled maintenance, the maintenance contracts will allow for call out of local engineers to resolve any issues as soon as they are picked up on the remote monitoring system.
- All maintenance work will only be carried out by people with the appropriate training and qualifications for the task at hand. All maintenance and operations work will be carried out in accordance with the relevant health and safety legislation with the appropriate planning and preparation.
- Regular visual inspections and testing of battery system equipment will be incorporated into the Proposed Development's operation and maintenance schedule as per the battery storage manufacturers' requirements.
- Fire safety measures and equipment in the battery storage facility will be kept in effective working order. This includes all fixtures and fittings such as fire doors, fire detection and alarm systems, fire-fighting equipment, notices and emergency lighting. Regular checks, periodic servicing and maintenance shall be carried out. Any defects will be put right as quickly as possible.
- A nominated competent person will carry out checks and routine maintenance work to ensure the reliability and safe operation of fire-fighting equipment and installed systems such as fire alarms and emergency lighting. A record of the work carried out on such equipment and systems will be kept on site at all times.
- Shadow flicker detection systems will be installed on all turbines in order to achieve zero shadow flicker on nearby receptors. This is further detailed in Chapter 14: Shadow Flicker.
- In certain wind conditions, turbines will run at reduced modes of operation in order to maintain appropriate daytime and night-time noise levels so as not to impact on residential amenity, as required. Details of these measures are set out in Chapter 10: Noise and Vibration.
- The wind farm system will include a kill switch that can be operated at any time with an overriding manual shutdown system in case of an emergency.
- In line with the Health Service Executive's Emergency Planning recommendations, any incident which may occur at the site which requires emergency services, incident information will be provided in the 'ETHANE' format.
 - Exact location
 - Type of incident



- Hazards
- Access and egress
- Number of casualties (if any) and condition
- Emergency services present and required
- The design of the Proposed Development has considered the susceptibility to natural disasters. The proposed site drainage will mitigate against any potential flooding with the use of swales as described in Chapter 9 – Hydrology and Water Quality.

5.9.6 Residual Impacts

5.9.6.1 Wind Farm and TDR

Through various aspects of the design process for the Proposed Development, negative residual impact on human health applies to all permutations is expected to be imperceptible. This is due to the setback distance from nearby dwellings, elimination of shadow flicker on neighbouring dwellings and noise control measures to reduce potential impacts on nearby receptors. Furthermore, the mitigation measures as set out throughout the EIAR will prevent any potential significant impacts on human health during the construction and decommissioning phases.

Long-term positive residual impacts will occur due to the provision of clean, renewable electricity. It is estimated that the operation of the Proposed Development will displace 52,325 tonnes of CO₂eq per annum (Vestas) and 1,831,375 tonnes of CO₂eq will be displaced over the proposed thirty five-year lifetime of the wind farm. By way of contrast, the Siemens Gamesa turbine (the turbine candidate with the minimum megawatt power rating at 6.6 MW) will displace 47,964 tonnes of CO₂eq per annum or 1,678,740 tonnes CO₂eq over the 35 year lifetime of the wind farm. If the Proposed Development was not built, this carbon would otherwise be emitted through the burning of fossil fuels.

The use of upgraded forest tracks for recreational activity will provide opportunities for health gain through encouragement of exercise. This has potential to provide a long-term moderate positive residual impact to human health in the locality.

5.9.6.2 Cable Routes and Recreational Amenity Trail

Recreational Amenity trail

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 Development on land use. Benefits to forestry practices as a result of the upgrading of access tracks throughout the site will cause a moderate, positive impact for forestry.

Cable Routes

The cable routes will remain in situ following decommissioning. There is no expected residual impacts from either Option 1 or Option 2 cable routes as a result of the decommissioning phase.



5.10 Renewable, non-renewable resources and utility infrastructure

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 of the Proposed Development on Material Assets.

5.10.1 Existing environment

It is proposed to haul construction materials from batching plants, 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 and mortar. Ready mix concrete will be sourced from batching plants.

Renewable resources at the site include extensive commercial forestry at both the northern and southern turbine clusters. Wind resource is above average at the site location and is approximately 9 metres/second at 100m (SEAI Wind Atlas, 2013).

5.10.2 Potential impacts- Construction

5.10.2.1 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. An estimated total of 10,243m³ of imported material will be required for the roads, hardstands and compound/substations and the temporary upgrade areas associated with the TDR.

The proposed 1 no. borrow pit has potential to provide a total of 20,200 m³ of onsite general fill as detailed in Chapter 8: Land Soils and Geology. 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. The use of site-won and imported material will have a slight, permanent impact on non-renewable resources of the area. This is not considered to be significant.

5.10.2.2 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 positive impact in terms of carbon reduction and climate change. It will assist Ireland in meeting its target of reducing 80% carbon emissions from the electricity sector by 2030, and will further support a net-zero greenhouse gas emissions no later than 2050, as set out in the Climate Action Plan 2023.



Trees felled for development 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 infrastructure to accommodate the construction of turbine foundations, hard stands, crane pads, access tracks, construction site compounds and substation. The estimated area of tree clearing required for the Proposed Development will be 54.36 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. The overall effect of the Proposed Development on renewable timber resources will be neutral.

5.10.2.3 Utilities Infrastructure

As detailed in the Turbine Delivery Route Assessment Report, telephone poles may require to be relocated due to oversail. This has the potential to cause a non-significant temporary impact on nearby dwellings and commercial/industrial activities. This potential impact is likely to be slight. The Turbine Delivery Route Assessment Report is included in Technical Appendix 12.1 found in Volume III of this EIAR. Cable route works will avoid existing services as detailed in Chapter 12: Traffic and Transportation. Potential effects on telecommunications are discussed in Chapter 13: Telecommunications and Aviation.

The construction of the cable trenches along public roads will have a slight, negative temporary impact on the roads concerned during construction, with some roads likely to require re-surfacing. Importation of materials and equipment for the Proposed Development will also increase shipping traffic at the ports being used and increase freight on the motorway, national primary routes and regional road network. This is assessed in Chapter 12: Traffic and Transportation.

There is potential for turbine delivery to negatively impact on major road infrastructure if unmitigated. Turbine delivery could potentially cause traffic disturbance and damage to road infrastructure if not properly planned and assessed. This has potential to cause significant negative impact to existing roads infrastructure if unmitigated.

5.10.3 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 imported fill, however, the impact of this is likely to be 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 positive impact on renewable energy resource and will contribute to reducing Ireland's dependency on imported fuel resources.

5.10.4 Potential Impacts – Decommissioning

5.10.4.1 Wind Farm and TDR

The potential impacts associated with decommissioning 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, mountings, and fencing. Turbine foundations and access tracks will be left in situ.



The proposed substation building is expected to be taken in charge of by EirGrid or ESB which will have a slight positive impact on electricity infrastructure. Similarly, the underground cable will remain in situ and will become a part of the national grid resulting in slight positive impact on electricity infrastructure.

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

5.10.4.2 Cable Route and Recreational Amenity Trail

The underground cable will remain in situ and will become a part of the national grid resulting in slight positive impact.

The amenity trail will remain in situ and will become part of the existing trails in the area resulting in slight positive impact.

5.10.5 Mitigation Measures

5.10.5.1 Wind Farm and TDR

Existing services along the proposed cable route will be identified through a desktop study and will be confirmed in the pre-construction surveys prior to construction. This will minimise the impact in terms of disruption or damage to existing utilities. It is not intended to divert existing services but instead, where possible, the cable will be laid above or below existing services. Communication with service providers will be maintained for the duration of the construction works where required.

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

The 54.36 ha hectares of forestry which will be felled at the Proposed Development site will be replanted at alternative lands under a felling licence.

To manage potential impact to roads infrastructure, a Turbine Delivery Report has been prepared and is included in Technical Appendix 12.1 found in Volume III of this EIAR.

5.10.5.2 Cable Route and Recreational Amenity Trail

Given that the potential impacts of the Proposed Development at construction, operation and decommissioning phases are predominantly positive in respect of renewable, non-renewable resources and utility infrastructure no other mitigation measures are considered necessary.

5.10.6 Residual Impacts

Non-renewable resources such as aggregates, and cement are required onsite during the construction phase. This will result in an imperceptible residual impact on non-renewable resources.

The Proposed Development will result in a moderate positive residual impact on non-renewable resources by offsetting the use of fossil fuels in electricity generation over the



lifetime of the Proposed Development. This effect applies to all permutations with the range.

The proposed substations and underground cable route is expected to be taken in charge of by Eirgrid or ESB following decommissioning, providing a slight positive residual impact on electricity infrastructure in the area.

5.11 Do-Nothing Scenario

In the event that the Proposed Development does not proceed, the existing land use will continue for agricultural and forestry purposes for the foreseeable future.

In the absence of renewable energy development, it is possible that there will be a continuance of excessive greenhouse gas emissions and consumption of fossil fuels.

The opportunity to harness the wind energy capacity of County Laois would be lost, further constraining the State from achieving its renewable energy targets of 70% by 2030. The net displacement of c. 47,964 – 52,325 tonnes of CO₂ per annum will not be achieved.

It is also envisaged that if the Proposed Development does not proceed, there will be no employment opportunities relating to the construction, operation and decommissioning of the Proposed Development, resulting in a net loss of economic activity in County Laois. No rates or development contributions will be made payable to Laois County Council by the developer and no Community Benefit Fund Scheme will be put in place in the locality.

5.12 Cumulative Effects

For the assessment of cumulative effects, any other permitted or proposed and unbuilt projects in proximity to the site (wind energy or other) have been considered where they have the potential to generate an in-combination or cumulative impact with the Proposed Development.

To determine the permitted, proposed or unbuilt projects in proximity to the site, a monthly desktop based planning search spanning 10 years within a radius of 20km was undertaken. Sources consulted included the EIA portal, An Bord Pleanála, Laois County Council and Carlow County Council planning lists. The list was refined by eliminating all single homes from 2km outside the red line boundary of the Proposed Development and focused on planning applications of over 50 houses and planning applications which contained an EIAR or an NIS. This formed our cumulative long list of developments.

Further refinement was undertaken to ascertain developments within this list. These refinements included:

- All wind farms and cable route planning applications within 20km where the planning status is to be determined, or where the construction period would likely coincide with the construction period of the Proposed Development
- All infrastructural projects which are operational and utilising the same road networks that are proposed by the Proposed Development
- All quarries within 2km of the Proposed Development red line boundary
- All Strategic Infrastructure and Strategic Housing Developments within 20km where the same road network would be utilised



- All Strategic Housing Development and Large Scale Residential Developments within 5km.

The result formulated the cumulative development short list. These are assessed for cumulative and in-combination effects in **Table 5-12**.

Table 5-12 Potential Cumulative Impact Developments in Proximity to the Proposed Development

Reg Ref	Applicant	Development Summary	Distance
20247 (Laois) Granted 19/11/2020	Michael Johnson	Restoration of a quarry- 15,000 tonnes per year	4km
Potential Effects:	Potential of intensification of road usage between the restoration of the quarry and the construction phase of the project which may impact on Traffic, Air Quality and Noise..		
Cumulative Assessment	<p>It is likely that should the construction phase of the Proposed Development coincide with the operational (restoration) phase of the Michael Johnson quarry that potential cumulative nuisance impacts will arise due to increased traffic, noise and dust in the vicinity of the development. However it is noted that the quarry entrance is on the N80 rather than the R426. In terms of impact on traffic / transport, the predicted cumulative effect is low and of short term duration (less than 3 years).No mitigation is required.</p> <p>In terms of Air Quality/Dust, it is considered that the proximity of the quarry to the Proposed Development is 4km distance. However it is noted that the quarry entrance is on the N80 rather than the R426. While there is no blasting in the quarry, the number of trucks entering the roadway in the vicinity of the Proposed Development is low. The cumulative effect is slight and of a short term duration (less than 3 years). No mitigation is required.</p> <p>In terms of Noise, the quarry is located 4km from the proposed development and does not have blasting on the site. However it is noted that the quarry entrance is on the N80 rather than the R426. Noise nuisance may arise in combination if the Proposed Development construction coincides with the operational phase of the quarry due to the combined number of vehicles on the road. The cumulative effect is slight and of a short term duration (less than 3 years). No mitigation is required.</p>		
Reg Ref	Applicant	Development Summary	Distance
Laois (20281) / Carlow (20282) Date Granted: 15.02.2022	Bilboa Wind Farm	4.6 ('km') of underground cables within Carlow County Council ('CCC') boundary and 2.0km within Laois County Council ('LCC') boundary and associated works, new substation, upgrading of existing forestry track; construction of two new onsite access track, amendments to a crane hardstanding area; road strengthening and widening along an updated turbine delivery route,	17 km
Potential Effects:	Potential of intensification of road usage between the construction phases of both projects which may impact on Traffic.		
Cumulative Effects (if any)	It is likely that should the construction phase of the Proposed Development coincide with construction phase of Bilboa Wind Farm that potential cumulative nuisance impacts will arise due to increased traffic, noise and dust to the south of the Proposed Development. However, it is noted that the cable corridor for Bilboa is located south of the southern cluster in close proximity to Carlow. As the TDR does not come through this area and given the nature of rolling construction works along either of the proposed cable routes, the predicted cumulative effect is low and of short term duration (less than 3 years).No mitigation is required.		



Reg Ref	Applicant	Development Summary	Distance
PL11.232626 (ABP) / 13268 (Laois) Granted 14/6/2014	Cullenagh Wind Farm	develop 18 no. wind turbines each with a hub height of up to 85m and a rotor diameter of up to 93m with an overall tip height of up to 131.5m (including associated transformers and hardstands at each turbine) and all ancillary infrastructure	3.5 km
Potential Effects:	Potential of intensification of road usage between the restoration of the quarry and the construction phase of the project which may impact on Traffic, and Air Quality and Noise..		
Cumulative Effects (if any)	<p>Cullenagh Wind Farm was permitted in 2014. However, the associated grid connection has is under assessment and is expected to be submitted for development consent in the coming months. It is therefore likely that the construction phases of the Proposed Development with the construction of Cullenagh wind farm will coincide near the same time.</p> <p>As the TDR does not come through this area and given the nature of rolling construction works along either of the proposed cable routes, the predicted cumulative effect is low and of short term duration (less than 3 years).No mitigation is required.</p> <p>Noise nuisance may arise in combination if the Proposed Development construction coincides with the construction phase of Cullenagh Wind Farm due to the combined number of vehicles on the road. The cumulative effect is slight and of a short term duration (less than 3 years). No mitigation is required.</p> <p>Dust nuisance may arise in combination if the Proposed Development construction coincides with the construction phase of Cullenagh Wind Farm due to the combined number of vehicles on the road. The cumulative effect is slight and of a short term duration (less than 3 years). No mitigation is required.</p>		
Reg Ref	Applicant	Development Summary	Distance
ABP-309293-21 / 19530 (Laois) 3rd Party appealed on 06/10/2022	Bord Na Móna Powergen Ltd.	Develop a Renewable Gas Facility, associated peat deposition area and external and internal road upgrades at Cúil Na Móna Bog within the townland of Clonboyne and Clonkeen, Portlaoise, Co. Laois. 1. Renewable Gas Facility (6.85 Ha) 2. Peat deposition and surrounding area (9.13Ha) 3. External road upgrades including proposed new roundabout, upgrade of R445 and local access road to existing site entrance - 660m in length (0.91Ha) 4. Internal upgrade of site access road - 443m in length (0.45Ha).	14 km
Potential Effects:	Potential of intensification of road usage between the construction phases of both projects which may impact on Traffic. This may also be considered as a Seveso site ²⁸ when commissioned.		
Cumulative Effects (if any)	If the construction phase of the Proposed Development coincides with the construction phase of the consented facility, it is considered that the haulage route of the consented facility will coincide with a portion of the TDR along the M8 Motorway. However, as the Proposed Development TDR deliveries will largely take place during the overnight hours, it is considered that the cumulative effect will be slight and short term in nature.		

²⁸ Hazard Classification of Biogas and Risks of Large Scale Biogas Production -Section 2.3-2.4. https://www.build-a-biogas-plant.com/PDF/CET_007.pdf Date Accessed 15/6/2023



Reg Ref	Applicant	Development Summary	Distance
21700 (Laois)(Under Appeal currently APB-314760-22)	Lagan Materials Limited (Spink Quarry)	the continued use and operation of the existing quarry including deepening of the quarry. comprising an extraction area of c. 14.5 ha within an overall application area of c. 19.6 ha. new site infrastructure, including portacabin site office / canteen, toilets, concrete batching plant and truck washdown facility, hydrocarbon interceptors, mobile crushing and screening plant, upgrading of the water management system, provision of holding tank for wastewater, and other ancillaries.	3 km
Potential Effects:	Potential of intensification of road usage between the operation of the quarry and the construction phase of the project which may impact on Traffic and Air Quality.		
Cumulative Effects (if any)	If the construction stage of the Proposed Development coincides with the operational phase of the Spink quarry, there is a potential that both will utilise the same road network (R426) via the R430 which is where the Spink Quarry's site entrance is. According to the traffic numbers for the Spink Quarry in the submitted EIAR(2021), between 8-12 HGV trips are to be generated per hour, if permitted. It is considered in terms of traffic nuisance that the cumulative effect will be moderate and long term in duration. In terms of Air Quality (dust nuisance), it is considered in light of the above, the cumulative effect will be medium, slight and long term in duration.		
Reg Ref	Applicant	Development Summary	Distance
PL11.248518 (ABP) / 16/260 (Laois) Granted 03/09/2021	Pinewoods Wind Farm (3 applications)	11 wind turbines, electricity substation, switch room, equipment compound, site access tracks, 7 site entrances, meteorological mast, upgrade of road junction. Townlands: Knockardugar, Boleybawn, Garrintaggart, Ironmills, Co. Laois	
ABP-308448-20 Granted 22/11/2021		A 110kv 'loop in/loop-out' Air-Insulated Switchgear substation, electricity lines, on-site access tracks and all associated site development works. Townlands: Knockardagur, Ballinakill, County Laois	
PL10.248392 (ABP) /17/62 (Laois) Granted 03/09/2019		2 kilometres of site access tracks, underground electricity and communications cabling and site drainage works. Townlands: Lands at Crutt, County Kilkenny.	
Potential Effects:	Potential of intensification of road usage and construction activity (cable routes, substation, construction works) between the construction phases of both projects.		
Cumulative Effects (if any)	It is likely that should the construction phase of the Proposed Development coincide with construction phase of Pinewoods Wind Farm that potential cumulative nuisance impacts will arise due to increased traffic, noise and dust to the south of the Proposed Development. It is noted that the EIAR for Pinewoods notes a total of 176 oversized loads with 3252 HGV loads over an 18 month construction period. The TDR does not travel through the area of the Proposed Development, instead diverting from the M8 to the M9 and N78. The HGV movements however do travel through the area of the proposed development to quarries in the vicinity of the proposed development (1 of 4 quarries). It is considered that the effect of the abnormal loads (turbines, substation, crane) is slight and of short term duration (less than 18 months) while the HGV traffic is of moderate and short term duration (less than 18 months). Grid Connection: even the nature of rolling construction works along either of the proposed cable routes, the predicted cumulative effect is slight and of short term duration (less than 3 years).No mitigation is required.		



5.13 Conclusion

The assessment of Population, Human Health and Material Assets has established the existing environment of the Study Area and compared the Study Area to County Laois and the State to establish a baseline for the impact assessment. 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, Human Health and Material Assets chapter has been subdivided into the following topics for the purpose of the assessment:

- Population and Demographics;
- Socio-Economics, Employment and Economic Activity;
- Land Use;
- Recreation, Amenity and Tourism;
- Human Health;
- Renewable, Non-Renewable Resources and Utilities Infrastructure

The population of the Study Area was found to be low density and dispersed. Short term slight temporary population growth was identified 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 and decommissioning works.

The employment profile of the Study Area consists of Farmers (15.31%), Manual Skilled (11.09%), Unskilled (5.47%), Own Account Workers (5.19%), and Agricultural (1.05%).

The operational phase of the Proposed Development has been identified as having a positive economic and social impact on the Study 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 Development. Other positive economic benefits as a result of the operational phase of the Proposed Development 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.

Land use in the Study Area as defined by 'Fossitt Classification Codes and Descriptions'²⁹ is primarily classified as 243 Land principally occupied by agriculture, with significant areas of natural vegetation; 211 Non-irrigated arable land; 231 Pastures; 242 Complex cultivation patterns; 312 Coniferous forest; 324 Transitional woodland-shrub; and 313 Mixed forest. The land use along both cable routes and TDR runs along the R426. The area is generally made up of Land Principally Occupied by Agriculture, with Significant Areas Of Natural Vegetation and dispersed single-rural dwellings. Once operational, the Proposed Development is not expected to have a significant negative impact on agricultural or forestry practices.

²⁹ Fossitt Classification Codes and Descriptions. Available at:
https://heritagemaps.ie/documents/fossittclassification_heritagemaps.pdf



With respect to Recreation, Amenity and Tourism, trail walking and hiking was identified as the main tourism and recreation potential for the Study Area. The construction and decommissioning phases are expected to have a non-significant, temporary and intermittent impact on recreation, amenity and tourism in the area due to the temporary closure of existing forestry tracks at the site during construction and decommissioning and the potential slight impact on existing trails in the area due to construction traffic. However, the operational phase will provide new and improved forestry tracks throughout the site which will be open to the public and will contribute to the main tourism and recreation potential for the Study Area resulting in a long-term positive residual impact on recreation, amenity and tourism.

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 Development. 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. Peer reviewed literature regarding potential health impacts as a result of operational wind turbines have been assessed. It was concluded that there is no scientific consensus to support the association between negative health impacts and wind energy developments with particular regard to noise and electromagnetic interference.

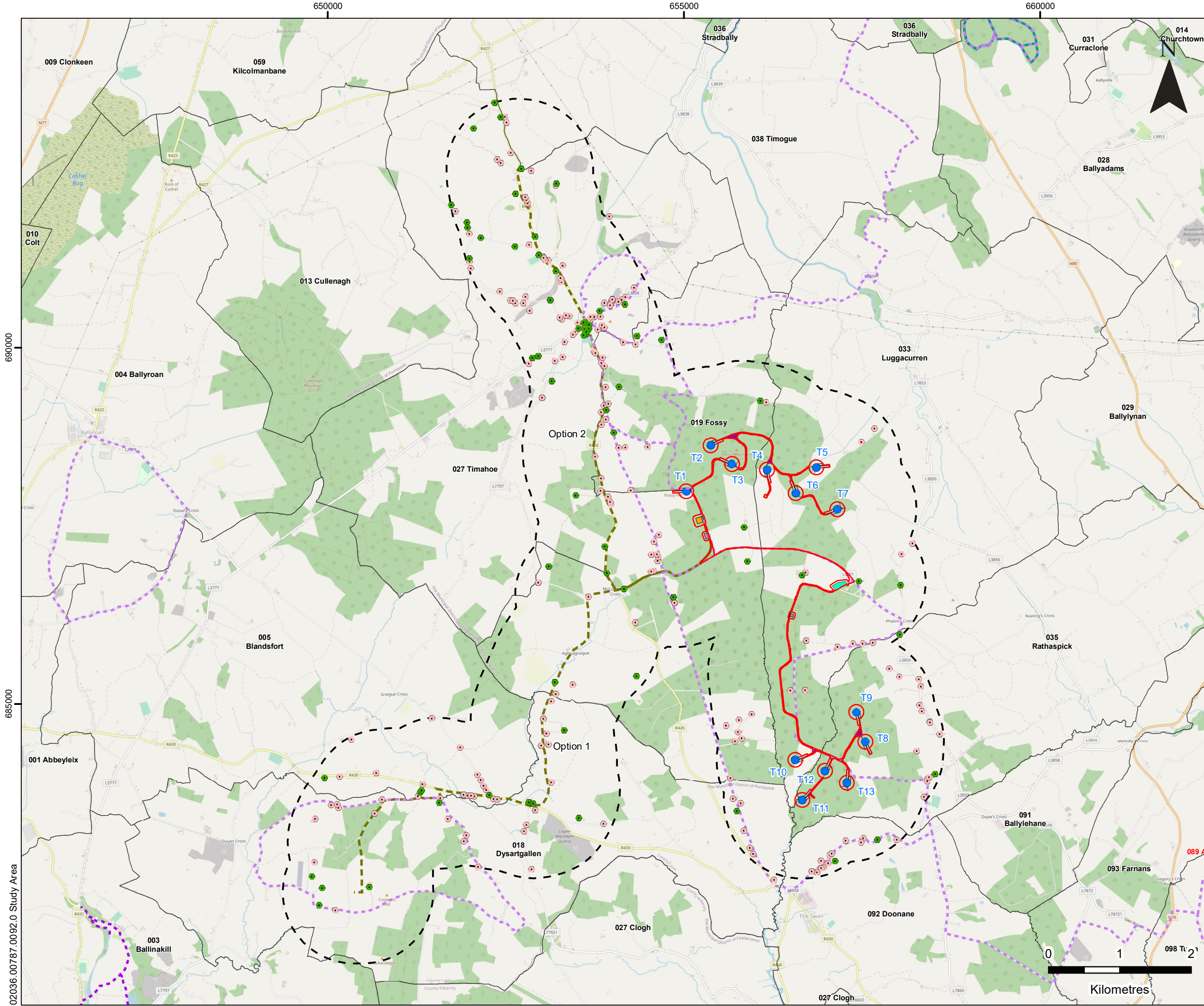
It is anticipated that the Proposed Development will avoid significant negative impact on renewable and non-renewable resources by sourcing local building materials where possible and providing site-won materials, therefore reducing the requirement for transport and reducing CO₂ emissions. Replant lands will be provided to replace forestry lands required for the development of the Proposed Development. Proposed Development was found to have an overall positive impact on utility infrastructure providing clean energy and reducing dependency on fossil fuels.

In conclusion, once mitigation measures set out throughout this EIAR are implemented, no significant negative effects on population, human health and material assets will occur as a result of the development of the Proposed Development.

This chapter comprehensively assesses all scenarios within the Turbine Range which is described in section 3.8.2 of Chapter 3 of this EIAR. The potential impacts that could arise from the Proposed Development during the construction, operational and decommissioning phases are set out in this conclusion. There will be no change to the potential impacts or predicted effects irrespective of which turbine is selected within the Turbine Range. Although there are slight changes to the effects associated between hub heights [99m] and rotor diameter [162m] compared to hub height [102.5m] and rotor diameter [155m] relating to a difference in MW output per turbine of 6.6MW to 7.2MW, such changes are not assessed to be alter the significance of the effects. As such, the predicted significance of the effect applies to all permutations with the range.

A proposed mitigation scheme for the construction, operational and decommissioning phases is described in this chapter and these mitigation measures are required and will be implemented in full for the turbine selected within the Turbine Range.





LEGEND

- Proposed Development Site Boundary
- Proposed Turbine Layout
- Proposed Substation Compound
- Proposed Temporary Construction Compound
- Proposed Borrow Pit
- Proposed Hardstanding
- Proposed Access Track
- Proposed Met Mast Hardstanding
- Proposed Cable Routes to be Assessed (Separate Planning Application)
- Study Area (Proposed Development Site Boundary and Proposed Cable Routes 1 km Buffer)
- Commercial Receptor
- Residential Receptor

Laois County Council Development Plan

- Existing Trail
- Proposed Trail
- National Trails Register
- Electoral Division (2016)



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COOLGLASS WIND FARM ENVIRONMENTAL IMPACT ASSESSMENT REPORT

POPULATION, HUMAN HEALTH AND MATERIAL ASSETS

STUDY AREA

FIGURE 5-1

Scale: 1:50,000 @ A3 Date: JUNE 2023

654000

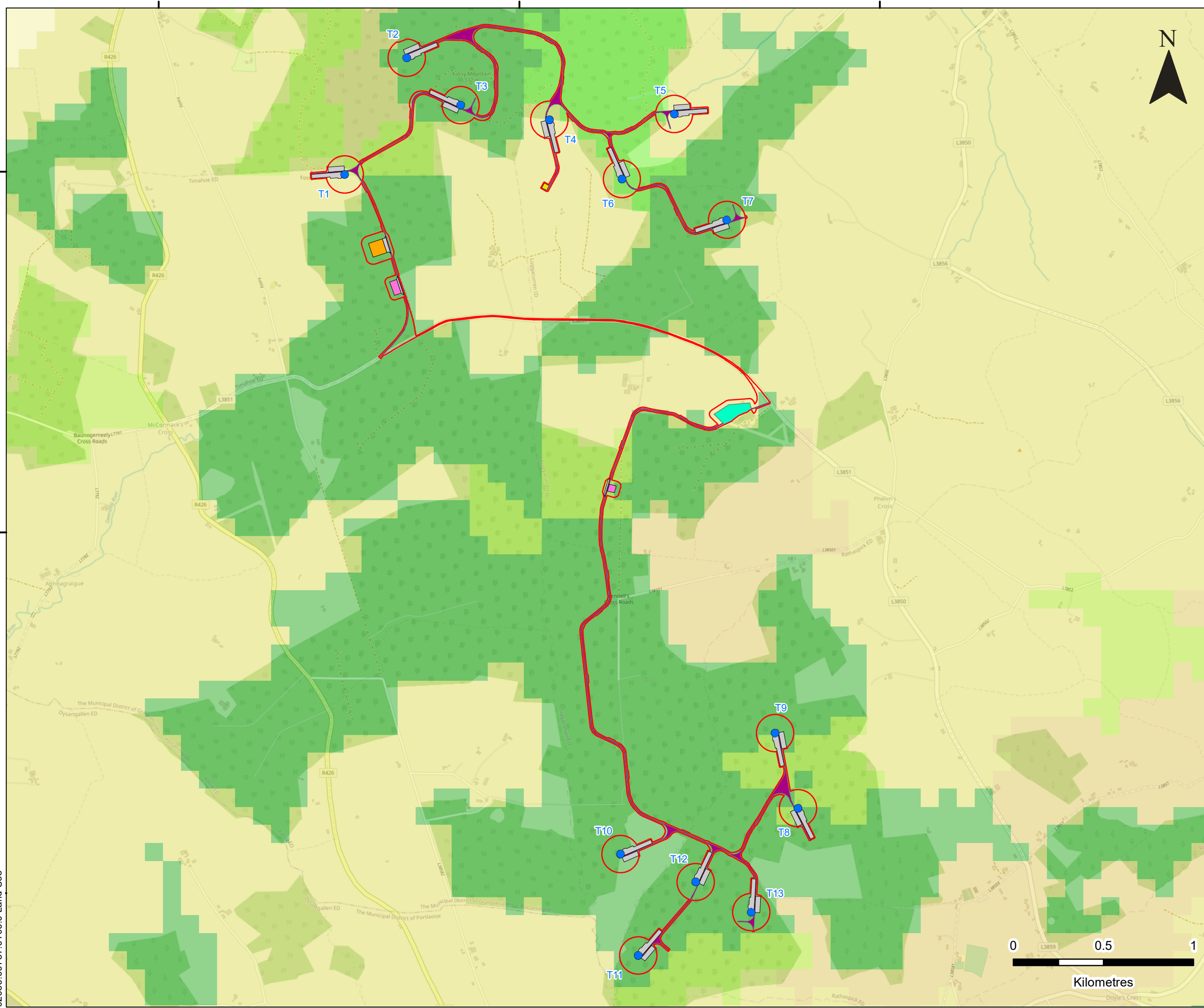
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02036.00787.0106.0 Land Use

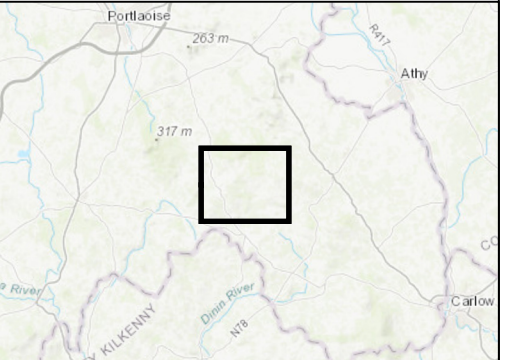


LEGEND

- Proposed Development Site Boundary
- Proposed Turbine Layout
- Proposed Substation Compound
- Proposed Temporary Construction Compound
- Proposed Borrow Pit
- Proposed Hardstanding
- Proposed Access Track
- Proposed Met Mast Hardstanding

Corine Land Cover (2018)

- Non-Irrigated Arable Land
- Pastures
- Land Principally Occupied By Agriculture, With Significant Areas Of Natural Vegetation
- Coniferous Forest
- Mixed Forest
- Transitional Woodland-Shrub



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**COOLGLASS WIND FARM
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 ASSESSMENT REPORT**

**POPULATION, HUMAN HEALTH
 AND MATERIAL ASSETS**

**CORINE LAND COVER 2018
 EXISTING LAND USE**

FIGURE 5-2

Scale: 1:20,000 @ A3 Date: JUNE 2023

