



Pinewoods Wind Farm Substation & Grid Connection

Chapter 4: Population and Human Health

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Contents

4.1	Introduction	1
4.1.1	Statement of Authority	1
4.1.2	Description of the Proposed Development	1
4.2	Policy and Guidance	2
4.2.1	National Policy	2
4.2.2	Local Policy	2
4.2.3	Guidance	3
4.3	Methodology	5
4.3.1	Desk Based Research	5
4.3.2	Study Area	5
4.3.3	Consultation	6
4.3.4	Approach to Assessment of Effects	6
4.3.5	Sensitivity Criteria, Magnitude and Significance Thresholds	6
4.3.6	Sensitivity Criteria	6
4.3.7	Magnitude Criteria	7
4.3.8	Defining Significant Effects	7
4.3.9	Approach to Mitigation	7
4.3.10	Cumulative Effects	7
4.3.11	Limitations of Assessment	8
4.4	Description of Existing Environment	8
4.4.1	Population	8
4.4.2	Human Health	10
4.4.3	Tourism	10
4.4.4	Character	11
4.4.5	Significance	11
4.4.6	Significance	11
4.5	Description of Likely Effects	12
4.5.1	Construction Phase	12
4.5.2	Operational Phase	16
4.5.3	Decommissioning Phase	18
4.6	Mitigation & Monitoring	18
4.6.1	Construction Phase	18
4.6.2	Operational Phase	18
4.6.3	Decommissioning Phase	18
4.7	Residual Effects	19
4.7.1	Construction Effects	19
4.7.2	Operational Effects	19
4.7.3	Decommissioning Effects	19
4.8	Summary	19

4.1 Introduction

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

This EIAR also addresses the likely significant effects on population and human health in other specific chapters, including, for example, in respect of Air Quality & Climate (**Chapter 8**), Landscape (**Chapter 9**), Noise & Vibration (**Chapter 11**), Shadow Flicker (**Chapter 12**), Material Assets (**Chapter 13**) and interactions between these environmental issues and population and human health (**Chapter 14**).

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

- Economic Activity - will the development stimulate additional development and/or reduce economic activity?;
- Social Considerations - will the development change patterns and types of social activities?; and
- Health and Safety - will there be risks of death, risks to public health, disease, discomfort or nuisance?

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

As the proposed development forms part of the overall Pinewoods Wind Farm project, this chapter assesses the cumulative effects of the proposed development in-combination with the permitted Pinewoods Wind Farm and all other existing, permitted and proposed developments, including those set out at **Chapter 1**.

4.1.1 Statement of Authority

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

4.1.2 Description of the Proposed Development

A full description of the proposed development is presented in **Chapter 3**. In summary, the proposed development comprises the following main components:-

- 1 no. 110kV loop-in/loop-out air-insulated switchroom (AIS) substation including control buildings, transformers and all ancillary electrical equipment; and
- All associated site development, access and reinstatement works.

The entirety of the proposed development is located within the administrative area of County Laois; while part of the overall project (Pinewoods Wind Farm) is located

within County Kilkenny. Additionally, candidate quarries which may supply construction materials are also located within County Kilkenny and County Carlow.

4.2 Policy and Guidance

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

4.2.1 National Policy

4.2.1.1 Wind Energy Development Guidelines for Planning Authorities 2006

The 2006 Guidelines offer advice to planning authorities in determining planning applications for wind farm developments, including the likely significant effects on population. While the proposed development does not, of itself, comprise a wind farm development; given its close association to same, the Guidelines are also of relevance in assessing the suitability and appropriateness of locations for related ancillary infrastructure.

4.2.1.2 Draft Revised Wind Energy Development Guidelines (December 2019)

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

4.2.2 Local Policy

Relevant local planning and development policies are derived from the following key documents:-

- Laois County Development Plan 2017-2023;
- Kilkenny County Development Plan 2014-2020; and
- Draft Kilkenny County Development Plan 2020-2026.

4.2.2.1 Laois County Development Plan 2017-2023

The Laois County Development Plan (LCDP) sets out a number of strategic aims, some of which are assessed to be relevant to the consideration of population and human health in this EIAR, namely:-

- Develop the full potential of each part of County Laois to contribute to the optimal performance of the county as a whole economically, socially, culturally and environmentally;
- Facilitate the future sustainable development of County Laois;
- Protect, conserve and enhance the built, natural and cultural environment through promoting awareness, utilising relevant heritage legislation and promoting good quality urban and rural design; and
- Support the development of key infrastructure such as telecommunications, electricity, gas to enable economic development.

The avoidance of impacts on the visual and residential amenities of the area including protected views, scenic routes and designated scenic landscapes and public rights of way are set out as key priorities for County Laois over the lifetime of the LCDP (Section 7). The LCDP also seeks to promote the County as a location for industry that is attractive and competitive in terms of inward investment. Furthermore, the promotion of the wind energy sector is set out as Policy WES1 in the

Wind Energy Strategy (Appendix 5 of LCDP).

4.2.2.2 Kilkenny County Development Plan 2014-2020

The Kilkenny County Development Plan (KCDP) also sets out a number of strategic aims which are assessed to be relevant to the consideration of population and human health in this EIAR, as follows:-

- To provide a framework for the implementation of the Council's economic strategy and the protection of the environment and heritage, to position the county for sustainable economic growth and employment;
- To integrate the planning and sustainable development of the county with regard to the housing, social, community and cultural requirements of the county and its population;
- To manage rural change and guide development to ensure vibrant and sustainable rural areas whilst conserving and sustainably managing our environment and heritage;
- To protect and improve recreational, tourism and arts facilities for the benefit of residents and for the promotion of tourism;
- To promote and facilitate all forms of renewable energies and energy efficiency improvements in a sustainable manner as a response to climate change; and
- To encourage the creation of living and working environments of the highest quality by ensuring a high quality of design, layout and function for all development under the Planning Acts and Regulations, to conserve and build upon positive elements in the built and natural environment, and to protect amenities.

4.2.2.3 Draft Kilkenny County Development Plan 2020-2026

The Kilkenny County Development Plan 2020-2026 is currently under preparation and will seek to guide future development within County Kilkenny in a proper and sustainable manner. The pre-draft Issues Paper, produced in April 2018, was reviewed to evaluate the matters raised as they relate to population and human health including sustainable development, environment and climate change, economic development and employment, rural development, tourism,

4.2.3 Guidance

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

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

Whilst the proposed development will not likely result in any such effects, it will lead to the generation of employment during both the construction and operational phases as well as inward investment which may affect local business supply chains.

In relation to likely effects on human health, the Guidelines state that the EIAR should refer to the assessments of those factors under which human health effects might occur e.g. under the relevant environmental factors of air, water, soil. The importance of avoiding duplication of the assessment of likely effects is highlighted i.e. care should be taken to avoid 'double-counting' effects that are identified elsewhere in the corresponding chapter of the EIAR, for example noise or air quality

effects. As a result, likely effects which may arise from these specific environmental topics are addressed in their respective chapters. The likely interactions of these effects, if any, are addressed in **Chapter 14**.

The Guidelines state that assessments of other health and safety issues are carried out under other EU Directives, as relevant e.g. reports prepared under the Integrated Pollution Prevention and Control frameworks. In keeping with the requirement of the EIA Directive, an EIAR should take account of the results of such assessments without duplicating them.

Whilst there are no other environmental permits required for the proposed development in addition to the necessary planning permission, this EIAR does contain elsewhere a detailed consideration of effects related to population and human health, most notably in relation to Air Quality and Climate (**Chapter 8**), Landscape (**Chapter 9**), Noise & Vibration (**Chapter 11**), Shadow Flicker (**Chapter 12**) and Material Assets (**Chapter 13**).

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

4.2.3.2 Fáilte Ireland 'Guidelines on the treatment of Tourism in an Environmental Impact Assessment'

The Fáilte Ireland Guidelines recognise that tourism can be affected both by the structures and/or emissions from new developments as well as by interactions between new activities and tourism activities; for example, the likely effects of high volumes of heavy goods vehicles passing through hitherto quiet, scenic, rural areas.

The guidelines set out that an EIAR should indicate the location of sensitive neighbouring tourism resources that are likely to be directly affected, and other premises which may be the subject of likely indirect or secondary effects, such as alteration of traffic flows or increased urban development. A number of typical tourism assets which should fall for assessment are listed, including accommodation, golf courses, visitor sporting facilities and historical and cultural sites, walking and scenic routes. The EIAR should indicate the numbers of premises and visitors likely to be affected directly and indirectly.

4.2.3.3 EMF & You: Information about Electric & Magnetic Fields and the electricity network in Ireland

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

The ESB document 'EMF & You' (ESB, 2017)¹ provides further practical information on EMF. Other advice and guidance, reviewed as part of the baseline assessment and in developing the assessment methodology include:-

- Department of Communications, Climate Action and Environment 'Code of Practice for Wind Energy Development in Ireland' (2017);
- IWEA 'Best Practice Guidelines for the Irish Wind Energy Industry' (2012);
- IWEA 'Best Practice Principles in Community Engagement and Community Commitment' (2013); and
- IWEA 'An Enterprising Wind': An economic analysis of the job creation potential of the wind sector in Ireland (2014).

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

- Central Statistics Office (CSO);
- Laois County Development Plan 2017-2023;
- Kilkenny County Development Plan 2014-2020;
- Pobal Profiling GIS Data (<https://maps.pobal.ie/>);
- Fáilte Ireland data in conjunction with websites of relevant tourism sites and amenities in the area;
- A Strategic Plan for Tourism in Laois 2018-2023;
- Laois Local Economic & Community Plan 2016-2021; and
- OSI mapping and aerial photography.

4.3 Methodology

4.3.1 Desk Based Research

The majority of effects on population and human health receptors are likely to be experienced during the construction phase. These are likely to include beneficial economic multiplier effects on the local economy, including employment opportunities as a result of increased spend on local services as well as possible adverse effects, such as restrictions on farming operations, neighbouring businesses or general disruption to the amenity of the local area, which may indirectly impact on its recreation or tourism value. Once operational, effects as a result of the proposed development are likely to be primarily related to the visual impact (if any).

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

Employment effects and direct expenditure are quantified using data provided by the Applicant and, where necessary, using standard industry data. Opportunities for local businesses and the local labour market to be involved in supply chain activities will be identified and where possible quantified.

4.3.2 Study Area

Due to the nature of the proposed development, a study area of 5km radius around the proposed development site is assessed to be sufficient to assess the likelihood of significant effects on population and human health. While economic effects on a wider scale are assessed to be likely with regard to the entire Pinewoods Wind Farm,

¹ https://esb.ie/docs/default-source/default-document-library/emf-public-information_booklet_v9.pdf?sfvrsn=0

these effects will be assessed in the cumulative assessment sections of this chapter. Given the scale of the proposed development, it is not intended to assess effects at a national or international level.

4.3.3 Consultation

A range of statutory and non-statutory organisations have been consulted as part of the EIA scoping process as discussed in **Chapter 1 (Volume I)**. The responses which are relevant to likely effects on population and human health are identified in **Table 4.1** below.

Consultee	Date of Correspondence	Comments	Reference within EIA
Health & Safety Authority	4 March 2020	No comment.	-
Faite Ireland	18 March 2020	Supplied copy of Guidelines on the treatment of tourism in an Environmental Impact Statement	Incorporated into methodology.

Table 4.1: Scoping feedback relating to Population and Human Health

Separately, the Applicant has previously engaged in an extensive public consultation process in relation to the now-permitted Pinewoods Wind Farm. A comprehensive overview of the Applicant's approach to public consultation is provided at **Annex 1.6 (Volume II)**.

4.3.4 Approach to Assessment of Effects

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

- the local economy (employment and economic output);
- the local population;
- opportunities for local involvement in the business supply chain and employment, i.e. how the key construction and operational activities will translate into investment;
- jobs; and
- recreation and tourism assets.

4.3.5 Sensitivity Criteria, Magnitude and Significance Thresholds

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

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

4.3.6 Sensitivity Criteria

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

receptor sensitivity, consideration is given to the following:-

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

Based upon expert judgement, four levels of sensitivity are used; High, Medium, Low and Negligible. The proposed sensitivity criteria are set out in **Table 4.2** below.

4.3.7 Magnitude Criteria

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

4.3.8 Defining Significant Effects

The significance of an effect is assessed by combining the magnitude of the impact and the sensitivity of the receptor, as shown in **Table 4.2**. Four levels of effect are used; Major, Moderate, Minor and Negligible.

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

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

Table 4.2: Level of Effect Matrix

4.3.9 Approach to Mitigation

Mitigation measures, additional to those environmental mitigation measures inherent to the project design, are also considered in order to mitigate any likely adverse effects that are identified through the assessment process.

4.3.10 Cumulative Effects

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

4.3.11 Limitations of Assessment

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

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

The status of certain individual receptors, for example, employment status, will be subject to change; however, information reported in this chapter is based on the baseline survey work described in **Section 4.4**.

4.4 Description of Existing Environment

4.4.1 Population

The proposed development site is located within the Electoral Division (ED) of Dysartgallen in County Laois which, according to Census 2016, has a population of 255. Other EDs located within the study area include Clogh (Co. Kilkenny) and Ballinakill and Blandsfort (Co. Laois); and their respective population details are provided at **Table 4.3**.

	2016	2011	Percentage Change
Dysartgallen	255	266	-4.1%
Ballinakill	826	792	+4.2%
Blandsfort	306	318	-3.7%
Clogh	1,221	1,276	-4.3%
County Laois	84,697	80,559	+5.1%
County Kilkenny	99,232	95,419	+3.9%

Table 4.3: Census 2016 - Population Details

Table 4.3 shows that Clogh has the largest population in the study area. The EDs of Clogh and Ballinakill both contain small urban centres, of the same name, which contribute to the larger population numbers.

Table 4.4 shows how the population is distributed in terms of the number of households; with Clogh having the highest number, which is consistent with its relative population size as outlined in **Table 4.3** above.

	No. of Households
Dysartgallen	84
Ballinakill	288
Blandsfort	108
Clogh	447

County Laois	32,794
County Kilkenny	39,226

Table 4.4: Census 2016 - Number of Households

Data on the age of properties in **Table 4.5** indicates an older housing stock with smaller proportions of recent builds. As was typical at national level, the volume of new builds reduced substantially from 2010 onwards. **Table 4.6** does, however, show that vacancy rates are not dissimilar to those of the respective counties, although almost 10% of properties in Ballinakill are unoccupied.

	Dysartgallen	Ballinakill	Blandsfort	Clogh	Co. Laois	Co. Kilkenny
Pre-1945	33	90	29	127	4,134	6,123
1945-1970	5	17	10	68	2,703	4,032
1971-2000	24	66	43	153	9,209	12,578
2001-2010	20	90	20	66	10,702	9,858
2011-later	1	7	3	2	729	713

Table 4.5: Census 2016 - Age of Housing Stock

	Dysartgallen	Ballinakill	Blandsfort	Clogh	Co. Laois	Co. Kilkenny
Occupied	86	295	111	466	29,787	36,231
Vacancy Percentage	4.5%	9.8%	4.3%	7.7%	9.2%	7.6%

Table 4.6: Census 2016 – Household Occupancy

Table 4.7 shows that levels of employment and unemployment within the EDs are not dissimilar to those for counties Laois and Kilkenny as a whole; except in Clogh where there is a higher level of unemployment at 18% and also a high proportion who are not working for reasons of illness or disability.

	Dysartgallen	Ballinakill	Blandsfort	Clogh	Co. Laois	Co. Kilkenny
At Work	102	331	126	462	33,541	41,363
Unemployed	9	46	8	87	6,068	6,044
Student	27	68	31	110	6,492	8,164
Retired	31	79	47	163	8,077	11,819
Not Working (Sickness or Disability)	2	31	4	59	2,970	3,276

Table 4.7: Census 2016 – Economic Status

4.4.2 Human Health

Table 4.8 provides information on people's sense of their own health, revealing that Clogh has a substantially higher proportion of people considering their health to be either 'Bad' or 'Very Bad'.

	Dysartgallen	Ballinakill	Blandsfort	Clogh
Bad or Very Bad	0.8	1.5	1.0	2.5

Table 4.8: Census 2016 – Percentage of Population who reported health of 'Bad' or 'Very Bad'

4.4.3 Tourism

Fáilte Ireland combines counties to form eight different regions across Ireland for which tourism statistics are produced. County Laois is part of the Midlands region along with Longford, Westmeath and Offaly. The latest data for the Midlands region was published in 2017 and indicates that:-

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

County Kilkenny is part of the South East region along with Carlow, Wexford, Waterford and South Tipperary. The latest data for the South East region was published in 2017 and indicates that:-

- there was a total of 954,000 overseas visitor trips to the region, generating approximately €271million;
- there was a total of 1.4 trips by Irish residents to the region generating approximately €253million; and
- there was a total of 46,000 trips by residents from Northern Ireland to the region generating approximately €14million.

In the Midlands region, County Laois attracts 43,000 overseas visitors with a revenue of €14million. Within the South East region, County Kilkenny attracts 315,000 overseas visitors with a total revenue of €55million.

It is likely that nearby communities such as Abbeyleix and Durrow have a relatively high proportion of their populations employed in this sector given the presence of local heritage features, hotels and guest houses. Although bypassed by the M7, Abbeyleix is a regular stop for visitors on route to destinations such as Cork or the west of Ireland.

Although not a major tourism destination, County Laois contains various sites of interest to visitors, including the Rock of Dunamaise, Emo Court and the Timahoe Round Tower. County Kilkenny has a somewhat higher tourism profile due to the City of Kilkenny, its heritage and annual festivals, destinations such as Thomastown and Inistoge, and attractions such as Dunmore Cave and the Castlecomer Discovery Park.

4.4.4 Character

Although elevated, the study area is not of great elevation (ranging between c. 200-300 mAOD) and is located on the lower northern slopes of the Castlecomer Plateau (known locally as Cooper's Hill). The dominant land use in the vicinity is agricultural pasture while coniferous forestry and transitional woodland scrub are also amongst the land cover types within the study area.

Residential properties in the study area, outside of settlements, are either single houses (including farmsteads) or occur in the form of scattered linear development, for example in Graiguenahown to the southeast. The nearby community of Knock contains a primary school, a church and a handful of dwellings. Boleybeg is a small community to the west containing a branch of Glanbia and a community field.

The principal communities include Ballinakill on the R432 and Clogh to the east on the R426. The former contains a national school, churches and a mixture of community facilities, including an outdoor swimming pool. There is also a tourist information point. The Heywood Demesne and its historic gardens are located just outside of Ballinakill, to the north, and the village is also located on the Laois Cycle Trail which connects with Durrow to the west. Heywood Community School is located close to the entrance of the demesne. The village of Clogh contains a soccer and GAA club and a local community walk. The Swan is a similar sized community located at the junction of the R430 and R426 to the north of Clogh. A brickworks is located here as well as a community centre and primary school

As well as farmsteads, there are a small number of aggregate/quarrying companies/sites and small family businesses in the vicinity, including organic farms, workshops and dog grooming. There is some equine activity, such as training and breeding, and pony trekking available in the wider area, including an equine stud near Ballinakill. To the west is the town of Abbeyleix located on the N77 which represented the main transport route between Dublin and Cork prior to the completion of the M7.

4.4.5 Significance

The upper elevations of Cooper's Hill and the Spink are largely unoccupied, with land cover which comprises grazing or rough grazing land and commercial forestry. At lower elevations there are dairy enterprises and pockets of broadleaf woodland. These lower elevations include minor roads along which there has been a modest amount of private development as noted above. The overwhelming majority of this development has been residential, although there are instances of family businesses such as vehicle workshops, equine businesses and dog grooming as well as, of course, farms.

There is only a light level of recreation or tourism activity in terms of walking or accommodation, although a circular walking route (Cooper's Hill Walk) using local roads and tracks has been promoted. Another local walking route, the Slieve Margy Way, passes through The Swan to the east. There are also cycle routes. The surrounding area, particularly between Boleybeg and Ballinakill, contains diverse attractive countryside with expansive views.

4.4.6 Significance

Concerns raised by local residents and consultees in previous submissions related to the Pinewoods Wind Farm include visual and landscape, loss of local amenity, noise, shadow flicker, health, effects on wildlife, water quality, equine and livestock, road use and widening, and likely effects on property prices and tourism. Likely effects

relating to visual impact, noise, shadow flicker, biodiversity, traffic, safety and material impacts are addressed elsewhere in this EIAR. It is understood that such perceived concerns can be a cause of anxiety and that this in itself may have implications for the health of sensitive population subsets. This applies in particular to people whose livelihood depends, to some degree, on agriculture or equine activity, or on tourism which has a relationship with the quality of the local environmental resource, including perceptions of environmental quality. People who work night shifts or who have disabilities, including dependents, are among those population subsets that could be described as being sensitive. Children are not a uniquely sensitive subset of the population in this instance, but it is acknowledged that there are primary schools in the area, of which the nearest to the proposed development is Knock National School.

The open land comprising the Spink and Cooper's Hill receive light amenity (walking, cycling) with most activity being on-road/tracks given the nature of the terrain. As noted above, a circular walking route has been described in locally available publications, which uses these roads and tracks. There is currently a low level of tourism activity in the area, although Heywood Demesne is maintained by the OPW and receives small but regular numbers of visitors. The surrounding attractive countryside has potential for tourism activity.

Mount Nugent Stud, which is located at Ironmills to the east of Ballinakill, is involved in the breeding of thoroughbreds and is amongst the sensitive receptors located within 5km of the site of the proposed development. The local Owenbeg (Owveg) River is a tributary of the River Nore and, although lightly fished itself, is important for the spawning of salmon and trout.

A map indicating the locations of key identified local features and resources is provided at **Annex 4.1 (Volume II)**.

4.5 Description of Likely Effects

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

4.5.1 Construction Phase

4.5.1.1 Population Sustainability & Residential Amenity

Construction of the proposed development is expected to have a duration of 15-18 months with works to occur the hours of 08:00 to 20:00 Monday to Friday and 08:00 to 18:00 hours on Saturday. Except for certain specific works, for example any possible emergency works, construction activity is not expected to occur generally outside of these hours, or on Sundays or Public Holidays.

Construction works will generate noise; with **Chapter 11** concluding that noise levels at properties nearest to the proposed development will be below acceptable limits. It notes that noise levels will be temporary in nature and will diminish with distance. The most significant contribution to noise is likely to arise from lorry movements, particularly movements on uneven surfaces, during the construction phase. In this respect, access to the proposed development site will be by sealed local roads L7800, L78001 and L77951. Construction or transport activities involving higher noise levels (such as vehicular movements on unsealed access tracks) will be intermittent and below noise thresholds required for residential receptors and at distances greater than 100m.

Chapter 13 (Transport & Access section) notes that the construction phase is

estimated to generate 4,773 heavy goods vehicle (HGV) trips during the 15-18 month construction period. It is also estimated that 15 no. light goods vehicle (LGV) trips will be generated daily as staff and personnel travel to and from the proposed development site. Overall, the likely effects are not assessed to be significant and are concluded to be a slight, negative effect of short-term duration and high probability.

No likely significant effects on population sustainability are anticipated and likely effects on residential amenity are expected to be slight to moderate negative, of a temporary nature with the specific effects dictated by the proximity of individual residences to the site or access roads.

4.5.1.2 General Amenity & Well-Being

Construction works will be temporary in nature. As discussed above, these are proposed to occur within daytime hours and not on Sundays or Public Holidays. The proposed development will be located on private lands and no rights-of-way will be affected during construction. The site will be appropriately fenced off with appropriate warning signs to prevent unauthorised access in accordance with health and safety requirements. There will likely be visual effects during construction, but these will be temporary in nature and comparable to those of forestry harvesting operations already occurring periodically in the locality.

While the construction of the proposed development will not require the delivery of abnormal loads, traffic management will be coordinated with the local authority and An Garda Síochána to ensure the minimisation of any likely effects. Most of the projected 4,773 HGV trips will be to transport excavated material from the proposed development site, the transportation of aggregates to the site from existing quarries/sources identified in **Chapter 13** and the importation of electrical apparatus via the principal haul route (L7800, L78001, L77951 and private access tracks from the R430). The precise transportation route to the R430/L7800 junction will depend on the source of materials but all suppliers will be instructed to utilise the motorway, national and regional road network insofar as possible and to avoid the L1828. This is likely to involve traffic movements through small communities but will not add appreciably to the existing volume of traffic on these roads. In all, construction traffic movements are assessed to have a slight-to-moderate negative effect of a temporary nature on general amenity and well-being.

Additionally, whilst it is noted that the construction material haul routes will interact with the Cooper's Hill Walk, provision will be made to ensure that access is not restricted, adequate provision for pedestrians is retained and that the walking route remains free from mud, dust and any other debris associated with the construction of the proposed development.

4.5.1.3 Economic Effects & Employment

During the 15-18 month construction phase of the proposed development, there will likely be economic effects resulting from capital expenditure on items such as site preparation, purchase and delivery of materials, plant, equipment and components. Information provided by the Applicant, based on experience at other wind farms in Ireland, indicates that 100 no. workers are likely to be employed during the construction phase. It is highly likely that a significant percentage of these workers will be sourced from the local labour market within the counties of Laois and Kilkenny, with the remainder being sourced from Ireland as a whole.

The procurement of goods and services is likely to have a significant positive effect

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

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

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

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

4.5.1.4 Effects on Tourism Economy

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

Anecdotal evidence, based on other construction projects, demonstrates that local businesses such as accommodation providers welcome the enhanced level of occupancy that is achieved due to construction contractors using their accommodation on a year round basis, including periods of the year that are traditionally considered 'low season'. The benefits of increased business, although temporary, can allow businesses to invest in improvements that would not otherwise be affordable, leading to a long term enhancement. Where construction staff or personnel are making use of local accommodation, all relevant public health guidelines will be fully adhered to.

Whilst overall likely effects to the tourism economy are assessed to be negligible and not significant (beneficial or adverse), as with any major capital investment in a locality, the benefits to individual businesses is likely to be substantial and may be significant. However, until such time as contracts are agreed, it is not possible to

quantify the precise level of benefit to individual businesses.

4.5.1.5 Accidents or Natural Disasters

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

The likelihood of significant natural disasters occurring at the proposed development site is low. Ireland is a geologically stable country with a mild temperate climate. The possible natural disasters that may occur are therefore assessed to be limited to flooding and fire. The risk of flooding is addressed in **Chapter 7** and, given the nature of the hydrological environment and topography of the site, the risk of flooding is assessed to be negligible.

It is assessed that the risk of significant fire occurring, affecting the proposed development and causing it to have significant environmental effects is limited. There are no habitat types located within the proposed development site, or its immediate environs, which are particularly susceptible to fire and no tracts of forestry are present. The proposed development will be operated to the highest standards, will be regularly inspected and subject to ongoing maintenance. This maintenance schedule will ensure that all electrical equipment is monitored to assess for fire risk. Should a fire occur, standard procedures will be implemented by Eirgrid and emergency services to mitigate the effects of same and ensure that local residents are not adversely affected.

As discussed above, there are no significant sources of pollution associated with the proposed development with the likelihood of causing any likely significant environmental or health effects. Furthermore, one of the core mitigation-by-design features of the proposed development, is maximising the distance to residential dwellings which further limits any likelihood of any significant human health effects in the event of accidents or natural disasters.

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

4.5.1.6 Cumulative Effects

This assessment has taken into account the likely cumulative effect of the proposed development with the permitted Pinewoods Wind Farm and all other existing, permitted and proposed developments, including those set out at **Chapter 1**.

It is likely that cumulative effects will arise in relation to the construction of other permitted or proposed developments should the construction phases overlap with the proposed development; however, given the temporary nature of the construction phase, it is assessed that none of these projects are likely to result in significant cumulative beneficial or adverse socio-economic or population and human health effects.

4.5.2 Operational Phase

4.5.2.1 Population Sustainability & Residential Amenity

The assessment of the existing environment (**Section 4.4**) identified that the study area is characterised by a low population density, recent declines in the number of new housing stock and an older housing stock; but also that the age and employment profile is fairly typical of rural areas.

On the basis of specific assessments undertaken in this EIAR, no likely significant effects have been identified in respect of water, air & climate, landscape, or noise which could adversely affect the sustainability of population or residential amenity in the locality

4.5.2.2 General Amenity & Well-Being

There is a light level of walking activity, principally by local people using local roads and tracks. The proposed development itself will be located on private land and no right of ways are affected.

In terms of the specific effect of the development on tourism or amenity, **Chapter 9** identifies the receiving landscape to be of 'Medium-low' sensitivity and that the impact of the proposed development will also be 'Medium-low'. The control building and towers are nestled within the re-contoured terrain and fit within the existing field boundaries. Given this 'Medium-low' sensitivity classification, there are only a few receptor locations where users, such as tourists or hill walkers, are likely to be highly attuned to the landscape. The proposed development, therefore, is assessed as being of slight negative significance in the context of the low, but tangible, level of local amenity activity.

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

All electricity, both natural and man-made, produces two types of fields: electric fields and magnetic fields. The proposed grid connection cables will comply with the international guidelines for ELF-EMF set by the International Commission on Non-Ionizing Radiation Protection (ICNRP), which is an advisory agency to the World Health Organisation.

Electrical equipment and apparatus is located a substantial distance from any residence with no possible EMF impact. The substation, when operational, will also comply with ICNIRP and EU guidelines relating to exposure to EMF.

4.5.2.3 Economic Effects & Employment

When the proposed development is operational, it will require a team of personnel to provide servicing, maintenance, repairs and other operational support. It is estimated that up to 2 no. engineers and technicians (full time equivalent) will be needed to provide operational support to the project.

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

- site and building maintenance;
- waste management;
- general site maintenance including grass cutting and weed control;
- supply of consumable items (e.g. lubricants and oils, spare parts, office supplies, etc.); and
- in addition, local shops, cafes, accommodation providers and hotels often experience an increase in business during the operational phase (e.g. extra technicians onsite for during wind farm maintenance and servicing).

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

4.5.2.4 Effects on Tourism Economy

Chapter 9 of the EIAR assesses in detail the likely landscape and visual effects of the proposed development. The chapter concludes that the significance of visual impact will be no greater than 'Slight' for any visual receptor and that the proposed development will not give rise to significant landscape and visual effects in EIA terms.

Notwithstanding these considerations, it is assessed that there is no evidence to suggest that an occasional view of the proposed development, including cumulatively with the Pinewoods Wind Farm, might adversely affect the visitor appeal of the area. The proposed development site is relatively remote, is set into the landscape by virtue of its chosen location and split-level design, and is substantially screened from the local road network and visual receptors by vegetation with limited views across the subject site available. Based on the evidence gathered from previous studies, occasional views of the proposed development are not assessed as likely to act as a deterrent to visitors or discourage repeat visits to the area.

4.5.2.5 Cumulative Effects

This assessment has taken into account the cumulative effects of the proposed development with the permitted Pinewoods Wind Farm and all other existing, permitted and proposed developments, including those set out at **Chapter 1**.

It is assessed that none of these projects are likely to result in significant cumulative positive or adverse socio-economic or population and human health effects in combination with the proposed development.

Community Benefit Funds

The operation of the proposed development, in combination with the Pinewoods Wind Farm, will bring about a number of financial benefit packages to the study area. These packages include a proposed community benefit fund and the payment of business rates to Laois County Council.

The Applicant is committed to operating a community benefit fund in accordance with the Irish Wind Energy Association (IWEA) best practice guidance and it will be available to the community at a rate of €2 euro per MWh produced. This will result in an investment of approximately €220,000 per annum for up to 15 years in the local community. The structure for the investment scheme will form part of the Renewable Energy Support Scheme (RESS).

The fund will be administered by a committee set up by the Applicant. Members of the local community are also likely to be appointed to the committee, thus allowing

the local community to prioritise the fund for the projects which matter most to their identified needs. Preference will be given to local projects and initiatives, thereby contributing to the vitality and viability of the local population, and to projects which are considered to represent an environmental benefit or incorporate a renewable energy element. This fund will be made available, and distributed annually, for up to 15 years.

In addition to the above community fund, as part of the permitted Pinewoods Wind Farm development, the Applicant has committed to making a €500 annual contribution towards the electricity/energy costs of all non-involved dwellings located within 1,030m of a permitted wind turbine.

It should also be noted that, over the lifetime of the proposed development (and indeed the entire Pinewoods Wind Farm project), a substantial investment will have been made by the Applicant to the landowner(s) whose landholdings form part of the proposed development. It is highly likely that the landowner(s) will reinvest a significant volume of this sum into the local economy and supply chains through various means which will, in turn, result in further community gains.

Benefits will accrue from these various income streams and, depending on the choices made, is likely to have a positive effect on the material well-being of local residents as well as wider spin-off and multiplier economic benefits.

The long term nature of the income will also allow the community to plan ahead, to draw in other sources of match funding to maximise the benefits, and investment projects could be designed to match local priorities. This will likely result in a positive effect of moderate or major importance to the study area.

4.5.3 Decommissioning Phase

As set out at **Chapter 3 (Sections 3.2 and 3.8)**, the proposed development will form part of the national electricity network and decommissioning of the substation is not proposed. Therefore, decommissioning phase effects will not occur.

4.6 Mitigation & Monitoring

4.6.1 Construction Phase

Allowing for the implementation of mitigation set out elsewhere within this EIAR, no likely significant adverse effects have been identified in respect of socio-economic receptors arising from construction of the proposed development and therefore no mitigation measures are required to reduce or remedy any effect.

4.6.2 Operational Phase

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

4.6.3 Decommissioning Phase

As set out at **Chapter 3 (Sections 3.2 and 3.8)**, the proposed development will form part of the national electricity network and decommissioning of the substation is not proposed. Therefore, no decommissioning phase mitigation measures are required.

4.7 Residual Effects

4.7.1 Construction Effects

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

4.7.2 Operational Effects

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

4.7.3 Decommissioning Effects

As set out at **Chapter 3 (Sections 3.2 and 3.8)**, the proposed development will form part of the national electricity network and decommissioning of the substation is not proposed. Therefore, residual decommissioning phase effects will not occur.

4.8 Summary

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

The overall conclusion of this chapter is that any adverse effects of the proposed development on population and human health are assessed as unlikely to be significant. No specific mitigation measures, other than full adherence to all health and safety and public health guidance, have therefore been identified as being required. However, whilst the proposed development will not likely result in any significant adverse effects, it will constitute, alongside the permitted Pinewoods Wind Farm, a major investment in the local economy and will likely lead to the generation of employment during both the construction and operational phases as well as inward investment which will have a likely significant positive effect on the local population and human health.

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