

MWP

**CHAPTER 05 POPULATION & HUMAN
HEALTH**

Brittas Wind Farm

Brittas Wind Farm Ltd

November 2024

Contents

5.	Population and Human Health.....	5-1
5.1	Introduction	5-1
5.1.1	Competency of Assessor.....	5-1
5.1.2	Legislation.....	5-1
5.2	Methodology.....	5-1
5.2.1	Guidelines and Best Practice	5-2
5.2.2	Study Area	5-2
5.2.3	Scope of Assessment.....	5-3
5.2.3.1	Human Health	5-3
5.2.3.2	Assessment Criteria	5-4
5.2.4	Statement on Limitations and Difficulties Encountered	5-4
5.3	Baseline Environment.....	5-5
5.3.1	Site Location and Description	5-5
5.3.2	Economic Activity	5-7
5.3.3	Population Trends and Density	5-7
5.3.4	Settlement Patterns	5-9
5.3.5	Land Uses.....	5-11
5.3.6	Public Health.....	5-13
5.3.7	Tourism and Amenities	5-13
5.4	Assessment of Impacts and Effects	5-13
5.4.1	Employment & Economic Benefit	5-13
5.4.2	Population and Settlement Pattern	5-15
5.4.3	Land Use Pattern	5-17
5.4.3.1	Construction Phase	5-17
5.4.3.2	Operational Phase.....	5-19
5.4.3.3	Decommissioning Phase	5-19
5.4.4	Human Health	5-20
5.4.4.1	Construction Phase	5-20
5.4.4.2	Operational Phase Effects	5-23
5.4.4.3	Concluding assessment of operational effects on human health	5-24
5.4.4.4	Concluding assessment of decommissioning effects on Human Health	5-25
5.4.5	Tourism and Amenities	5-25
5.4.5.1	Construction Phase	5-25
5.4.5.2	Operational Phase.....	5-26
5.4.5.3	Decommissioning Phase	5-26
5.4.6	Do- Nothing Scenario	5-27
5.5	Mitigation and Monitoring Measures.....	5-28
5.6	Residual Impacts and Effects.....	5-29
5.7	Interaction with other Environmental Topics	5-31
5.8	Cumulative Impacts and Effects.....	5-31
5.9	References	5-32

Figures

Figure 5-1	Site location map of the proposed Brittas Wind Farm Development	5-6
Figure 5-2	Site Layout	5-6
Figure 5-3:	Electoral divisions in the project area.....	5-8
Figure 5-4	Population Density Map for the Proposed Area (Persons per sq.km).....	5-9
Figure 5-5:	Distribution of neighbouring housing and settlements around the proposed project site.	5-11
Figure 5-6	Land cover in area around the Proposed Project (Corine land use data)	5-12

Tables

Table 5-1 Issues relevant to the Human Environment	5-3
Table 5-2 Health Effects.....	5-4
Table 5-3 Occupations people employed in Co. Tipperary 2022	5-7
Table 5-4: Population Statistics Development Area.....	5-7
Table 5-5 Population Data ED’s 2011-2022 (CSO).....	5-8
Table 5-6 Population Density per sq.km of Electoral Divisions	5-9
Table 5-7 General Health Percentage of the Population 2022 (CSO)	5-13
Table 5-8: Effects on Employment (and Income).....	5-15
Table 5-9: Effects on Population and Settlement.....	5-16
Table 5-10: Effects on Land Use	5-19
Table 5-11 Construction Effects on Human Health.....	5-22
Table 5-12 Effects on Human Health	5-24
Table 5-13: Decommissioning Effects on Human Health.....	5-25
Table 5-14 Effects on Tourism and Visitors	5-26
Table 5-15 Mitigation Measures – Construction.....	5-28
Table 5-16 Mitigation Measures – Operational	5-28

Project No.	Doc. No.	Rev.	Date	Prepared By	Checked By	Approved By	Status
23318	6003	A	18/11/2024	LD	MT/EH	MT	ISSUE

MWP, Engineering and Environmental Consultants

Address: Park House, Bessboro Road, Blackrock, Cork, T12 X251, Ireland

www.mwp.ie



Disclaimer: This Report, and the information contained in this Report, is Private and Confidential and is intended solely for the use of the individual or entity to which it is addressed (the “Recipient”). The Report is provided strictly on the basis of the terms and conditions contained within the Appointment between MWP and the Recipient. If you are not the Recipient you must not disclose, distribute, copy, print or rely on this Report. (unless in accordance with a submission to the planning authority). MWP have prepared this Report for the Recipient using all the reasonable skill and care to be expected of an Engineering and Environmental Consultancy and MWP do not accept any responsibility or liability whatsoever for the use of this Report by any party for any purpose other than that for which the Report has been prepared and provided to the Recipient.

5. Population and Human Health

5.1 Introduction

This chapter considers the potential effects on population and human health arising from the Brittas Wind Farm Project, the 'Proposed Project'. A full description of the Proposed Project and all associated elements is provided in **Chapter 2** of this EIAR. The nature and probability of effects on population and human health arising from the overall project has been assessed. The assessment comprises:

- A review of the existing receiving environment.
- Prediction and characterisation of likely impacts;
- Evaluation of effects significance; and
- Consideration of mitigation measures, where appropriate.

5.1.1 Competency of Assessor

The assessment was completed by Maura Talbot MA (Human Geography), BA Hon (Geography), BA Hon. (Economics) and Zeba Haseeb, BS Hons. (Environmental Science), MS Environmental Science, Environmental Scientist at Malachy Walsh and Partners (MWP). Maura has had 25 years of experience working as a Senior Environmental and Socio-Economic Specialist Consultant on a full time and freelance basis. She has managed and contributed to environmental and social impact assessments (ESIAs and EIAs) of roads, powerlines, mines, biofuel estates, golf courses, conservation, tourism, and residential developments in a number of countries. She has also provided specialist input into Strategic Environmental Assessments (SEAs) related to mining developments, conservation, forestry and municipal spatial planning processes.

5.1.2 Legislation

This chapter has been prepared in accordance with the Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment as amended by Directive 2014/52/EU.

5.2 Methodology

The assessment of the likely significant effects of the Proposed Project on population and human health was conducted by reviewing the current environment of the area and surroundings of the Proposed Project site. This included an analysis of aerial photography and Ordnance Survey (OS) mapping, and desk-based research of published information on the local receiving environment.

Demographic trends were analysed at state, county, and local level, with the latter comprising the Electoral Divisions where the development site is located or those in closest proximity. Information was gathered with respect to the demographic and employment characteristics of the resident population within the study area sourced from 2016 and 2022 Census data. This data included information on population, structure, age health profile, tourism and employment.

The methodology used for this study included desk-based research of published information and site visits to assemble information on the local receiving environment.

The desk study included the following activities:

- Review of the most recent CSO Census of Ireland data (2022) to establish settlement demographics and economic context of the study area.
- Review of Ordnance Survey Mapping and aerial photography (Geohive¹) to establish existing land use and settlement patterns within the study area.
- Review of the Tipperary County Development Plan (CDP) 2022-2028 in order to identify future development and identify any planning allocations within the study area. (<https://www.tipperarycoco.ie/cdp>)
- Review of Tipperary County Council's Planning Register and ABP's Planning Register to identify relevant development proposals currently under consideration by the Council and board.

5.2.1 Guidelines and Best Practice

The desk-based research also had regard to published information on public health and wind turbines including:

- WHO *Environmental Noise Guidelines for the European Region* (2018).
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (Environmental Protection Agency (EPA), May 2022;
- The European Commission 'Guidance on the preparation of the Environmental Impact Assessment Report, 2017;
- Wind Energy Development Guidelines published by the Department of the Environment, Heritage and Local Government (2006)
- Draft Revised Wind Energy Development Guidelines published by the Department of the Environment, Heritage and Local Government (2019).

5.2.2 Study Area

The study area for the purpose of this assessment on Population and Human Health primarily focuses on the local receiving human environment in the vicinity of the proposed wind farm development site. These include those who reside in, work in, visit, or use the local road networks in the general area.

Electoral Divisions (EDs) are the smallest legally defined administrative areas in the State for which Small Area Population Statistics (SAPS) are published from the Census of Population. Therefore, in order to discuss the receiving human environment and other statistics in the vicinity of the Proposed Project site, the Study Area for this assessment has regard to EDs within or located close to the Proposed Project site.

Although this chapter predominantly describes the human environment in the vicinity of the Proposed Project, sensitive human receptors in the broader human environment are considered in the other specialised environmental topics including the following;

- Noise (Chapter 12);
- Shadow Flicker (Chapter 13);
- Air Quality and Climate (Chapter 14);

¹ <https://webapps.geohive.ie/mapviewer/index.html>

- Landscape and Visual Impact (Chapter 15) and;
- Traffic and Transportation (Chapter 16).

5.2.3 Scope of Assessment

Table 5-1 outlines the issues which the EPA guidance documents suggest may be examined as part of the human environment study.

Table 5-1 Issues relevant to the Human Environment

Topic Area	Definition
Employment	Will the development affect employment opportunities?
Settlement Patterns	Will the development change settlement patterns and types of activity?
Land-use Pattern	Will the development change land use patterns and types of activity?
Baseline Population	Will the development affect the current population?
Demographic Trends	Will the development change concentrations of a particular ethnic group or influence the movement of human populations?
Human Health	Vectors through which human health impacts could be caused e.g. will there be risk of death, disease, discomfort or nuisance?
Amenity	Will the development change the uses of the site, loss of rights of way or amenities?

Accordingly, the scope of this assessment is made with respect to these topic areas and considers the effects of the construction, operation and decommissioning of the Proposed Project in terms of how the proposal could affect employment, settlement patterns, land use, baseline population, demographic trends, amenity, and human health.

5.2.3.1 Human Health

The European Commission document ‘Guidance on the preparation of the Environmental Impact Assessment Report, 2022; provides that: *“Human health is a very broad factor that would be highly Project dependent. The notion of human health should be considered in the context of the other factors in Article 3(1) of the EIA Directive and thus environmentally related health issues (such as health effects caused by the release of toxic substances to the environment, health risks arising from major hazards associated with the Project, effects caused by changes in disease vectors caused by the Project, changes in living conditions, effects on vulnerable groups, exposure to traffic noise or air pollutants) are obvious aspects to study. In addition, these would concern the commissioning, operation, and decommissioning of a Project in relation to workers on the Project and surrounding population”.*

Similarly, the EPA Guidelines on the information to be contained in environmental impact assessment reports (2022), states that *‘in an EIAR, the assessment of impacts on population & human health should refer to the assessments of those factors under which human health effects might occur, as addressed elsewhere in the EIAR e.g. under the environmental factors of air, water, soil etc’.*

The EPA (2022) guidance also advises that *‘The evaluation of effects on these pathways is carried out by reference to accepted standards of safety in dose, exposure and risk. These standards are in turn based upon medical and scientific investigation of direct effects on health of the individual substances, effect or risk. This practice of reliance*

upon limits doses and thresholds for environmental pathways such as air water or soil provides a robust and reliable health protection criteria for analysis relating to the environment’.

Human health, in this chapter of the EIAR, is therefore considered in relation to health effects/issues and environmental hazards arising from the other environmental factors and the assessment is made with regard to the established international health-based guidelines limit value necessary to protect the public.

The potential wellbeing and nuisance effects of the proposed project on the local human environment have been identified as follows:

- Dust emissions from construction activities;
- Noise emissions during construction and operational activities;
- Public safety;
- Visual effects during operation;
- Traffic nuisance during construction.

Each of these issues have been fully assessed and are documented in other chapters of the EIAR as set out in Table 5-2. These assessments were reviewed to inform this study.

Table 5-2 Health Effects

Development Phase	Potential Health Issue	Addressed in EIAR Chapter
Construction Phase	Noise emissions and vibration	Chapter 12 Noise and Vibration
	Dust emissions	Chapter 14 Air Quality and Climate
	Traffic nuisance	Chapter 16 Traffic
Operational Phase	Noise emissions and vibration	Chapter 12 Noise and Vibration
	Visual effects	Chapter 15 Landscape
	Air quality effects	Chapter 14 Air Quality and Climate
	Shadow Flicker	Chapter 13 Shadow Flicker

5.2.3.2 Assessment Criteria

Determination of the significance of an effect will be made in accordance with the terminology outlined in the EPA Guidelines on Information to be contained in Environmental Impact Assessment Reports (2022). These are outlined in detail in **Chapter 1** of the EIAR.

5.2.4 Statement on Limitations and Difficulties Encountered

In preparation of this Chapter, the following difficulties were encountered:

‘The most recent census data which informed this Chapter’s analysis are from 2022 and had unavailability of specific information regarding small areas and settlements total population for year 2022. The analysis relies on electoral division data.’

Notwithstanding the above, we consider that the data collected, and analyses outlined reflects an accurate representation of the population and human health considerations with respect of the Proposed Project.

5.3 Baseline Environment

5.3.1 Site Location and Description

The project comprises several key elements, namely the Wind Farm Site, of which the core elements include ten wind turbines 180m in height, associated infrastructure including tracks and an on-site 110kV electrical substation, a Battery Energy Storage System (BESS), rerouting of an ESB 38kV overhead powerline (OHL) which is currently under development and the underground Grid Connection Route (GCR) to the existing 110kV Thurles substation. Also, part of the proposed project is the Turbine Delivery Route (TDR) which will facilitate transportation of turbine components from the Port of Foynes to the Wind Farm Site, including necessary temporary accommodation works along public roads. Upon completion, this wind farm is projected to contribute between 57 and 66 megawatts (MW) of renewable electricity to the National Grid. A detailed project description is included in Chapter 2.

The proposed windfarm site sits about 3km north of Thurles town, covering several townlands including Brittas, Rossestown, Clobanna, Brownstown, Killeenleigh and Kilkillahara in County Tipperary. See **Figure 5.1** for Site Location. A site layout is provided in **Figure 5.2**. The lands are made up of agricultural fields bounded by hedgerows and treelines. To the southwest, there is an area of broadleaf forestry. The River Suir transects the site from north to south. Nearby, the N62 road connects Templemore to Thurles, providing access to major motorways such as the M6, M7, and M8. Additionally, the L8017 local road crosses the site from east to west, including a bridge over the River Suir.

The proposed substation and BESS units are to be located in the north-eastern section of the wind farm site in the townland of Killeenleigh. The substation and BESS site is bounded by hedgerows and treelines.

The proposed Grid Connection Route (GCR) is located underground, buried within the public road between the Wind Farm Site and the existing Thurles 110kV Substation. The Grid Connection Route is approximately 7km long and is located south-east of the proposed wind farm site. The GCR is located in the following townlands: Killeenleigh, Coolgarrane, Clobanna, Athnid More, Rossestown, Cassestown, Laghtagalla, Farranreigh, Furze, Loughlahan and Ballygammane, County Tipperary.

The Turbine Delivery Route (TDR) runs from the Port of Foynes in County Limerick to the Wind Farm Site via the national, regional and local road network. Proposed works associated with the Turbine Delivery Route are located in the Townlands of Brittas and Brittas Road, County Tipperary.

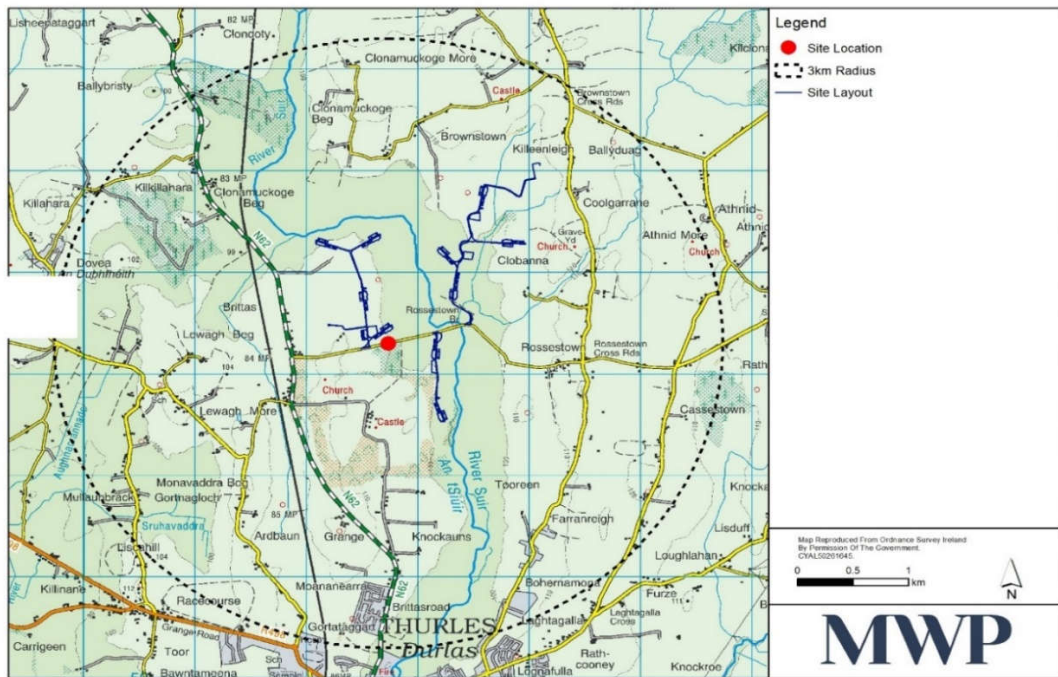


Figure 5-1 Site location map of the proposed Brittas Wind Farm Development

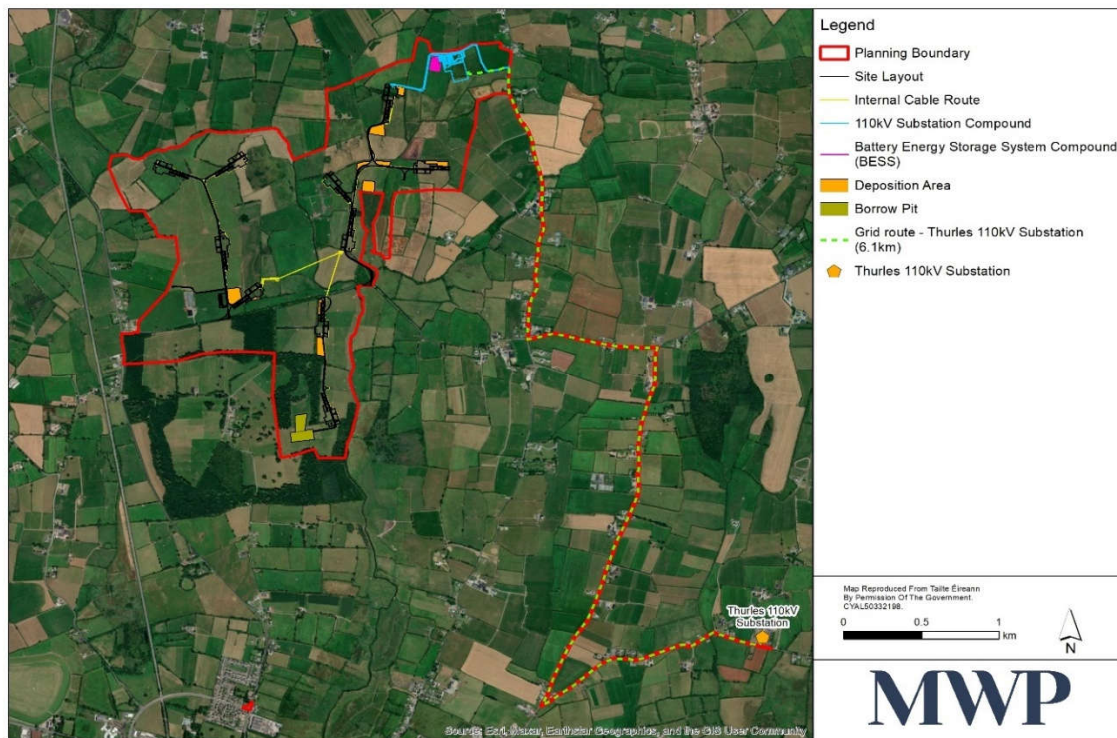


Figure 5-2 Site Layout

5.3.2 Economic Activity

According to the 2022 Census employment statistics for the region, the work force is employed in a diverse range of industries, refer to **Table 5-3**. The statistics show that the highest level of employment is within the Professional services category. Other key employment sectors include Commerce and Trade, and Manufacturing. Smaller sectors within the Study Area consist of 'Transport and Communication' 'Public admin' and 'Building and Construction'.

Large urban centres, such as Thurles, serve as the principal employment hub for the area, offering a wide range of employment opportunities in the retail, services, and professional sectors. Long term unemployment recorded in the 2022 census for each electoral division (ED) indicated that 6 persons were unemployed in the ED of Kilrush, 8 persons in Rahelty and 37 persons in Thurles Rural. This represents an unemployment rate of less than 3.3% across the three EDs.

Table 5-3 Occupations people employed in Co. Tipperary 2022

Occupations	Thurles Rural ED	Rahelty ED	Kilrush ED	Co. Tipperary
Agriculture, forestry, fishing	56	37	46	6,454
Building and construction	74	27	15	4,540
Manufacturing industries	136	28	30	11,472
Commerce and trade	273	75	58	14,720
Transport/Communication	62	15	11	3,804
Public admin	67	22	18	4,425
Professional Services	314	95	73	17,638
Other	149	29	18	10,154
Total	1,131	328	269	73,207

5.3.3 Population Trends and Density

The proposed project elements including the wind farm, OHL, GCR, substation and BESS are located within the Electoral Divisions (ED) of Thurles Rural, Rahelty, and Kilrush (see **Table 5-4** and **Figure 5-3**).

Table 5-4: Population Statistics Development Area

Development Element	Electoral Division	County
Substation and BESS	Kilrush	Co. Tipperary
Wind Farm and OHL	Thurles Rural, Rahelty, and Kilrush	Co. Tipperary
Grid Route	Thurles Rural, Rahelty, and Kilrush	Co. Tipperary

Several residential receptors lie within a 1km radius of the overall development. Population statistics relevant to the area are detailed in **Table 5-5**. According to the Central Statistics Office (CSO) 2022 report, the total population of County Tipperary was 167,895.

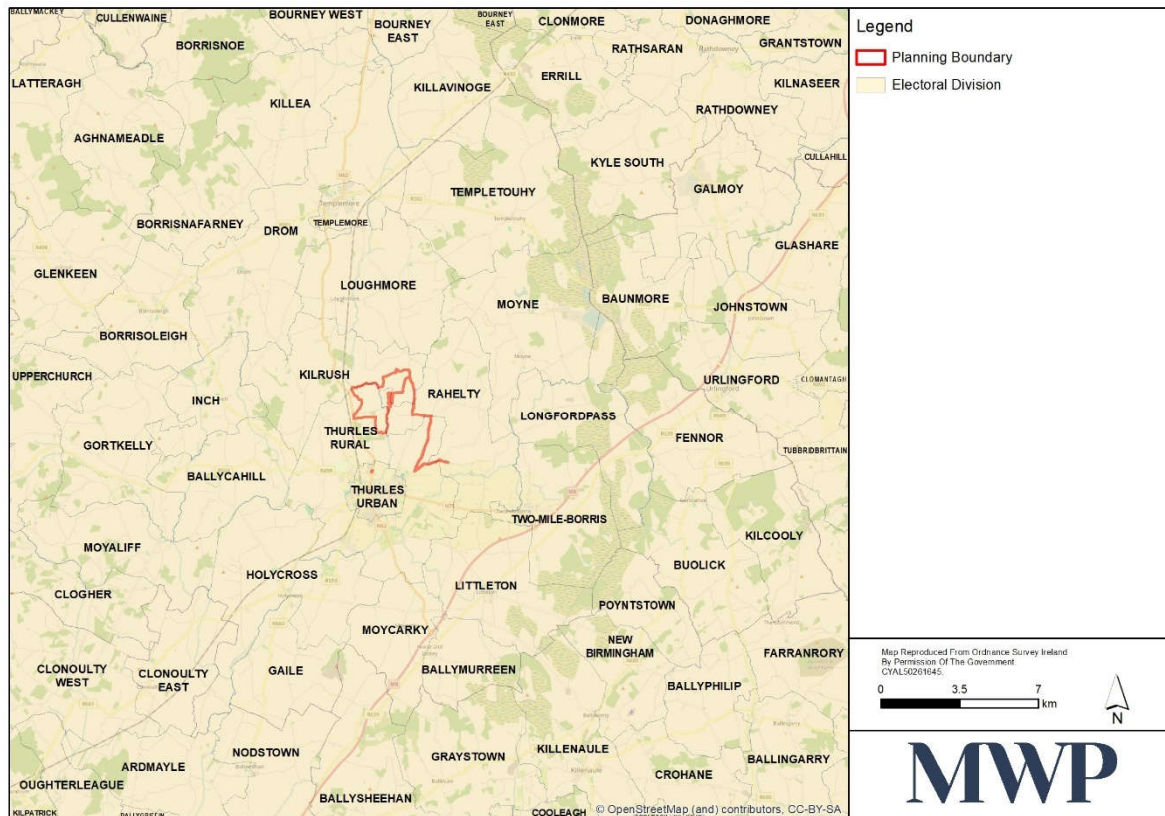


Figure 5-3: Electoral divisions in the project area

A review of the 2016 and 2022 population statistics for each ED shows that while the recorded population trends vary across each ED, the overall study area is moderately populated.

The CSO data indicates a moderate increase in Kilrush ED where the proposed substation and BESS facility will be located. While other EDs that are involved in the wind farm and grid route study area, showed a slight increase in population between 2011-2022.

Table 5-5 Population Data ED's 2011-2022 (CSO)

Electoral Division (ED)	2011	2016	2022
Thurles Rural	2,300	2,314	2,365
Rahelty	765	772	779
Kilrush	523	499	556
Tipperary County	158,754	159,553	167,895

Of all the EDs that make up the overall Study Area for this assessment, the highest population change was observed in Kilrush with 10% of change from 2016 to 2022.

A review of the 2016 and 2022 population statistics for each ED shows that while the recorded population densities vary across each ED, the overall study area is moderately populated. The lowest population density was observed in the Kilrush.

Table 5-6 Population Density per sq.km of Electoral Divisions

Electoral Division	Density 2016	Density 2022	Pop % change
Thurles Rural	59.4	59.8	2.2
Rahelty	24.7	30	0.9
Kilrush	20.5	20.5	10.3
Tipperary County	37.1	39	5

As indicated in **Figure 5-4** below, the population density for most of the proposed project area is within the moderate region.

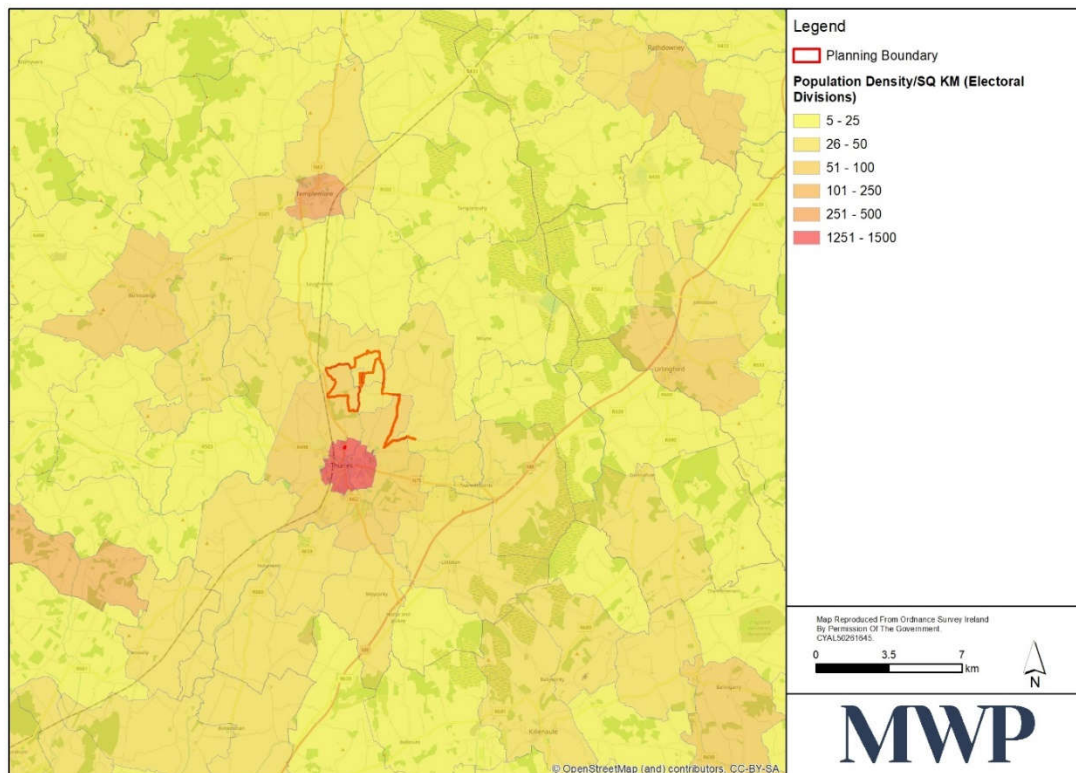


Figure 5-4 Population Density Map for the Proposed Area (Persons per sq.km)

5.3.4 Settlement Patterns

Wind Farm Site and Overhead Line (OHL)

The closest urban settlement to the proposed wind farm site is the town of Thurles. The immediate vicinity is predominantly rural, with agricultural land surrounding the proposed site to the east, west, and north. The closest dwellings to the proposed wind turbines are 560m from T5 and 650m from T10 and belong to involved landowners. All the rest of the neighbouring dwellings are located at least 720m from any of the proposed turbines. (see **Figure 5-5**).

Within 1km radius of the proposed wind turbines, there are 57 dwellings. A further 337 dwellings are located between 1km and 2km from the site. The 3km radius around the proposed turbines encroaches on the northern part of Thurles town and includes many more dwellings and some other sports and other social facilities.

The OHL traverses within the wind farm site from the north-western corner near T1 to the southern boundary at T10. In the study area, settlement patterns are dispersed, with some isolated houses. In the broader region, settlements range from medium-sized to small community settlements, including relatively isolated farmsteads. The area is rural yet moderately populated, characterised by scattered one-off housing and ribbon developments along the local and regional road networks serving the vicinity. **Figure 5-5** illustrates the distribution of housing and settlements near the Proposed Project lands.

Thurles, with a population of 8,185 according to the Central Statistics Office (CSO) data from 2022, is the nearest town, located approximately 3km to the south. Additionally, Templemore, with a population of 2,005 according to CSO 2022 figures, lies roughly 4.3km northwest of the proposed wind farm site. These towns serve as the principal service and employment hubs in the region.

Substation and BESS

Settlement patterns in the broader region exhibit a range from large urban centres to small community settlements and relatively isolated farmsteads to small clusters of houses close to the proposed substation and BESS site. The closest cluster of dwellings to the proposed project site include Rossestown Cross approximately 1.3km east of T9 and Athnid approximately 1.68km southeast. The local service centre of Loughmore is approximately 3.8km to the northwest, and Thurles town approximately 3km south.

The closest residential property to the proposed 110kV substation is approximately 350m east.

Grid Connection Route

Settlement patterns along the proposed underground grid route (GCR) primarily consist in clusters with an occasional one-off residential dwellings along the local road network between the site and the existing 110kV Thurles substation, in the townland of Ballygammane, Co. Tipperary. The grid route passes by 62 rural residences which front on to the road corridor along its 7km length.

Turbine Delivery Route

The Turbine Delivery Route (TDR) runs from the port of Foynes in County Limerick to the Wind Farm Site via the national, regional and local road network. Proposed temporary accommodation works associated with the TDR are spread out over 22 pinchpoints along the R489, N62 and L-8017 (see Figure 2-14 in Chapter 2). Settlement patterns along the TDR range from urban settlements such as Limerick, Borrisoleigh and Thurles, smaller villages and dispersed one-off dwellings along the route. Most of the proposed works are within the public road corridor, with two adjacent land take areas where hard surfaces are required. One of these is at the Jimmy Doyle Road/N62 junction in Thurles town, and the other involves the removal of a small section of forest plantation at the junction between the N62 and the L-8017 at the western side of the wind farm site. See project red line boundary in Figure 5-2. The accommodation works required for the TDR are detailed in the Turbine Delivery Route Assessment Report included in **Appendix 2A** of this EIAR.

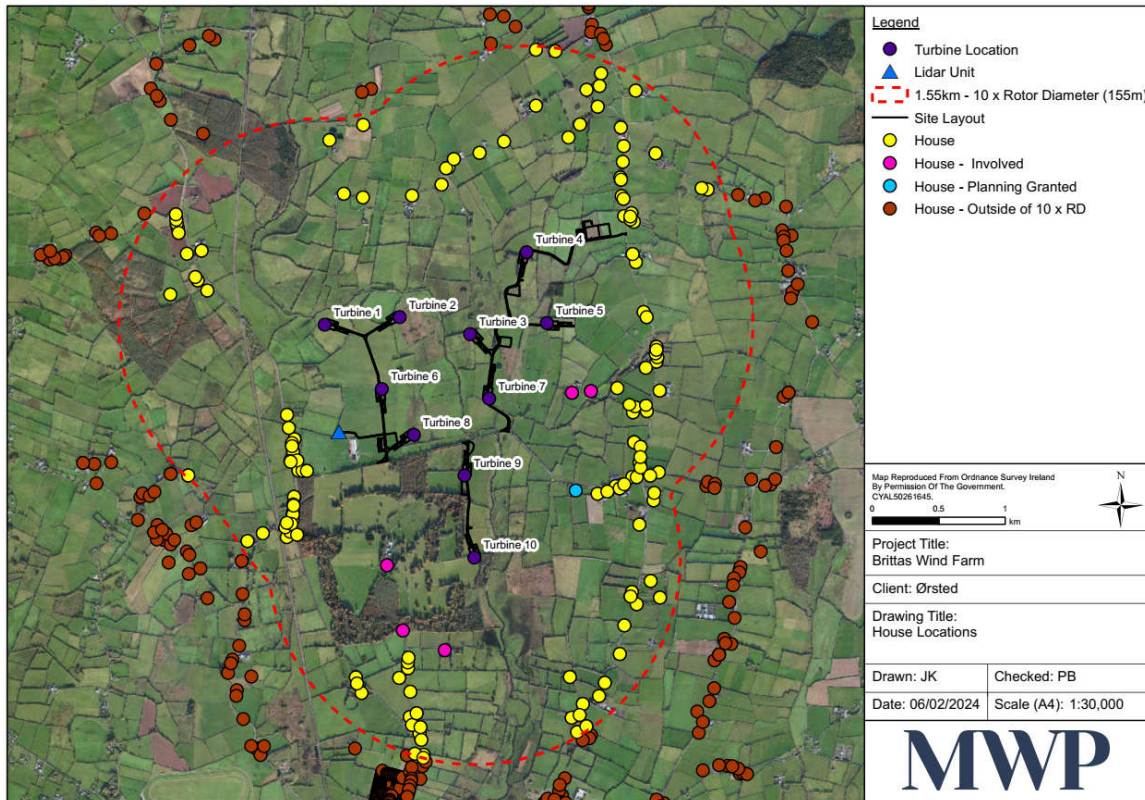


Figure 5-5: Distribution of neighbouring housing and settlements around the proposed project site.

5.3.5 Land Uses

Wind farm and OHL

The proposed wind farm site and existing overhead line is surrounded by open agricultural land on the eastern, north and south side with a mix of hedgerow, treelines and forestry towards the south and southwest. It is estimated that 1.4ha of forestry felling and 4086m of hedgerow removal for wind farm infrastructure will be required.

According to Corine map (2018), the wind farm is situated on land primarily composed of “231- Pastures - with dense predominantly graminoid grass cover with floral composition”, with a small section occupied by “242- Complex Cultivation Patterns” in the central region of the site. “311- Broad leaved forest’ and “211- non-Irrigatable land’ are mapped in the south and southeast regions of the site (Figure 5-6).

Substation and BESS

The proposed substation and BESS facility site is to be located on agricultural land and bounded by hedgerows and treelines on all sides. The substation and BESS facility will be located on land primarily consisting of ‘231- Pastures - with dense predominantly graminoid grass cover with floral composition’.

Grid Connection Route

The 7km grid route will be located under the existing public road as per EirGrid requirements. Starting from the onsite substation entrance the proposed grid route will turn south along the L-4120 road to the junction with the L-8017 Rossestown road. There the route turns east and follows the L-8017 road to the next junction, where it will then turn south along the L-4119 road to Thurles town. At the T-junction with the L-8015 road the route will turn east until the fork in the road and will then follow the L-8014 (to the right) to existing Thurles substation.

The adjacent land uses along the proposed underground grid cable route varies from rural to semi-urban settings. The area that surrounds the grid connection route include agricultural land, and pastures. The grid route will pass 62 adjacent residential dwellings, farm buildings or property entrances along its 7km route.

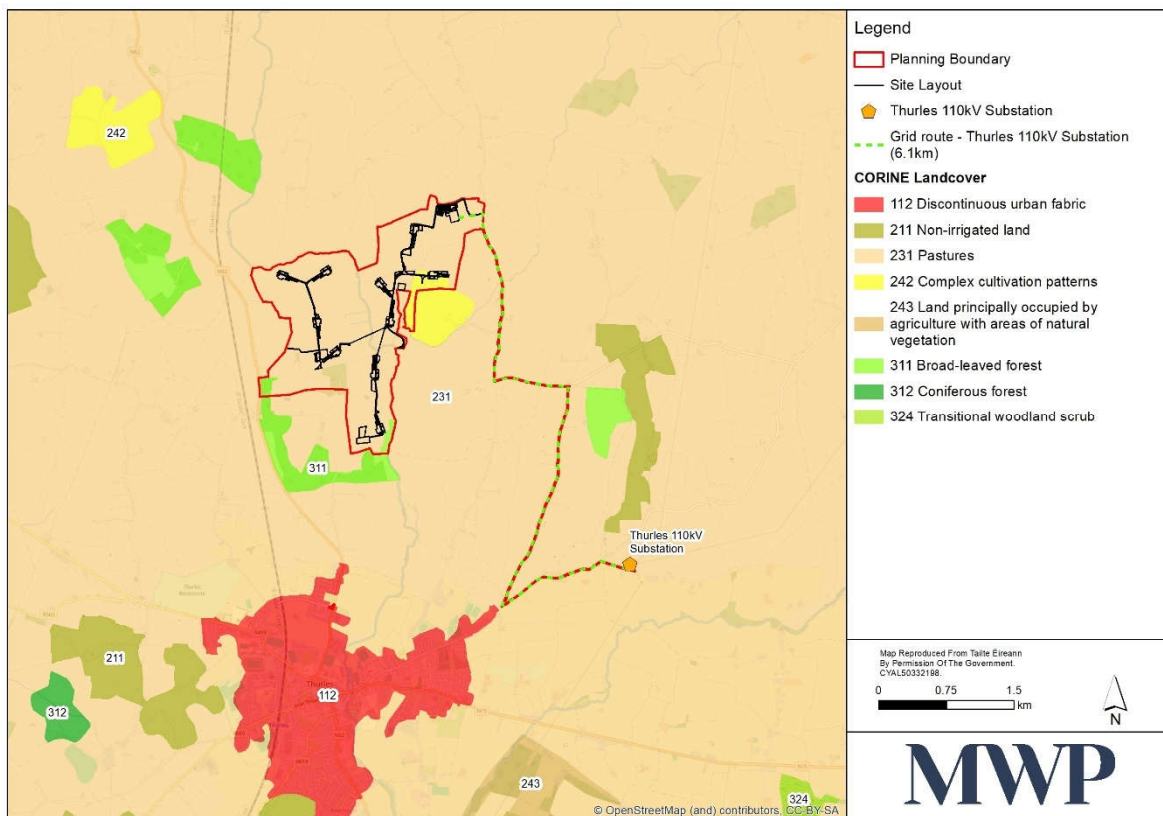


Figure 5-6 Land cover in area around the Proposed Project (Corine land use data)

The surrounding area is well served by a network of local roads. The nearest other existing wind farms are located 9.8km north of the proposed project.

Turbine Delivery Route (TDR)

The turbine delivery route land use includes road networks and road adjacent land. Enabling works are required along the route and 22 pinch points were identified commencing at Junction 25 Nenagh on the M8. The works include temporary removal of traffic signs, lights, electricity poles, bollards, hedge removal or trimming and some road widening. Two points were identified where temporary hardstanding areas are required and these are therefore included in the redline boundary. These are located in the townland of Brittasroad, and the townland of Brittas, County Tipperary, and currently consist of private open space and commercial forestry respectively.

5.3.6 Public Health

A general health survey was conducted by CSO in 2022. This provides information on the general health profile of the population for each electoral division. **Table 5-7** summarises the general health of persons.

Based on the analysis of the health statistics provided below, it is evident that the general health of the local population in the overall Proposed Project area is recorded as either 'very good' or 'good'. More than 50% of respondents from the 2022 Census indicated that their health was either 'good' or 'very good', with approximately above 1% indicating their health was 'bad'. Less than 1% of respondents indicated their health was 'very bad' in these areas. Overall, these figures represent a very small proportion of the total population, suggesting that the general health status across all EDs is relatively good.

Table 5-7 General Health Percentage of the Population 2022 (CSO)

General Health	Thurles Rural	Rahelty	Kilrush
Very Good	1,342	448	351
Good	720	185	138
Fair	181	78	38
Bad	24	16	7
Very Bad	5	2	3
Not Stated	93	50	19
Total	2,365	779	556

5.3.7 Tourism and Amenities

The Proposed Project elements are not within any tourist attraction site. The closest amenity attraction is Loughagalla Park, located to the south-east of the Proposed Project on the outskirts of Thurles. Other nearby attractions include Holycross Abbey, St. Mary's Famine History Museum, Lisheen Castle (which is a private residence), Thurles Golf Club, Father Mackey's Blessed well, and Semple Stadium. In the wider area, tourist attractions include Farney Castle, Killahara Castle, Rock of Cashel and Loughmoe Castle. No scenic routes are observed to be present close to the site.

Additionally, retail and commercial facilities are present in the vicinity of the Proposed Project in the settlements of Thurles and Templemore.

5.4 Assessment of Impacts and Effects

5.4.1 Employment & Economic Benefit

Construction Phase

The construction of the wind farm, rerouting of the on-site OHL, construction of the substation and BESS facility phases of the Proposed Project will result in an uptake of resources and labour will mainly be sourced locally whenever possible. These elements of the construction phase will take approximately 18 months.

The Proposed Project is expected to provide employment opportunities for site contractors, on-site vehicle and plant operators, engineers, materials delivery personnel, environmental personnel and health and safety

personnel. The construction phase is estimated to create up to 60 full-time jobs. During the construction phase, supplies such as aggregates, concrete, and surface foundation supplies will be sourced from local quarries and suppliers, thereby supporting the local economy.

The proposed GCR within the public roads will take approximately 5 months to construct and install, of which 2 months will be trenching and the remaining period for pulling cables.

The TDR phase is expected to take 3 months will require specialist contractors therefore impact on local employment is not foreseen.

There are no anticipated negative effects on existing economic activity in the area. Local companies may benefit from providing services such as catering, accommodation and plant hire.

Overall, the Proposed Project is likely to have a positive effect on employment during the construction phase. The Proposed Project is anticipated to have a **temporary, positive** and **slight** effect on economic activity during this phase.

Operational Phase

During the operational phase, employment and economic benefits will arise from ongoing procurement of local materials, services and equipment necessary for wind farm operations. The wind farm site, BESS and substation operation is expected to generate a small number of full-time positions in operation and maintenance roles. Some local employment opportunities may develop over the lifetime of the wind farm occasionally for less specialised activities such as road or drainage maintenance as required.

As set out in the terms of the Renewable Energy Support Scheme (RESS), all renewable energy projects applying for RESS will require the establishment of a Community Benefit Fund prior to commercial operations of the project. The current terms of RESS require a contribution of €2/MWh for all projects. Furthermore, as part of RESS, the Community Benefit Fund will provide a minimum payment per annum of €1,000 to all dwellings located within a distance of 1 kilometre radius from RESS projects and a minimum of 40% of the funds shall be paid to not-for-profit community enterprises, focusing on education, energy efficiency, sustainable energy and climate action, in line with UN Sustainable Development Goals, 4, 7, 11 and 13.

For the proposed Project, the community benefit fund under RESS is expected to deliver approximately €250,000 a year to the local community for the first 15 years of the project. This will provide a **medium-term, positive** and **slight** effect on the local economy, benefitting individual households directly as well as receiving indirect benefits through local community enterprises.

As the grid route will be underground, there is no impact anticipated from the operational phase of the grid and collector cable. There will be no impact on employment from the TDR element during the operational phase of the proposed project.

Overall, the Proposed Project is expected to have **positive, long-term effects and imperceptible** on the local employment and economy.

Decommissioning Phase

The potential impacts associated with the decommissioning phase regarding employment and economic activity will mirror those of the construction phase but to a lesser extent. There will be no decommissioning phase impacts from the rerouting of the OHL or the TDR as no works will be required. A construction team will be necessary for dismantling the infrastructure and carrying out remediation as needed at the wind farm site. Since the decommissioning of the project is expected to be less intensive than the construction phase, fewer construction

workers will likely be required. Employment opportunities will be available at the wind farm site, BESS and substation site during the decommissioning phase. The presence of construction workers during the decommissioning phase to the wind farm, BESS, substation site will have a **temporary, positive and not significant impact** on local businesses and services, contributing to the local economy, similar to that of the construction phase but of lesser magnitude.

Pre-Mitigation Effect Rating Summary

In **Table 5-8** below, the relevant pre mitigation rating for each of the types of assessment criteria is provided for the potential effects on employment and economic. The criteria, their explanations and the effect rating methodology outlined in **Chapter 1** of the EIAR have been used to assess this effect.

Table 5-8: Effects on Employment (and Income)

Impact	Quality of Effect	Significance	Spatial Extent	Duration
Construction Phase				
Construction Employment	Positive	Slight	Local - Regional	Temporary
Increased demand for material & services	Positive	Slight	Local	Temporary
Operational Phase				
Employment	Positive	Imperceptible	Local-Regional	Long Term
Community Financial Benefit	Positive	Slight	Local	Medium term
Decommissioning Phase				
Construction Employment	Positive	Not significant	Local	Temporary

5.4.2 Population and Settlement Pattern

Construction Phase

There will be no loss of residential dwellings or residential displacement as a result of the Proposed Project elements, therefore it is unlikely to have a significant effect on population numbers or settlement patterns in the area. There are no dwellings in or in the immediate vicinity of the key construction elements of the wind farm site. A minor number of key employees involved in the construction, may decide to temporarily re-locate to the area in the short-term however most personnel will likely travel to the site daily from the wider area. The overall impact throughout the construction phase will be **temporary, neutral and not significant** on settlement patterns and population.

The construction of the grid connection route and the accommodation works for the turbine delivery route will have **temporary, not significant and neutral** effect on population and settlement. While there are likely to be some temporary inconvenience and nuisance associated with the roads works for residents living along the grid route or adjacent the TDR pinch points, these are considered **not significant**. This will have **no effect** on local population and settlement patterns.

Operational Phase

There are numerous operational wind farms in the study area including Lisheen Wind Farm that are already a feature of this working landscape and will not result in a significant landscape character change. Consequently, it is **likely** that the operational phase of the Proposed Project will have a not-significant impact on local population or settlement patterns. The proposed windfarm, BESS and substation will require a small number of employees during the operational phase for operations and maintenance. It is expected that the employees will be sourced locally and will not be requiring accommodation. The rerouted OHL, underground GCR and Turbine Delivery Route will have no operational phase impacts. Thus, the operational phase will not bring changes to the population and settlement structure in the area. The Proposed Project is likely to have a **long term, neutral** and **imperceptible** effect on population and human settlement during the operational phase.

Decommissioning Phase

The decommissioning phase of the proposed project provides for the removal of wind turbines, BESS and associated infrastructure from the site. The substation will remain ESB property and will not be decommissioned. The potential impacts associated with the decommissioning works in relation to population and settlement pattern 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. The underground cables will not be removed if an environmental assessment of the decommissioning operation demonstrates that this would do more harm than leaving them in situ. The rerouted OHL and the TDR will have no decommissioning phase impacts. As the decommissioning of the project is expected to be less intensive than the construction phase, it is likely that less construction workers will be required for this phase. During the decommissioning phase, the workforce at the wind farm, and BESS will increase daily during working hours and return back to normal outside of working hours. The decommissioning phase is therefore likely to result in a **not significant, temporary and neutral** increase in population within the windfarm, BESS and substation site. It is not likely that the decommissioning phase will result in any permanent impact to population in terms of changes to population in the area. The grid route element of the project will remain in situ following decommissioning. There is no expected impact on population due to the underground grid connection as a result of the decommissioning phase.

The removal of the wind turbines from the landscape is expected to have a **not significant, positive, local** effect on landscape character and associated population and settlement in the **long term**.

Pre-Mitigation Effect Rating Summary

In **Table 5-9** below, the relevant pre mitigation rating for each of the types of assessment criteria is provided for the potential effects on population and settlement. The criteria, their explanations and the effect rating methodology outlined in **Chapter 1** of the EIAR have been used to assess this effect.

Table 5-9: Effects on Population and Settlement

Impact	Quality of Effect	Significance	Spatial Extent	Duration
Construction Phase				
In-migration of workers	Neutral	Not Significant	Local - Regional	Temporary
Wind farm site - Pop. changes due to nuisance effects	Neutral	Not significant	Localised	Temporary
Grid Route & TDR - Pop. changes due to nuisance effects	Neutral	Not significant	Localised	Temporary

Impact	Quality of Effect	Significance	Spatial Extent	Duration
Operational Phase				
Pop. changes due to landscape character effects	Negative	Not significant	Localised	Long-term
In-migration of workers	Neutral	Imperceptible	Localised	Long Term
Decommissioning Phase				
In-migration of workers	Neutral	Not Significant	Local - Regional	Temporary
Pop. changes due to landscape character effects	Positive	Not significant	Localised	Long-term

5.4.3 Land Use Pattern

5.4.3.1 Construction Phase

Wind Farm Site & OHL

Current land use within the Proposed Project site is predominantly agricultural, with some areas of forestry plantation. The Proposed Project has the potential to affect the local area character and human environment by introducing a new land use activity which could result in physical changes, severance or changes in users ability to continue existing activities.

During construction, there will be some effect on existing land-uses within the development site. The construction areas for the turbines, hardstands, blade set down areas, access tracks, BESS, substation, rerouted OHL, Met Lidar, spoil deposition areas, borrow pit and site compounds will be securely fenced for the duration of the 18-month construction period for health and safety purposes. Existing agricultural activities (apart from felling required for the Proposed Project) within the footprint of these windfarm facilities will cease for the duration of the construction works. Public access within the site will also be prohibited during construction. However as the lands are under private ownership, public access is not available. Outside of these construction areas it is not envisioned that land use activities will be negatively affected as agricultural activity can continue in adjacent fields.

In terms of effects to neighbouring lands and land-uses, it is considered that the wind farm development does not pose a risk to either existing or future land-uses. All existing land-use practices can co-exist with the proposed wind farm.

Access may be restricted to involved landowners within the site at times of heavy site activity such as deliveries and concrete foundation pouring. Traffic procedures and mitigations within, through and around the construction areas at these times will be implemented. Prior to commencement of the works the applicant will engage with all relevant stakeholders to minimise disruption and to provide any alternative access where possible.

1.4 ha of existing forest plantation will be felled to make way for the proposed project. There will be re-planting of trees and hedges on-site. The forestry felling and replacement replanting will be undertaken subject to licenses in compliance with the Forestry Act 2014 as amended. The replanting license application for this wind farm will propose to replant in areas around existing woodland and hedgerows to improve the ecological connectivity on the site.

Due to the affected forestry and agricultural landowners being involved in the wind farm project, these land use changes are expected to have a **negative, not significant, temporary and local** pre-mitigation effect on land use.

Grid Connection Route

The land-use along the proposed grid connection route comprises mainly agricultural land, pastures, residential and public road uses. The proposed grid connection will be constructed within 7km of existing public roads as described in section 2.4.14 of Chapter 2 of this EIAR.

The road network along the grid connection comprises narrow local roads. During construction works for the grid connection phase, the Proposed Project will likely have potential temporary traffic nuisance and access effects on residents and other landowners along the route. The active grid construction area will be small. It is expected that 100m of active construction works will be completed each day over a period of approximately 2 months. Thereafter, the second 2-3 months of construction will involve sequentially opening up of various joint bays (these are the pre-cast concrete chambers that will be required along the grid connection route over its entire length) and pulling electrical cables through ducts and then joining each cable together. There is anticipated to be 12 joint bays with 2-3 days' work involved at each which have been positioned to avoid effects on adjacent dwellings and farm buildings. Construction activities along the proposed grid connection route will operate between the hours 7:00 a.m. and 7:00 p.m., Monday to Saturday (if required).

To minimise the disruptive effect on neighbouring households, the project will use stop-and-go traffic management measures and provide diversions where needed. Access to specific houses along the grid route will be maintained and outside of construction hours the trenches will be temporarily reinstated or covered to allow access to dwellings in the normal manner. These traffic management measures will be developed in consultation with Tipperary County Council. Local affected residents will also be kept informed and consulted during the construction works. The appointed contractor shall make provision for safe access at all times to private residences in proximity to the construction works.

Pre-mitigation, these changes will result in **significant, negative, temporary and local effects** to road users and neighbouring property owners and residents.

Due to the restricted access to the affected sections of the local roads for short periods during these works, there will be **significant, negative, brief to temporary and local** pre-mitigation effect on local residents accessing the public road.

Turbine Delivery Route

The components for each turbine are expected to be delivered in approximately 100 No. deliveries. Due to their abnormal size, blades and towers will be delivered at night to avoid disruption to daytime traffic. The turbine blades will be the longest components to be transported from port to site. The turbine blades will range from 73m to 76m in length. The components are expected to be delivered by sea to the Foynes Port in County Limerick and transported to site along the national, regional and local road network as per description in **section 2.4.5 of Chapter 2**. Twenty-two pinch points along the route where various temporary accommodation works will be required have been identified. Details of these works is available in **Appendix 2A**. These works include the temporary removal of some traffic signs and signals, lamp posts, electric poles and fences, some tree and hedge trimmings, lowering of roadside banks and/or road widening. The affected public and private infrastructure will be reinstated once the turbine components have been delivered. Pre-mitigation these changes will result in **slight, temporary and local effects** to road users and some adjacent land owners.

5.4.3.2 Operational Phase

Given that the footprint of the proposed wind farm site including wind turbines, roads, OHL, BESS and substation, the Proposed Project will occupy a small proportion of the development site area when operational. Existing agricultural activities on the project site are expected to continue during the operational phase. It is anticipated that there will be **long term, not-significant and negative** effect on existing agricultural land uses within the site arising from the operational phase. The addition of the wind energy facilities to the agricultural land uses represents a positive diversification and intensification of land use effect which is rated as **slight, long-term and positive**.

The grid route will be installed in the existing public road and will be underground, hence bringing no changes to the land use in the grid route area during the operational phase. Further works along the grid connection are not expected during the operational phase of the proposed project. There will be no impact from the TDR element of the project during the operational phase. Therefore, the operational phase will have **no impact** on land use along the GCR and TDR.

5.4.3.3 Decommissioning Phase

Decommissioning works will include removal of the turbines, BESS and associated infrastructure. The access tracks will be left in situ to continue to be used for agricultural and forestry land uses. The rerouted OHL will remain in situ. The decommissioning works will require a construction crew on-site and may cause temporary disruption to surrounding land uses. Removal of infrastructure from the site may have temporary impact on agricultural practices in the area. During decommissioning works agricultural access within the wind farm site may be in use by construction crews which may temporarily prohibit access to certain areas or hinder access to areas of agricultural pasture within the site area. Impact to these land uses during the decommissioning phase is expected to be **temporary, slight, and negative**.

The underground grid connection will remain in situ following decommissioning and form part of the national grid.

Pre-Mitigation Effect Rating Summary

In **Table 5-10** below, the relevant pre mitigation rating for each of the types of assessment criteria is provided for the potential effects on land use. The criteria, their explanations and the effect rating methodology outlined in **Chapter 1** of the EIAR have been used to assess this effect.

Table 5-10: Effects on Land Use

Impact	Quality of Effect	Significance	Spatial Extent	Duration	Probability
Construction Phase					
Loss of Agricultural Land use	Negative	Not Significant	Localised	Temporary	Likely
Felling and Replanting of Forestry	Negative	Not Significant	Localised	Temporary	Likely
Grid Route Traffic Impacts	Negative	Significant	Localised	Temporary	Likely
TDR Accommodation Works	Negative	Slight	Localised	Temporary	Likely
Operational Phase					
Loss of Agricultural Land	Negative	Imperceptible	Localised	Long Term	Likely
Diversification of Land Use	Positive	Slight	Localised	Long Term	Likely
Decommissioning Phase					
Loss of Agricultural Land	Negative	Not significant	Localised	Temporary	Likely

5.4.4 Human Health

5.4.4.1 Construction Phase

Construction phase impacts from noise, vibration, dust, shadow flicker and traffic on human health are fully assessed in their respective chapters as part of this EIAR. While there is the potential for other construction related hazards, serious risks to human health and safety are not envisioned.

Should a major accident or natural disaster occur, the potential sources of pollution onsite during the construction phase is limited. Sources of pollution with the potential to cause significant environmental impact and associated negative effects on health would be associated with the bulk storage of hydrocarbons or chemicals, storage of wastes or similar and these are expected to be limited.

There is limited potential for significant natural disasters to occur at the Proposed Project site. Ireland is a geologically stable country with a mild temperate climate. The potential natural disasters that may occur are therefore limited to flooding and fire. The risk of flooding is addressed in **Chapter 8 Water**. It is considered that the risk of significant fire occurring, affecting the wind farm and causing the wind farm to have significant environmental effects is limited. As described earlier, there are no significant sources of pollution in the wind farm with the potential to cause environmental or health effects. Also, the spacing of the turbines and distance of turbines, BESS facility and substation from roads and any residential properties has been designed to limit the potential for effects on human health by providing appropriate setback distances.

During construction the site will be managed in accordance with the following safety and health regulations and guidelines which will ensure a high standard of safety both for workers on site and the general public.

- Safety, Health & Welfare at Work (Construction) Regulations 2013;
- Safety, Health & Welfare at Work (General Applications) Regulations 2007 to 2020; and
- Irish Wind Energy Association Best Practice Guidelines.

Under normal conditions, access to the construction site and turbines will be controlled and not accessible to the public or the agricultural land owners/users. It is not anticipated that the construction works of the turbines will present any danger to the public. The rigorous safety checks imposed on the turbines during design, construction, commissioning, and operation ensures the risks to humans are negligible.

The potential wellbeing and disturbance effects of the proposed wind farm scheme on the local human environment have been identified as follows:

- Dust emissions from construction and decommissioning activities;
- Noise emissions during construction activities and operation;
- Visual effects during construction and operation;
- Traffic disturbance during construction.

Each of these issues has been fully assessed and is documented in other chapters of the **EIAR** as set out in **Table 5-11**. These assessments were reviewed to inform this study and it is concluded having regard to these environmental factors, under which human health effects might occur, there will be no significant effects on human health as a result of the construction of the wind farm, substation, BESS, grid route, turbine delivery accommodation works and rerouting of the on-site OHL.

Traffic and Road Usage

Potential effects on the surrounding road network will arise principally during the construction phase. Peak daily construction traffic to the wind farm site, including the rerouting of the OHL, construction of the substation and BESS and all associated infrastructure is predicted to be 40 HGV movements during the concrete pours and the same for the delivery of imported stone. Peak construction traffic will principally occur during turbine base pours and material deliveries for the BESS and substation building. Traffic studies carried out for the Proposed Project indicate that while there will be an increase of traffic volume on the public road network during the construction phase, this increase will be well within the carrying capacity of the public road network. The nature of the surrounding road network being lightly trafficked, with no active travel infrastructure (designated pedestrian routes, bicycle tracks or leisure routes) partnered with narrow carriageway widths, indicates that utilising the surrounding routes will not raise major safety concerns or cause disruption to the surrounding networks mobility.

Works for the majority of the grid connection are on the public road. The works will be temporary and appropriate traffic control and management systems will be in place to minimise, as far as possible, traffic disruption to road users. The appointed contractor shall make provision for safe access at all times to private residences in proximity to the construction works.

As per Chapter 16 of the EIAR (Traffic and Transportation Chapter) it is envisaged that the construction traffic for the wind farm site will have **short term, local and moderate negative** effects on the surrounding transport network, particularly along the section of the L-8017 Rossestown road through the wind farm site and along the N62.

The proposed construction works in the road along the grid route will have **moderate to significant, local, negative and temporary effects** due to the operation of a stop-go system. This has potential to cause risk to human health and safety if unmitigated. However, best practice traffic management measures will be employed to maintain safety along the route during the construction phase

Delivery of the turbines to site will be along the public roads at night to reduce disruption. This has potential to cause safety hazards during component movements along the TDR. However, a permit for moving abnormal loads to the wind farm site will be sought from An Garda Síochána and Tipperary County Council on the proposed TDR. A detailed transportation plan with a breakdown of the timing of deliveries will be established at construction stage and agreed with the local authority. The component movements will be under escort and will be conducted during off-peak hours to best avoid issues around human safety along the TDR. This combined with the temporary enabling works along the TDR will result in a temporary nuisance and road safety issues for road users. TDR works and delivery will have pre-mitigation effects that are rated as **moderate , negative, local and temporary**. The delivery of the turbine components will have **temporary, slight, local negative** traffic effects on the affected roads and users.

Noise

The construction phase for the wind farm site, OHL, substation, BESS and associated infrastructure has the potential to generate noise emissions which has the potential to cause disturbance to local noise sensitive areas. The results of the Noise study suggests that given the distances between the main construction works for the wind farm site and nearby noise sensitive properties and the fact that the construction phase of the development is short-term in nature, it is expected that the various noise sources for the wind farm site will not be excessively intrusive. Furthermore, the application of binding noise limits and hours of operation, along with implementation of appropriate noise and vibration control measures, will ensure that noise and vibration effect is kept to a minimum. The noise assessment proposes recommendations regarding measures of reducing the amount of

noise reaching the noise sensitive areas in accordance with BS5228-1&2 +A1 2014, *Code of Practice for the Control of Noise and Vibration on Construction and Open Sites*. The construction phase impacts from noise are **negative, not significant and temporary**.

The nearest NSL’s to the grid connection route (GCR) vary considerably. The noise emissions were calculated at various distances in order to assess if there would be any significant impact on receptors. The construction noise limits are $L_{Aeq, 1hr}$ 65dB. Along the grid route, any receptors within 40m of the works could exceed the noise limits. The construction works will be carried out in 100-200m stretches therefore any exposure would be of very short (brief) duration. Noise control and mitigation measures provided in *BS 5228-1:2009* will be adopted and set out in the CEMP. The overall impact will be **negative, brief, significant and localised** without mitigation.

The turbines will be delivered to the site during the night time period to minimise impact on traffic. Enabling works closer than 150m to the nearest receptor have the potential to exceed the noise limit criteria. The impact from the delivery of the turbines and the enabling works will be **brief, negative, localised and not significant** without mitigation. Noise control and mitigation measures provided in *BS 5228-1:2009* will be adopted and set out in the CEMP.

Air Quality

During the construction phase at the wind farm site, rerouted OHL, substation and BESS, there is the potential for temporary negative effects in terms of dust emissions from materials including soil and stone and from the operation of machinery and traffic to and from the site.

In terms of the location and nature of the site, the risk of dust impacts on air quality is considered low due to the distance between the proposed works and nearby dwellings. Prior to mitigation, the construction works associated with the wind farm and grid connection is considered to be **not significant** with respect to dust soiling effects on human health.

During the construction phase of the grid connection route (GCR) the likelihood of impacts on sensitive receptors including human health is low due to the duration of the phase in proximity to each receptor.

The potential for impact on receptors, including air quality, from the TDR element of the proposed development is considered low due to the duration and quality of the effect.

With the effective implementation of standard dust management measures to control and reduce dust, no significant adverse effect, in terms of a community disturbance, is likely to occur.

Overall the impact of the proposed development on air quality and human health is considered **not significant, temporary and negative**.

Pre-Mitigation Human Health and Safety Effect Rating Summary for Construction phase

In the **Table 5-11** below, the relevant pre mitigation rating for each of the types of assessment criteria is provided for the potential construction effects on human health and safety. The criteria, their explanations and the effect rating methodology outlined in **Chapter 1** of the EIAR have been used to assess this effect. The effects are presented without mitigation.

Table 5-11 Construction Effects on Human Health

Construction and Operational Effect: Human Health (pre-mitigation)			
Quality of Effect	Significance	Spatial Extent	Duration
Construction Phase			

Construction and Operational Effect: Human Health (pre-mitigation)				
	Quality of Effect	Significance	Spatial Extent	Duration
Human Safety effects from Traffic (Wind Farm & OHL)	Negative	Moderate	Localised	Short Term
Human Safety effects from Traffic (GCR)	Negative	Significant to Moderate	Localised	Temporary
Human Safety effects from Traffic (TDR)	Negative	Slight to moderate	Localised	Temporary
Human Health effects from Noise (Wind Farm & OHL)	Negative	Not Significant	Localised	Temporary
Human Health effects from Noise (GCR)	Negative	Significant	Localised	Brief
Human Health effects from Noise (TDR)	Negative	Not Significant	Localised	Temporary
Human Health effects from Dust & Air Emissions	Negative	Not significant	Localised	Temporary

5.4.4.2 Operational Phase Effects

Traffic

During the operational phase of the wind farm, there will be periodic maintenance on site. This will generate a relatively low volume of vehicles, including occasional heavy vehicles. The traffic generated will likely be imperceptible and will not cause any safety issues on public roads.

There will be no expected operational phase traffic associated with the GCR and TDR elements of the project.

On the basis of the EPA Guidelines, the proposed operational phase will have **long term, negative, imperceptible traffic effects**.

For further details on traffic and transportation, see **Chapter 12** of this EIAR.

Noise

During the operational phase of the wind farm site, the noise levels will be within the best practice noise criteria recommended in guidance 'Wind Energy Development Guidelines for Planning Authorities, 2006'. A full assessment of noise impacts is included in Chapter 11. The impact from operational noise is assessed as **negative, imperceptible and long-term**.

Notwithstanding that the operational noise criterion will not be exceeded, it should be noted that a new noise source will be introduced into the soundscape which may be noticeable at low wind speeds.

There will be no operational phase noise impact from the GCR and TDR elements of the project.

Air Quality

During the operational phase of the wind farm site, the only source of air emissions could be the vehicle emissions from the employee's car or machinery used for maintenance which will be minimal. As it is expected that only a

minor number of employees will be required on-site during the operational phase, no significant dust impacts are expected from the operational phase of the Proposed Project.

The carbon calculations demonstrate that significant CO₂ emissions will be offset by the Proposed Project and will further assist Ireland's CO₂ reduction commitments under the Paris Agreement and Ireland's Climate Action Plan 2024. The electricity generated will assist to displace electricity otherwise generated from coal, oil and gas fired power plants, thus reducing emissions from these power plants.

There will be no operational phase emissions associated with the GCR and TDR elements of the project.

Once operational, the development is expected to have **positive, significant, national, and long-term effects** on air quality and carbon savings.

Shadow Flicker

Shadow flicker is defined as the alternating light intensity produced by a wind turbine as the rotating blade casts shadows on the ground and stationary objects, such as the window of a residence.

The Proposed Project has the potential to give rise to shadow flicker nuisance impacts on surrounding dwellings. As set out in Chapter 13. When average annual sunshine data is taken into account, it is predicted that 12 dwellings will potentially experience shadow flicker above the 30-hour threshold per year and no dwellings will exceed the threshold of 30-minutes per day. The Shadow Flicker assessment in Chapter 13 was completed for three alternative rotor diameters and potential effects on nearby dwellings can be inspected for all three scenarios.

The shadow flicker effects associated with the Proposed Project will be **not significant to slight pre-mitigation**, however, is unlikely to cause any negative health effects. As set out in Chapter 13, the correct operation of the installed shadow flicker control measures will ensure that there will be no shadow flicker impact.

5.4.4.3 Concluding assessment of operational effects on human health

Overall, the effect on employees health, and community health and safety during the operational phase is expected to be **neutral**, with measures in place to mitigate potential risks.

Pre-Mitigation Effect Rating Summary

In the **Table 5-12** below, the relevant pre mitigation rating for each of the types of assessment criteria is provided for the potential operational effects on human health. The criteria, their explanations and the effect rating methodology outlined in **Chapter 1** of the EIAR have been used to assess this effect.

Table 5-12 Effects on Human Health

Operational Effect: Human Health				
	Quality of Effect	Significance	Spatial Extent	Duration
Operational Phase				
Human Health effects from dust, shadow flicker, noise, traffic	Negative	Imperceptible	Localised	Long Term
Community Health & Safety – Climate Adaptation	Positive	Significant	National	Long Term

In conclusion the Proposed Project is likely to have **positive significant effect** on community health and safety in terms of carbon emissions, and **imperceptible to not significant neutral to negative effects** on employee and

community health during the construction and operational phases (pre-mitigation). The application of the proposed health and safety mitigation measures will reduce the effect/risk to **not significant**.

5.4.4.4 Concluding assessment of decommissioning effects on Human Health

Decommissioning works will include removal of the turbines, BESS and associated infrastructure. The access tracks will be left in situ to continue to be used for agricultural and forestry land uses. The re-routed OHL will remain in situ. The underground grid connection will remain in situ following decommissioning and form part of the national grid.

The decommissioning works will require a construction crew on-site to disassemble and remove components that may have noise and dust effects. Contractor vehicles and the removal of infrastructure from the site may have temporary traffic safety effects along the haul roads. Impact of these activities on human health during the decommissioning phase is expected to be similar to those during the construction phase but fewer impacts of shorter duration and less significance.

In the **Table 5-13** below the relevant pre mitigation rating for each of the types of assessment criteria is provided for the potential construction effects on human health and safety. The criteria, their explanations and the effect rating methodology outlined in **Chapter 1** of the EIAR have been used to assess this effect. The effects are presented without mitigation.

Table 5-13: Decommissioning Effects on Human Health

Construction and Operational Effect: Human Health (pre-mitigation)				
	Quality of Effect	Significance	Spatial Extent	Duration
Construction Phase				
Human Safety effects from Traffic (Wind Farm & Haul Routes)	Negative	Slight	Localised	Temporary
Human Health effects from Noise (Wind Farm & OHL)	Negative	Not Significant	Localised	Temporary
Human Health effects from Noise (Haul Routes)	Negative	Slight	Localised	Temporary
Human Health effects from Dust & Air Emissions	Negative	Not significant	Localised	Temporary
Human Health – Climate Change Adaptation	Negative	Not Significant	Regional	Long term

5.4.5 Tourism and Amenities

5.4.5.1 Construction Phase

Given that there are currently no tourism attractions specifically pertaining to the subject site, there are no direct effects associated with the construction phase of the proposed wind farm, BESS, and substation, TDR accommodation works or rerouting of the OHL.

The proposed construction works could cause **temporary, imperceptible negative, indirect and localised** visual impacts that could impact tourism in the vicinity of the site.

As the grid route is underground, the landscape and visual effects will only occur during the construction phase. These effects will be **temporary, imperceptible, negative and localised**.

The TDR element will have a **brief, imperceptible negative and localised** effect on tourism.

The location of the Proposed Project site ensures visitors and tourists are not affected or impeded in anyway. There is potential for some traffic effects which could have a brief negative effect on tourism during construction works. However, there are no significant tourist attractions in the area, and there are no works proposed on major routes which would likely be used by tourists.

Overall, this assessment concludes that the Proposed Project will likely have a **temporary, negative, imperceptible and localised** effect on tourism and amenities during the construction phase.

5.4.5.2 Operational Phase

The wind farm, OHL, BESS and substation development is not expected to cause any significant effects on tourism and amenity during the operational phase. While the study area is predominantly agricultural, there are numerous other wind farms in the vicinity which operate without issue and are established on the landscape. Significant tourism and amenity attractions in proximity to the site will not be directly impacted by the proposed wind farm during the operational phase.

The community benefit fund associated with the proposed project will have a slight positive medium term effect on local amenities as funding will be available for not-for-profit community enterprises. The community benefit fund is a requirement for the Renewable Energy Support Scheme (RESS) and will run for the first 15 years of the project.

The grid connection will be underground and therefore will not cause any impacts on tourism and amenity during the operational phase. There will be no operational phase impacts from the TDR element of the proposed project. Overall, it is expected that the operational phase of the Proposed Project will have a **long-term, imperceptible, and neutral impact** on recreation and amenity.

5.4.5.3 Decommissioning Phase

The potential impacts associated with the decommissioning phase in relation to recreation, amenity and tourism will be similar to those associated with construction phase but will likely be of a reduced magnitude. Decommissioning works will include removal of above ground structures including turbine removal, fencing, BESS, substation and associated infrastructure. Similar to the construction phase, this is expected to have a **temporary, not significant to imperceptible, negative impact** on recreation.

Pre-Mitigation Effect Rating Summary

In **Table 5-14** below, the relevant pre mitigation rating for each of the types of assessment criteria is provided for the potential effects on tourism. The criteria, their explanations and the effect rating methodology outlined in **Chapter 1** of the EIAR have been used to assess this effect.

Table 5-14 Effects on Tourism and Visitors

Impact	Quality of Effect	Significance	Spatial Extent	Duration
Construction Phase				

Loss of tourism demand due to nuisance effects	Negative	Imperceptible	Localised	Temporary
Loss of visitors due to visual impacts	Negative	Imperceptible	Localised	Temporary
Operational Phase				
Loss of visitors due to visual impacts	Neutral	Imperceptible	Localised	Long-term
Decommissioning Phase				
Loss of visitors due to visual impacts	Negative	Imperceptible	Localised	Temporary

5.4.6 Do- Nothing Scenario

In the event that the proposed Brittas Wind Farm Project does not proceed, the existing land use on the site will continue in its present form for the foreseeable future, consisting of agricultural lands and forestry. There will be no changes to the baseline environment of the site and existing agricultural and forestry land use will continue. There will be no likely increase in local employment and the economic benefit via the community benefit fund will not be realised.

The potential emissions from the construction phase will not be created and there will be no noise, shadow flicker or visual effects which are associated with proposed project. However, the local, regional and national benefits which accompany the Proposed Project associated with the replacement of fossil fuels with between 57 and 66MW of renewable energy will be lost and the long term benefits to air quality and climate associated with the project will not be realised.

5.5 Mitigation and Monitoring Measures

To maximise the potential positive employment effects the following measures have been incorporated into the project design and construction management plan:

Table 5-15 Mitigation Measures – Construction

Effect	Mitigation Measures
Settlement Patterns	None required
Employment	None required
Land Use	<ul style="list-style-type: none"> Residents and affected parties will be informed in advance of any planned utility diversions or potential disruptions. Clear and timely notifications will be issued to ensure residents are well-informed and can make necessary preparations. Ongoing and transparent communication with the local community will be maintained to address any concerns related to diversions.
Tourism & Amenity	<ul style="list-style-type: none"> Screening and landscaping will be used to minimise visual intrusion and noise effects.
Human Health	<ul style="list-style-type: none"> The health and safety mitigation measures provided in the noise, air quality, shadow flicker and traffic Chapters will be complied with. The CEMP will be developed, and relevant health and safety standards and protocols will be developed prior to initiation of the project. A comprehensive traffic management plan will be agreed with the local authority prior to construction to assure the safety of local residence, motorists and pedestrians. All those employed on the project's construction must be inducted in the relevant health and safety standards and protocols and management plans before starting work on this project. Compliance with the health and safety standards must be monitored and enforced by management.

Table 5-16 Mitigation Measures – Operational

Effect	Mitigation Measures
Employment	None required
Population and Settlement	None required
Land Use	None required
Tourism and Amenity	None Required
Human Health	<ul style="list-style-type: none"> The health and safety mitigation measures provided in the noise, air and climate, shadow flicker and traffic reports for the construction and decommissioning phases must be complied with. All those employed on the site must be inducted in the relevant health and safety standards and protocols before starting work. Compliance with the health and safety standards must be monitored and enforced.

5.6 Residual Impacts and Effects

Category	Impact	Mitigation Measures	Quality of Effect	Significance	Spatial Extent	Duration
CONSTRUCTION						
Employment	Employment	Refer to section 5.5	Positive	Slight	Localised & Regional	Temporary
	Increase demand for goods and services	Refer to section 5.5	Positive	Slight	Localised & Regional	Temporary
Population & Settlement	In-migration of workers	Refer to section 5.5	Neutral	Not significant	Localised	Temporary
	Pop. changes due to nuisance effects		Neutral	Not significant	Localised	Temporary
Land Use	Loss of Agricultural Land	Refer to section 5.5	Negative	Not significant	Localised	Temporary
	Felling and Replanting of Forests	Refer to section 5.5	Negative	Not Significant	Localised	Temporary
	Disruptions to Traffic	Refer to section 5.5	Negative	Slight	Localised	Brief to temporary
Tourism & Amenity	Loss of tourism demand due to nuisance effects	Refer to section 5.5	Neutral	Imperceptible	Localised	Temporary
	Loss of Visitors due to Visual effect	Refer to section 5.5	Neutral	Imperceptible	Localised	Temporary
Human Health	Traffic (WF, TDR & OHL)	Refer to section 5.5	Negative	Slight to Moderate	Localised	Temporary
	Traffic (GCR)		Negative	Slight	Localised	Temporary
	Noise (All elements)		Negative	Not significant	Localised & Regional	Temporary
	Air Emissions		Negative	Not significant	Localised & Regional	Temporary
OPERATIONAL						
Employment	Employment	Refer to section 5.5	Positive	Slight	Localised-Regional	Long-term
Economic	Community Financial Benefit	No Mitigations	Positive	Slight	Localised	Long-term
Population & Settlement	In-migration workers	Refer to section 5.5	Neutral	Imperceptible	Localised	Long Term
Population & Settlement	Pop. changes due to landscape character effects		Negative	Not Significant	Localised	Long Term

Category	Impact	Mitigation Measures	Quality of Effect	Significance	Spatial Extent	Duration
Land use	Loss of agricultural land	Refer to section 5.5	Negative	Imperceptible	Localised	Long Term
Land Use	Facilitation of further diversification	Refer to section 5.5	Positive	Slight	Localised	Long Term
Tourism & Amenity	Loss of Visitors due to visual impacts	Refer to section 5.5	Neutral	Imperceptible	Localised	Long-term
Human Health	Human Health effects from dust, shadow flicker, noise, traffic	Refer to section 5.5	Negative	Imperceptible	Localised	Long Term
	Community Health & Safety		Positive	Significant	National	Long Term
DECOMMISSIONING PHASE						
Employment and Economic	Employment	None Required	Positive	Not Significant	Localised & Regional	Temporary
Employment and Economic	Demand for Goods and Services	None Required	Positive	Not Significant	Localised & Regional	Temporary
Population & Settlement	In-migration of workers	Refer to section 5.5	Neutral	Imperceptible	Local-Regional	Temporary
Population & Settlement	Pop. changes due to landscape character effects	None Required	Positive	Not significant	Localised	Long-term
Land Use	Loss of Agricultural Land	Refer to section 5.5	Negative	Not significant	Localised	Temporary
Human Health	Human Safety effects from Traffic (Wind Farm & Haul Routes)	Refer to section 5.5	Negative	Slight	Localised	Temporary
	Human Health effects from Noise (Wind Farm & OHL)	Refer to section 5.5	Negative	Not Significant	Localised	Temporary
	Human Health effects from Noise	Refer to section 5.5	Negative	Slight	Localised	Temporary
	Human Health effects from Dust & Air Emissions	Refer to section 5.5	Negative	Not significant	Localised	Temporary
Tourism & Amenities	Loss of visitors due to visual impacts	Refer to section 5.5	Negative	Imperceptible	Localised	Temporary

5.7 Interaction with other Environmental Topics

There are interactions between the traffic, noise, air emissions and visual/landscape effects and the population and human health effects. This is because of the potential for these other effects to effect human health and population. This Chapter has taken into consideration the potential effects assessed in the traffic, noise, air emissions and visual/landscape Chapters of this EIAR. As indicated in this report, these effects are mostly low or moderate and not considered significant. The only potential effect of concern is the potential traffic congestion, visual and noise nuisance effects during the construction phase. However, these are temporary, not significant and can be mitigated.

5.8 Cumulative Impacts and Effects

The list of all projects considered for the cumulative assessment are included in **Chapter 1** of this **EIAR**. Each of the projects listed were considered with respect to potential cumulative effects on population and human health.

Small scale projects listed in **Chapter 1** will not result in cumulative effects and can be discounted from the impact assessment.

The search within 20km of the development site within the last 10 years identified 68 sizable developments (**Section 1.6.4.2.4** of **Chapter 1** of the **EIAR**). This included eight multiple housing developments, three sports facilities, six quarry developments or extensions, two overhead power lines, two waste recovery/processing facilities, one mixed-use development, two mining developments, two wastewater treatment plants, one substation, one agricultural development, one retail park, one nursing home and one medical care centre.

The closets of these planning applications to the development include:

- Four multiple housing developments in Thurles;
- 1 incomplete powerline (Borrisoleigh to Thurles – note there are 2 planning applications for this line);
- A community health care centre and pharmacy (Thurles); and
- A multifunctional spectator stand for a sports facility with three pitches in Thurles.

One multi-housing development (86 units) in Thurles was permitted in Feb 2024, another in Feb 2023 (26 units) and a third in Sept 2022 (63 dwellings). One multi-housing planning application in Thurles is still under consideration. These are all located at least 3km south and downstream of the proposed wind farm site.

Most of these developments are located in Thurles and surrounding areas, at least 3 km south and downstream of the proposed wind farm site.

Housing Developments - The construction of multiple housing units in Thurles and Roscrea may lead to increased population density in these areas. These projects would be developed in accordance with the zoning objectives of the county development plan. These projects will impact local infrastructure and services, including healthcare, schools, and transportation. Concerning the Proposed Project, the cumulative impacts will occur primarily during the construction phase. Considering the temporary nature of the Proposed Project construction works and employing the local workforce where possible for the Proposed Project, the cumulative impact on population density is not considered significant. If these developments are constructed concurrently, there may be slight traffic congestion, noise, and air quality impacts. However, as construction of the proposed development is only expected to begin in Q4 2028 construction of these housing developments is likely to be completed. Large scale developments would require submission of a traffic management plan to the local authority for co-ordination of traffic management, minimising disruption.

Community Health Care Centre: The healthcare centre and pharmacy in Thurles may cause some in combination slight traffic, noise and dust effects if the developments will be constructed concurrently. But considering the 3km distance between the two developments and the timing of the construction works, cumulative impacts are not expected.

Solar Farm and Substation: The solar farm and substation in Rahelty, permitted in early 2021, may introduce some traffic and noise, and air quality impacts if constructed concurrently.

Powerline: The only potential direct cumulative impact with the Proposed Project is the incomplete powerline located on-site, which requires additional construction. The powerline intersects the proposed wind farm site and involves either erecting new poles or that existing poles be strung. This powerline project was permitted in mid-2023 and is expected to be completed prior to the proposed project obtaining planning permission. Considering the timelines of the construction, works for both developments will not coincide, and no significant impacts are expected.

Given these developments, the cumulative impact on population and human health is expected to be slight. The incomplete powerline's combination effects with the wind farm project will not introduce significant additional effects. The wind farm developer will work with Tipperary County Council and ESB to reroute the powerline appropriately, ensuring minimal disruption.

Overall, the proposed wind farm, alongside these other developments in proximity to the site, is unlikely to pose significant cumulative risks to population and human health. On the contrary, the combined effect of improved infrastructure, renewable electricity generation, housing, and healthcare, may enhance the quality of life in the region.

5.9 References

Central Statistics Office, www.cso.ie

Tipperary County Development Plan 2022-2028,

EPA Maps, <https://gis.epa.ie/EPAMaps/>;

Discover Ireland

Sustainable Energy Authority of Ireland (SEAI); Wind Energy Roadmap 2011-2050.

Review of Ordnance Survey Mapping and aerial photography (Geohive)

WHO *Environmental Noise Guidelines for the European Region* (2018).

Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (Environmental Protection Agency (EPA), May 2022;

The European Commission 'Guidance on the preparation of the Environmental Impact Assessment Report, 2017;

Wind Energy Development Guidelines published by the Department of the Environment, Heritage and Local Government (2006)

Draft Revised Wind Energy Development Guidelines published by the Department of the Environment, Heritage and Local Government (2019).