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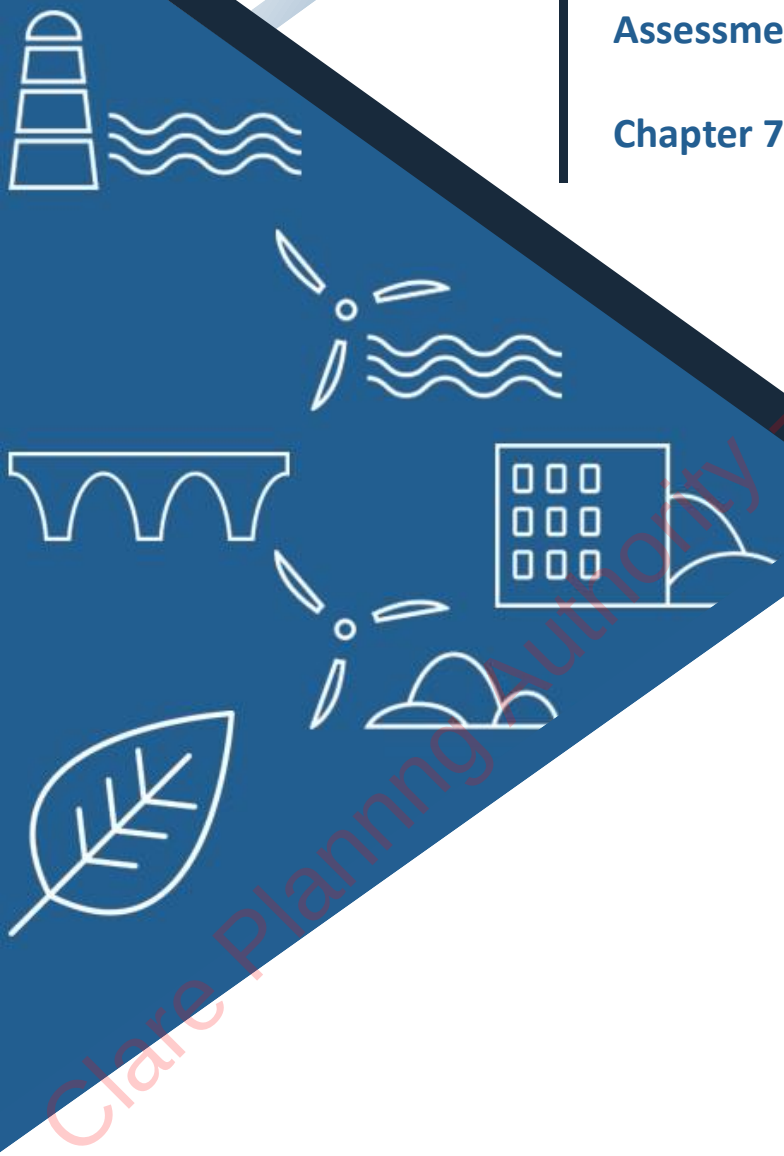
Illaunbaun Wind Farm - Environmental Impact Assessment Report

Chapter 7: Population and Human Health



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ACRONYMS

AADT	Annual Average Daily Traffic
ATCs	Automatic Traffic Counters
BS	British Standard
BSc	Bachelor of Science
CDP	County Development Plan
CEMP	Construction Environmental Management Plan
CMP	Construction Management Plan
CSO	Central Statistics Office
CTMP	Construction Traffic Management Plan
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
EU	European Union
GDG	Gavin and Doherty Geosolutions Ltd.
HGV	Heavy Goods Vehicle
HIA	Health Impact Assessment
HSE	Health Service Executive
IEMA	Institute of Environmental Management and Assessment
IPH	Institute of Public Health
MEngSc	Master of Engineering and Science
NIAH	National Inventory of Architectural Heritage
NMI	National Museum of Ireland
NO_x	Nitrogen Oxides
NPWS	National Parks and Wildlife Service
NRA	National Roads Authority
NSL	Noise Sensitive Locations
PO	Preservation Order
PPE	Personal Protective Equipment
PSCS	Project Supervisor Construction Stage
RMP	Record of Monuments and Places
RPS	Record of Protected Structures
SEA	Strategic Environmental Assessment
TII	Transport Infrastructure Ireland
U.S.	United States
UK	United Kingdom
USA	United States of America
VSL	Vibration Sensitive Locations
WHO	World Health Organisation

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7 POPULATION AND HUMAN HEALTH

7.1 INTRODUCTION

This chapter of the Environmental Impact Assessment (EIA) Report presents the assessment of the likely significant effects (as per the "EIA Regulations") of the Proposed Development on Population and Human Health arising from the construction and operation of the Proposed Development, both alone and cumulatively with other plans and projects. This chapter was informed by the Illaunbaun Wind Farm EIA Scoping Report, which was issued to the following topic-relevant stakeholders:

- Clare County Council
- National Parks and Wildlife Service (NPWS)
- Department of Transport, Tourism and Sport
- Minister for Rural and Community Development

The EIAR presents the current scope of the Proposed Development, which is described in Chapter 5: Project Description. Please see Chapter 6: Project Scoping and Consultation for full details of consultation undertaken at the EIA scoping stage of the project.

The assessment presented in this chapter has been informed by the following chapters:

- Chapter 11: Air Quality
- Chapter 12: Climate
- Chapter 13: Noise and Vibration
- Chapter 15: Landscape and Visual Impact
- Chapter 17: Material Assets
- Chapter 19: Traffic and Transport

This chapter provides a summary of topic-relevant guidance and outlines the data sources used to characterise the Population and Human Health baseline. Building on the general EIAR methodology outlined in Chapter 1: Introduction and Methodology, the topic-specific methodology followed in assessing the impacts of the Proposed Development on topic-specific environmental receptors is set out, as is the assessment of likely effects on the topic-specific receptors arising from the construction, operation and decommissioning of the Proposed Development. Relevant mitigation measures, following the 'mitigation hierarchy' of avoidance, minimisation, restoration and offsets, and/or monitoring requirements, are proposed in respect of any significant effects, and a summary of residual impacts is provided.

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7.1.1 RELEVANT LEGISLATION AND GUIDELINES

7.1.1.1 LEGISLATION

The 1985 (85/337/EEC) and 2011 (2011/92/EU) EIA Directives refer to *Human Health* and *Human Beings* as the corresponding environmental factor. The 2014 EIA Directive (2014/52/EU) changes this factor to *Population and Human Health*.

While the 2014 Directive (2014/52/EU), gives no specific guidance on the meaning of the term Human Health, the same term was used in the SEA Directive (2001/42/EC). The Commission's SEA Implementation Guidance states

> "The notion of human health should be considered in the context of other issues mentioned in paragraph (f)".

Paragraph (f) lists the environmental factors including soils, water, air, etc). Annex IV of the amended EIA Directive requires an EIAR to contain

> "A description of the factors specified in Article 3(1) likely to be significantly affected by the project: population, human health […]"

Other relevant legislation includes:

- Ambient Air Quality Directive (2008/50/EC)
- Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011)
- Air Quality Standards Regulation 2022 (S.I. 739 of 2022)
- Ambient Air Quality Directive (2024/2881/EC)

7.1.1.2 GUIDANCE

The 2002 EPA EIS Guidelines (EPA, 2002) state that health is considered through assessment of the environmental pathways through which it could be affected, such as air, water or soil:

> "The evaluation of effects on these pathways is carried out by reference to accepted standards (usually international) of safety in dose, exposure or risk. These standards are in turn based upon medical and scientific investigation of the direct effects on health of the individual substance, effect or risk. This practice of reliance upon limits, doses and thresholds for environmental pathways, such as air, water or soil, provides robust and reliable health protectors [protection criteria] for analysis relating to the environment"

The 2017 EPA guidelines (EPA, 2017) state:

> "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. and that assessment of other health & safety issues are carried out under other EU Directives, as relevant. These may include reports prepared under the Integrated Pollution Prevention and Control, Industrial Emissions,

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> Waste Framework, Landfill, Strategic Environmental Assessment, Seveso III, Floods or Nuclear Safety Directives. In keeping with the requirement of the amended Directive, an EIAR should take account of the results of such assessments without duplicating them."

The EPA 2022 'Guidelines on the Information to be contained in EIAR' (EPA, 2022) highlight that the EIA Directive (as amended) and state that:

> "The environmental impact assessment shall identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of a project on the following factors: a) population and human health; […]"

IEMA (2017) states that Health Impact Assessment (HIA) and EIA are separate processes, and whilst a HIA can inform EIA, a HIA alone will not satisfy the requirements of the EIA Directive with regards to human health. Also, HIA is not typically undertaken for major infrastructure projects in Ireland (such as the Proposed Development) and is more widely included as a non-statutory document, prepared voluntarily. In order to undertake an accurate HIA, qualitative and quantitative baseline health data is necessary as without detailed baseline data, it is not possible to determine the quantitative impacts that a development such as this may have on a population's health. In the absence of localised data such as for townlands or electoral divisions, countywide data may be used, however for a development of this size, the generalised data will only give an estimate of potential impacts on human health.

The 2021 HIA Technical Guidance, published by the Institute of Public Health (IPH, 2021), serves as a comprehensive resource for policymakers, community organisations, and practitioners in Ireland. This guidance document aims to facilitate the integration of health considerations into decision-making processes across various sectors which overall promotes healthier communities and reduces health inequalities. The guidance outlines the stages of conducting HIAs through screening, scoping, appraisal, reporting and monitoring. Each stage of the process is explained with methodologies and tools to assess potential health impacts effectively. This guidance represents an update to the 2009 edition, reflecting advancements in the field and aligning with international best practices to effectively address public health challenges.

This chapter has also considered the following guidance documents:

- British Standard (BS) (2014) 5228-1:2009+A1:2014 – *Code of Practice for Noise and Vibration Control on Construction and Open Sites Part 1: Noise*;
- EPA (2016) *Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4);*
- IEMA (2023) *IEMA Guidelines: Environmental Assessment of Traffic and Movement*
- U.S. EPA (2016) *Health Impact Assessment Resource and Tool Compilation;*
- World Health Organisation (WHO) (2014) *Regional Office for Europe. Health in impact assessments: opportunities not to be missed*;

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- World Health Organisation (WHO) (2016) *Dioxins and their effects on Human Health WHO Fact sheet No. 225;*
- World Health Organisation (WHO) (2009a) *Night Noise Guidelines for Europe;*
- World Health Organisation (WHO) (2009b) *Guidelines for Community Noise, WHO 1999;*
- World Health Organisation (2021) *Global air quality guidelines: particulate matter (PM2.5 and PM10), ozone, nitrogen dioxide, sulphur dioxide and carbon monoxide;* and,
- World Health Organisation (WHO) (2018) *Environmental Noise Guidelines for the European Region 2018.*

7.2 ASSESSMENT METHODOLOGY

As recommended by the EPA (2022), the assessment of the impacts on population and human health has been informed by assessments of the factors under which human health effects might occur, as addressed elsewhere in the EIAR. This chapter of the EIAR, therefore, draws on information presented in the following chapters:

- Chapter 11: Air Quality
- Chapter 12: Climate
- Chapter 13: Noise and Vibration
- Chapter 15: Landscape and Visual Impact Assessment
- Chapter 17: Material Assets
- Chapter 19: Traffic and Transport

The assessment of effects on human health described below has been provided to satisfy the EIA Directive and does not constitute an HIA.

The assessment of the significance of effects is a professional judgement based on the sensitivity of the receptor and the magnitude of any change.

The methods used for assessment of effects on population is based on the EPA Guidelines (2022), as set out in Chapter 1: Introduction and Methodology of the EIAR, the IEMA (2022) EIA guidance, and expert judgement.

7.2.1 STATEMENT OF COMPETENCE

This chapter was prepared by David Cahill, an Environmental Scientist at Gavin & Doherty Geosolutions (GDG). David holds a Bachelor's degree in Environmental Science and a Master's degree in Sustainable Energy Engineering, both from University College Cork. He has 2 years of professional experience in the preparation of Environmental Impact Assessment Reports (EIARs) and Scoping Reports for both onshore and offshore wind energy developments.

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7.2.2 CONSULTATION

As part of the EIA scoping consultation, the project team engaged with a number of relevant consultees in February 2025. Issues raised by consultees that are directly or indirectly relevant to population and human health – such as noise, road safety, water supply and shadow flicker – have been considered within this chapter, in line with EPA (2022) guidance on determinants of health. Of the consultees that responded, those relevant to population and human health include:

Transport Infrastructure Ireland (TII), whose response requested that the EIAR give adequate consideration to the Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes (National Road Authority (NRA), 2014), consider the European Communities (Environmental Noise) Regulations, 2018 (S.I. No. 549 of 2018), and identify the methods/techniques proposed for any works traversing or in proximity to the national road network. These matters are relevant to population and human health, particularly in relation to potential health impacts from construction noise and road traffic. The guidance documents and regulations requested by the TII are considered in the Noise and Vibration section (Chapter 13) of this EIAR. Chapter 19 (Traffic and Transport) of this EIAR also identifies the methods and techniques proposed for any works traversing or near the national road network.

The Department of Transport recommended the inclusion of a condition requiring the developer to comply with all appropriate standards, and in particular the Guidelines for Managing Openings in Public Roads, 2017, in order to ensure orderly development. The application of this guidance contributes to minimising community disturbance and protecting health and safety during construction. These guidelines have been considered in the preparation of Chapter 19 of this EIAR (Traffic and Transport).

The Health Service Executive (HSE) raised a number of issues of direct relevance to this chapter. These included potential effects on public water supply reservoirs in the Rockmount area, and any likely significant effect on drinking water supplies, including private wells. The HSE also requested that the EIAR clearly identify potential noise and vibration impacts on all noise-sensitive locations and assess the appropriateness and effectiveness of the proposed mitigation measures. Furthermore, the HSE recommended that a shadow flicker assessment be undertaken, including identification of all sensitive receptors (such as existing and permitted dwellings) and any proposed mitigation measures. These issues are addressed respectively in Chapter 10 & 11 (Hydrogeology and Hydrology), Chapter 13 (Noise and Vibration), and Chapter 14 (Shadow Flicker) of this EIAR.

7.2.3 DATA SOURCES

This chapter of the EIAR draws on information from the following sources:

- Central Statistics Office (CSO) (www.cso.ie), Central Statistics Office (CSO), Census 2016, 2022.
- Central Statistics Office (2023), Live Register Data – Information relating to population and human health, population, local economy, income and employment.
- Department of Health. (2019). Healthy Ireland outcomes framework. Government of Ireland.
- Department of Health. (2022). Health in Ireland: Key trends 2022. Government of Ireland.

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- The Department of Education and Skills (www.education.ie)
- Environmental Protection Agency. (n.d.). EPA website – Water quality data, human health data, and guidelines on the information to be contained in EIARs. Retrieved from https://www.epa.ie
- Health Service Executive. (n.d.). HSE county health profiles – Health statistics within the study area. Retrieved from https://www.hse.ie
- Lenus Health Repository. (2015). Health profile 2015 Clare. Retrieved from https://www.lenus.ie/bitstream/handle/10147/584047/Clare.pdf?sequence=1
- Project Ireland 2040 – Department of Public Expenditure, NPD Delivery and Reform. (2019). Project Ireland 2040. Government of Ireland.
- Pobal HP Relative Deprivation Index (2023) https://data.pobal.ie/Portal/apps/sites/#/pobal-maps
- Clare County Council. (2024). Clare County Council Noise Action Plan 2024-2028. Clare County Council.
- Clare County Council. (2023). Clare County Development Plan 2023-2029. Clare County Council.

The demographic and population statistics quoted in this chapter are drawn from the 2016 and 2022 Census. Data from the Labour Force Survey was also utilised in this study.

7.2.4 LIMITATIONS OF ASSESSMENT

The assessments presented in this chapter are based on the assumption that all individual within the Study Area's population have equal sensitivity to the potential effects assessed. Due to the lack of detailed health data and age profiles specific to the Study Area, it is not possible to establish a sensitivity hierarchy within the Population.

As socio-economic determinants of health such as employment and income generation, and relative deprivation, can have effects reaching beyond the identified Study Area, the Irish average is used for comparison.

As this chapter draws on information contained in other relevant chapters of the report, this chapter is also bound by the limitations outlined in those specific chapters.

7.2.5 APPROACH TO ASSESSMENT OF EFFECTS

The baseline information obtained has been used to provide an understanding of the value of each receptor relevant to this topic (the 'baseline scenario'), and its sensitivity to the potential impacts associated with the construction and operation of the Proposed Development.

The baseline scenario has been determined with due consideration of the 'do nothing' scenario.

The 'source-pathway-receptor' model has been used to identify potential impacts resulting from the proposed project activities on the environment and sensitive receptors within it.

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The potential environmental effects identified have been assessed using a systematic approach to identify and evaluate the significance of the potential impacts both alone and in combination with other plans and projects.

Effects can be beneficial (positive), neutral or adverse (negative) in nature.

Significance of effects has been categorised as follows:

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

Effects determined as slight or lower are considered to have 'no likely significant effect'. Any effect with a greater than moderate significance is considered to have a 'likely significant effect'.

The assessment described above includes consideration of mitigation measures that are incorporated into the design (i.e. primary mitigation) and which are intended to prevent, reduce and where possible offset any significant adverse impacts on the environment.

Where potentially significant adverse effects have not been eliminated by project design, further mitigation measures (i.e. secondary mitigation) have been proposed.

For each significant effect identified, appropriate secondary mitigation measures are prescribed. Secondary mitigation measures have been informed by stakeholder engagement and determined by the relevant technical experts.

Where relevant, the significance of residual effects is determined for each significant effect, considering all proposed mitigation.

In cases where uncertainty of residual effects is identified within the EIAR, or the success of implemented mitigation measures requires validation, commitments are made for the provision of monitoring.

7.2.6 STUDY AREA: POPULATION RECEPTORS

The Study Area for Population receptors for this Chapter of the EIAR has been identified as the Electoral Divisions (EDs) containing the Proposed Development and any EDs immediately adjacent to

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the Proposed Development (Figure 7-1:). This consists of the Ballyvaskin and Moy electoral divisions.

Socio-economic determinants of health such as employment and income generation and relative deprivation will have a wider scope of influence than the above environmental health determinants. As this wider scope is difficult to specify, the Irish average has been used for comparison.

7.2.6.1 RECEPTOR SENSITIVITY

Although it is known that within the identified population, there will be varying levels of sensitivity to impacts, it is not possible to differentiate sensitivity accurately at a population level, therefore it is assumed that for Population receptors, the population within the Study Area are uniformly sensitive to the population impacts assessed in this Chapter of the EIAR.

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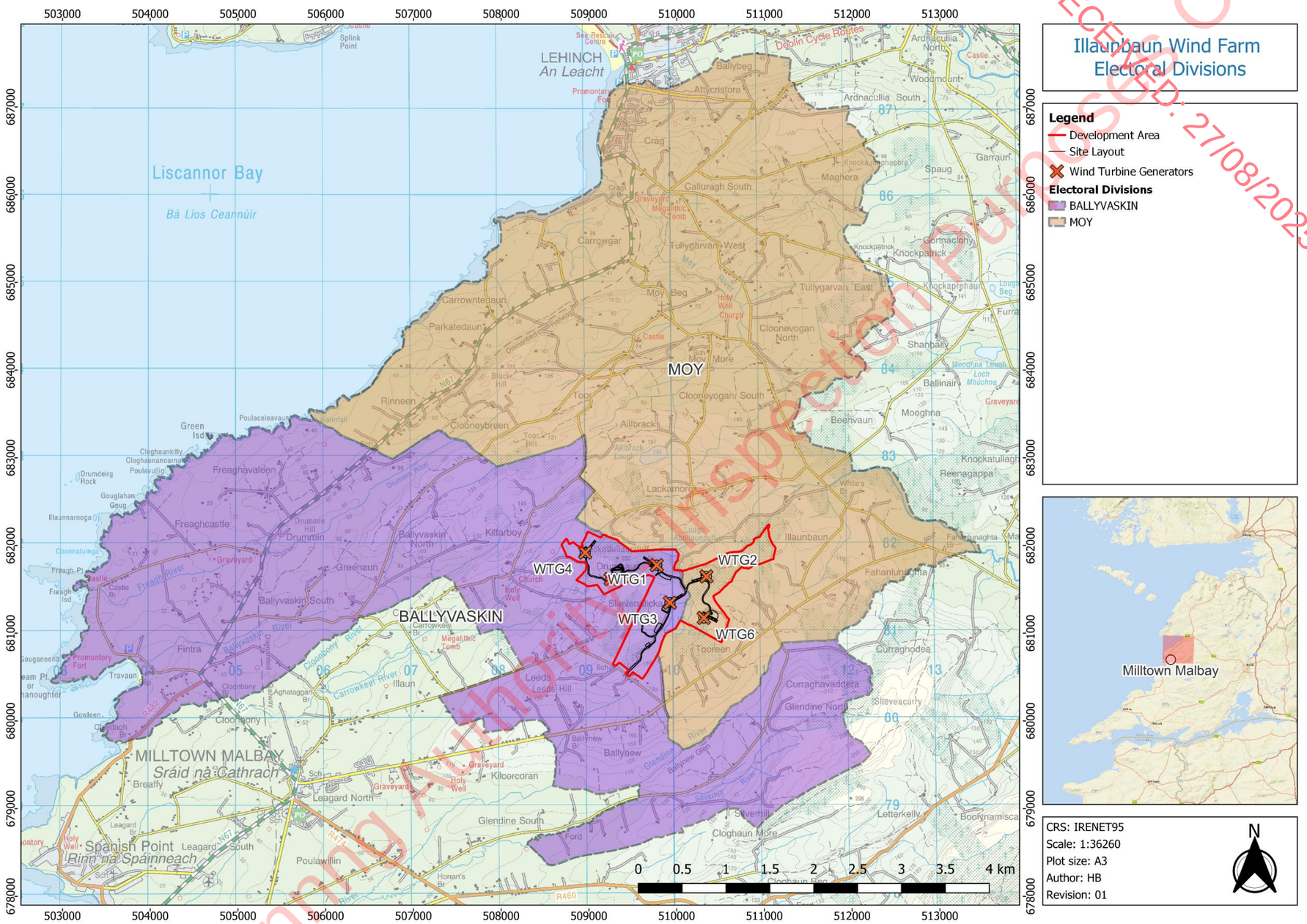

Figure 7-1: Population Study Area

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7.2.7 STUDY AREA: HEALTH RECEPTORS

Human health receptors include environmental health determinants such as air quality or noise which are likely to have impacts to human health at a local level. As this chapter considers receptors identified in other chapters (Air Quality, Transportation, Noise and Vibration, and Visual Amenity, the study areas for these topics, align with those identified in each topic-specific chapter, which align with the relevant topic-specific guidance.

Table 7-1: Human Health Receptors

Receptor	Chapter	Study Area
Population Sensitive to Flood Risk	10: Hydrology, Water Quality and Flood Risk	Site Boundary
Dust Sensitive Receptors	11: Air Quality	Sensitive Receptors within 20 m, 50 m, 100 m and 250 m of the Site
Noise Sensitive Locations (NSL)	13: Noise and Vibration	All residential receptors within 2 km of the Wind Farm
Vibration Sensitive Locations (VSL)	13: Noise and Vibration	All residential receptors within 2 km of the Wind Farm
Receptors Sensitive to Visual Impact	15: Landscape and Visual Impact	Receptors within 20 km of the Wind Farm
Road Users	19: Traffic & Transport	Road users as identified in

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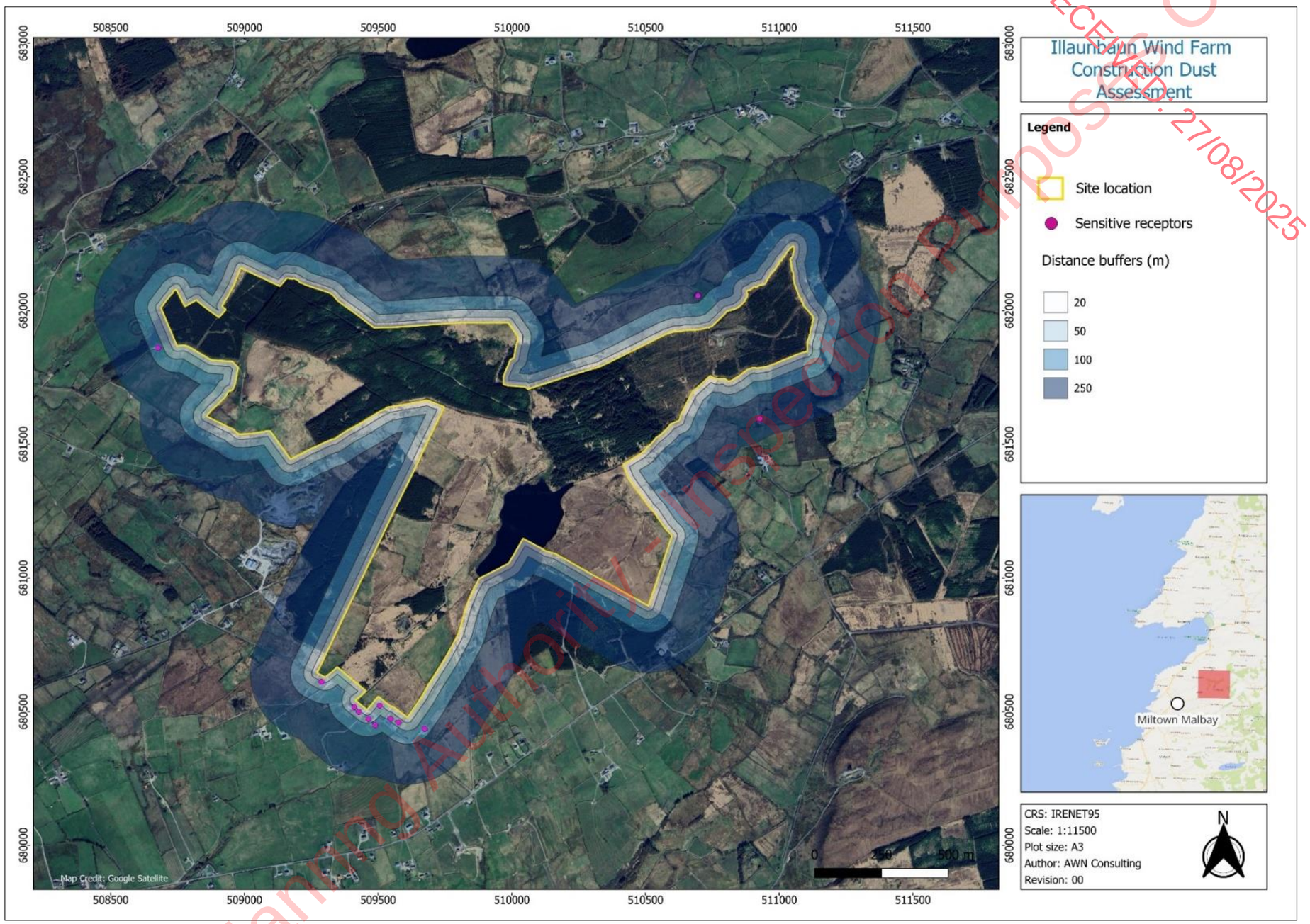

Figure 7-2: Air Quality Study Area

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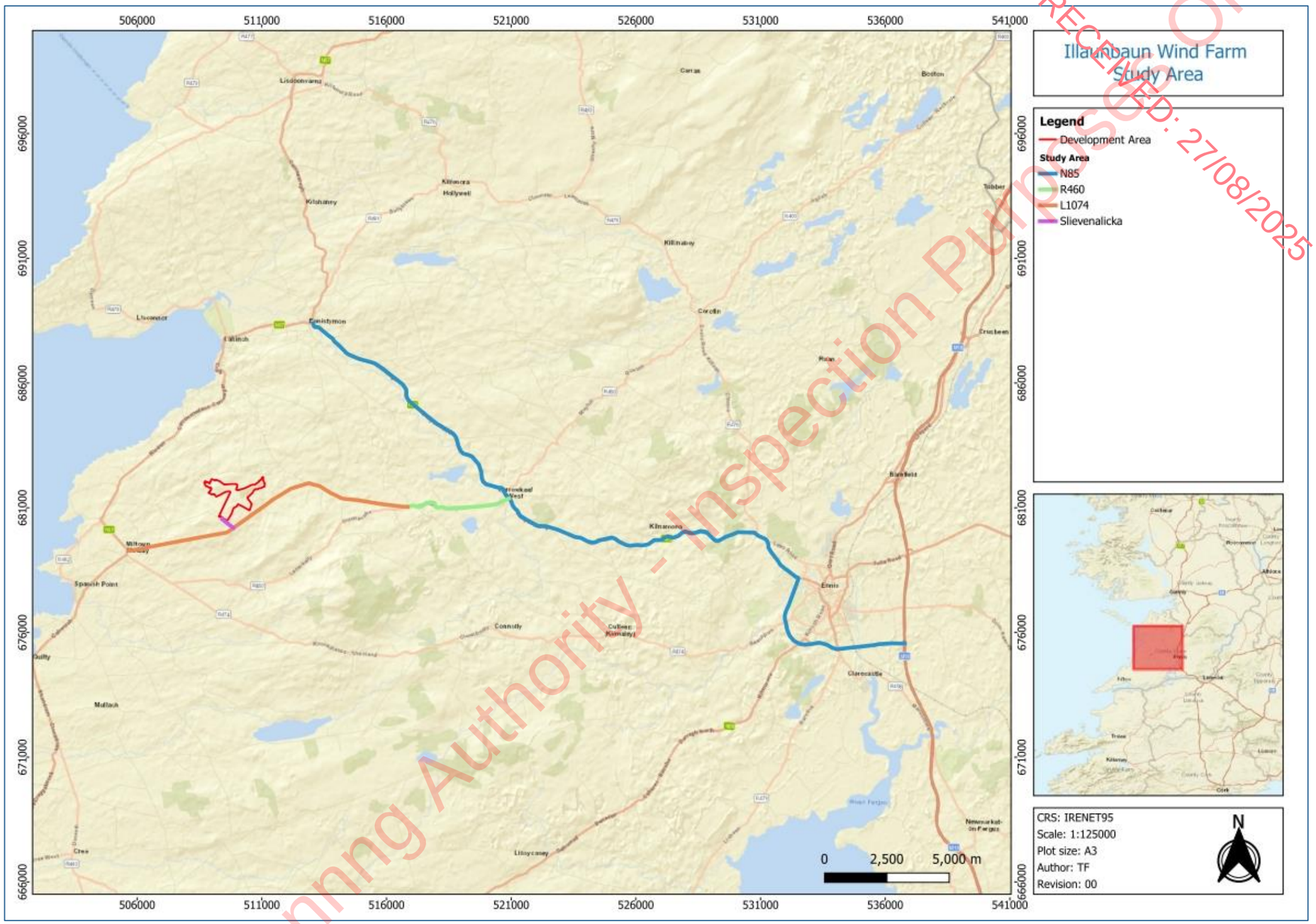

Figure 7-3: Road Users Study Area

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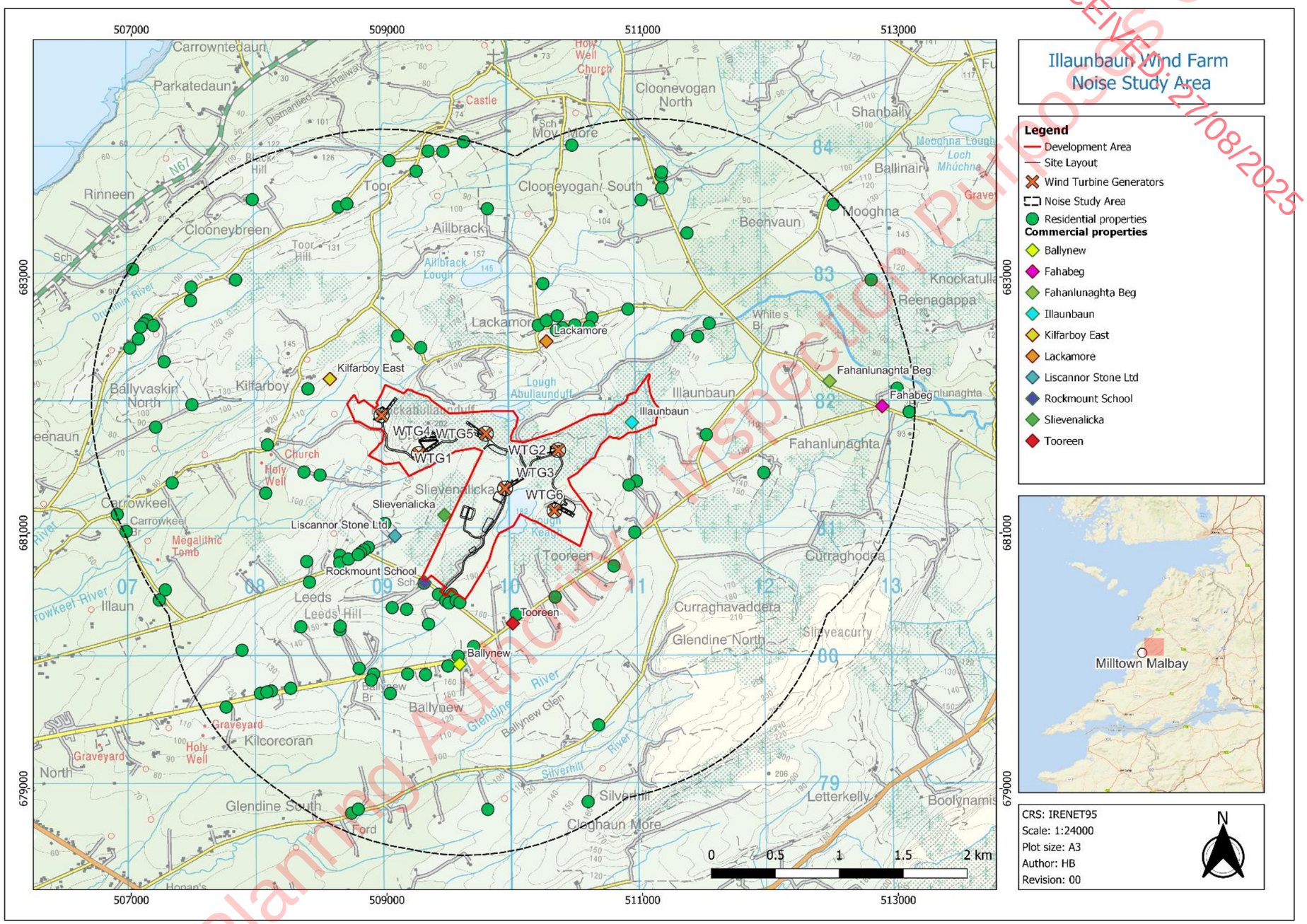

Figure 7-4: Noise Study Area

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7.3 BASELINE: POPULATION AND HUMAN HEALTH IN RECEIVING ENVIRONMENT

7.3.1 EMPLOYMENT

Data from the 2022 census showed that in 2022, 56,144 people (aged 15 and over) were at work in Clare, an additional 6,633 people compared to the figured recorded in the 2016 census (CSO, 2016), showing an increase of 13% between 2016 and 2022 (CSO, 2023). According to the 2022 census, Clare's employed population increased by 13% in 2022 compared to 2016, lower than the national average increase over this period, which was 16%.

7.3.2 SETTLEMENT AND LAND USE PATTERNS

The Proposed Development is located across multiple landholdings, comprising a combination of private and forestry lands. In the area surrounding the Proposed Development are a minor number of residential and commercial dwellings, including some farmland.

7.3.3 BASELINE POPULATION

Results of the Census 2022 have detailed that the number of people living in Clare is now at 127,419, an increase of 8,602 on the 118,817 recorded in 2016 (CSO, 2022). Data from the 2022 census showed that Ireland had a population of 5,149,139 as of April 2022. Compared to figures from April 2016, the population had increased by 387,274, an 8.1% increase over the four-year period.

The population in Ballyvaskin and Moy were 422 and 765 respectively according to the 2022 census data, compared to 399 and 692 respectively in 2016.

7.3.4 DEMOGRAPHIC TRENDS

The average age of Clare's population in April 2022 was 40.1 years, compared to 38.5 years in April 2016. Nationally the average age of the population was 38.8, up from 37.4 in April 2016. The number of people aged 65 and over increased by 23% in Clare and 22% nationally in 2022 compared to 2016 figures.

Of Clare's population, 65,021 were female and 62,917 were male, which means there were 97 males for every 100 females. In Ireland overall there were 2,604,590 females and 2,544,549 males or 98 males for every 100 females.

Within the population Study Area, consisting of the electoral divisions Ballyvaskin and Moy, the population consisted of 559 males and 532 females in 2016 and 601 males and 586 females in 2022.

7.4 HUMAN HEALTH

In 2022, 83% of people in Clare stated that their health was good or very good compared with 87% in 2016. This is a similar trend to the national figures, which also showed a 4% decrease in the good/very good categories, from 87% to 83%.

As specific health data for individuals in the Study Area is confidential, it is difficult to establish a local profile or provide specific detail for the Study Area. Due to this difficulty, an overall community health profile is being applied to account for this difficulty in acquiring localized data.

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Health profiles for all Local Authority areas in Ireland have been published by the Health Services Executives, Lenus and the Irish Health Repository, although the most recent publications are from 2015. The publication for County Clare was made in 2015 and considers data over the period 2006-2012.

Based on the 2015 Clare Health Profile published by Lenus (Lenus, 2015):

- Clare has the highest incidence rate nationally of female breast cancer and lowest incidence nationally of female lung cancer.
- Clare has a lower-than-average cancer mortality rate for all ages.
- The overall birth rate is 14.4 and birth rates to those aged under 20 is 9.1, which is lower than the national figures of 15.8 and 12.3.
- As of 2015, Clare was also the thirteenth most affluent local authority area nationally with 95% of the population ranging from affluent to marginally below average affluence.

It is important to note that the above data refers to the entire population of County Clare and is based on 2006-2012 figures. Although this data is taken to be the most accurate, available data, it must also be noted that this data is over a decade old and may not accurately reflect the current state of human health within the Study Area.

Impacts on air quality and the effects of noise and vibration from the Proposed Development are the main considerations for human health for this assessment.

7.4.1.1 AIRBORNE NOISE AND DUST

As described in Chapter 13 (Noise and Vibration) of this EIAR, baseline noise monitoring was undertaken between 7th November 2023 and 1st December 2023 at four different locations surrounding the Proposed Development Site. Noise data was recorded for a representative range of wind speeds during the monitoring period, correlating with the onsite LiDAR.

Consultation was carried out with landowners who were familiar with the site. Noise level monitoring was carried out at the dwellings nearest to the Proposed Development with permission from the householders / landowners.

Further to collecting and downloading the noise level meter at Noise Monitoring Location 1 (NML1), it was noted that it had developed a fault and thus the data could not be relied upon. The results of the three remaining NML's can be seen in Table 7-2: :

Table 7-2: Prevailing Background Noise Levels

Monitoring Location	Prevailing Background noise levels $L_{90,10min}$ dB(A)								
	Standardised Mean 10 m height wind speed (m/s)								
		4	5	6	7	8	9	10	11	12
NML2	Day	20.0	20.7	21.7	23.0	24.6	26.3	28.1	30.1	32.1

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Monitoring Location	Prevailing Background noise levels $L_{90,10min}$ dB(A)								
	Standardised Mean 10 m height wind speed (m/s)								
		4	5	6	7	8	9	10	11	12
	Background +5	25.0	25.7	26.7	28.0	29.6	31.3	33.1	35.1	37.1
	Night	20.3	21.3	22.5	23.9	25.4	26.9	28.6	30.3	32.1
	Background +5	25.3	26.3	27.5	28.9	30.4	31.9	33.6	35.5	37.1
NML3	Day	24.0	24.5	25.4	26.6	28.2	30.0	32.0	34.1	36.4
	Background +5	29.0	29.5	30.4	31.6	33.2	35.0	37.0	39.0	41.4
	Night	24.3	24.8	25.6	26.6	27.8	29.2	30.8	32.5	34.3
	Background +5	29.3	29.8	30.6	31.6	32.8	34.2	35.8	37.5	39.3
NML4	Day	27.3	27.2	27.6	28.3	29.3	30.5	31.9	33.5	35.2
	Background +5	32.3	32.2	32.6	33.3	34.3	35.5	36.9	38.2	40.2
	Night	25.7	26.2	26.9	27.8	28.8	30.0	31.3	32.7	34.3
	Background +5	30.7	31.2	31.9	32.8	33.8	35.0	36.3	37.7	39.3

Chapter 13 of this EIAR derived noise limits for the Proposed Development based on the limits contained within the wind Energy Development Guidelines 2006 and on the background levels obtained in Table 7-2: , the derived noise limits are as follows:

Table 7-3: Derived Noise Limits

Monitoring Location	Prevailing Background noise levels $L_{90,10min}$ dB(A)								
	Standardised Mean 10 m height wind speed (m/s)								
		4	5	6	7	8	9	10	11	12
NML1	Day	40.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0
	Night	40.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0
NML2	Day	40.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0
	Night	40.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0
NML3	Day	40.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0
	Night	40.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0
NML4	Day	40.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0
	Night	40.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0

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As seen in Table 7-2: and Table 7-3: , the prevailing background noise levels did not exceed the derived noise limits during the baseline survey.

7.4.1.2 AIR QUALITY

Chapter 11 (Air Quality) of this EIAR describes the baseline for air quality according to the Framework Direct on Air Quality (1996/62/EC), in which, four air quality zones have been defined in Ireland for air quality management and assessment purposes outlined in the EPA's document *Air Quality in Ireland 2023* (EPA, 2024). Monitoring data and the results from previous air quality assessments can be found on the EPA website. The nearest Air Quality monitoring station to the Proposed Development can be found in Ennistymon. Based on the baseline examination undertaken in Chapter 11, the air quality in the area of the Proposed Development is generally good, with concentrations of the key pollutants generally well below the relevant limit values. However, the limit values will be reducing in 2030 due to Directive (EU) 2024/2881.

7.4.2 AMENITY

7.4.2.1 VISUAL AMENITY

For a detailed description of the visual amenity baseline, please see Chapter 15: Landscape and Visual Impact of this EIAR.

7.4.2.2 RECREATIONAL ACCESS

The nearest tourism attractions to the Proposed Development occur in Miltown Malbay, which has a rich cultural and music tradition, including the 'Music Makers' building in the Miltown Malbay town centre. Miltown Malbay resides outside of the Study Area identified in Figure 7-1: and thus the Proposed Development will not have any impacts on access to any recreational amenities.

7.4.2.3 CULTURAL HERITAGE AMENITIES

As described in Chapter 16 (Archaeology and Cultural Heritage) of this EIAR, no previous archaeological investigations have been undertaken within the Proposed Development Boundary or in the surrounding townlands:

- No stray finds are recorded in the National Museum of Ireland (NMI) for the townlands located within or adjacent to the Proposed Development.
- No World Heritage properties or candidate sites are located within a 20 km radius of the Proposed Development.
- No national monuments or Preservation Order (PO) sites are located within the Proposed Development Boundary and none are located within 5 km of the proposed wind turbine locations.
- There are no nationally significant complexes in elevated positions or with views integral to the setting of the monument within a 10 km radius of the proposed wind turbine locations.
- There are no recorded monuments (RMP sites) within the proposed wind farm development area boundary or immediately adjacent to it.

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- There are five Record or Monument and Place (RMP) sites within 1 km of the proposed wind farm, and a further 10 RMP sites located with a 1 – 2 km radius of the Proposed Development.
- There are no Record of Protected Structures (RPS) within or in proximity to the Proposed Development, and only one RPS within a 2 km radius of the Proposed Development.
- No National Inventory of Architectural Heritage (NIAH) Building and Garden Surveys are located within a 2 km radius of the Proposed Development.
- There are no Architectural Conservation Areas (ACAs) located within a 2 km radius of the Proposed Development.

7.4.3 SOCIO-ECONOMIC INDICATORS

Within the Study Area consisting of Ballyvaskin and Moy, Ballyvaskin achieved a deprivation index of marginally above average, while Moy achieved a deprivation index of marginally below the average Irish relative deprivation index in 2022.

Key employment sectors in County Clare are focused on the public sector e.g., public administration, primary education, health care, along with farming and residential care/social work. In terms of the private sector, key areas are medical and dental instruments and construction. Retail and hotels are also among Clare's top employers. The largest full-time occupations are administration, teaching, caring and farming. The largest numbers employed part-time are in caring, elementary administration, sales and administrative occupations.

The primary economic drivers in county Clare are Shannon Airport and the Limerick-Shannon-Ennis economic corridor. Shannon International Airport is crucial to Clare's economic activity as it provides a direct route to the county for tourists and also commercial imports.

7.4.3.1 EDUCATION

There are three schools within the Population Study Area, Scoil Iosef Naofa, Carrowkeel (Ballyvaskin) hedge school and Rockmount National School.

7.4.3.2 TRANSPORT

The N85 is a national secondary road in County Clare routing approximately 32 km in a northwest direction from the M18 at Ennis, to the N67 at Ennistymon and bypassing the village of Inagh. The N85 provides a connection between the M18 motorway and the site, via the R460 and Ballard Road. A significant proportion of construction traffic is expected to use the N85 to access the site from the M18 motorway.

The R460 is a regional road in County Clare, routing approximately 58 km in a southwest direction from Gort, a town in County Galway, to its junction with the R474, approximately 2 km south of Miltown Malbay. In the context of the study area, the R460 routes approximately 4km west from Inagh to Bawnslieve, where three other local roads (L5208, L1074 and L1084) form a junction with the R460.

Ballard Road is a minor road leading from Miltown Malbay, in a generally east west direction. Ballard road is a rural road of varying width with narrow grass verges and a speed limit of 80 kph, with the

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exception of sections through settlements where the speed limit reduces to 50 kph. The minor road (Slievenalicka) from which the Proposed Development will be accessed is approximately 1.8 km east of Miltown Malbay.

The most likely route for construction traffic to the site will be from the M18, via the N85, R460, L1074 and Ballard Road to Slievenalicka, where the site access is located.

The Road Users Study Area can be seen in Figure 7-3: Road Users Study Area . A baseline study was also undertaken in Chapter 19 (Traffic) of this EIAR, the results of which can be seen in Table 7-4: . Table 7-5: and Table 7-6: .

Table 7-4: Study Area Annual Central Growth Rates

	County Clare	
Year	Light Vehicle	Heavy Vehicle
2016-2030	1.0156	1.0417

Table 7-5: Study Area Baseline Traffic Flows

Counter Location	Road Link Category	Source	2025 Base AADT	2025 Base HGV	Percentage HGV
1. Ballard Rd	Local Road	2023 ATCs Survey	425	38	9%
2. Slievenalicka	Public Road	2023 ATCs Survey	207	19	9%
3. N85 (s of Inagh)	National Secondary Road	2023 ATCs Survey	8,001	805	10%
4. N85 (s of Ennistymon)	National Secondary Road	TII 2024	6,559	141	2%

Table 7-6: Study Area Construction Year (2027) Baseline Traffic Flows

Counter Locations	2027 AADT	2027 HGV	Percentage HGV
1. Ballard Rd	440	41	9%
2. Slievenalicka	214	21	10%
3. N85 (s of Inagh)	8296	873	11%
4. N85 (s of Ennistymon)	6773	153	2%

Traffic data for the study area was sourced from the TII Traffic Count Data Website and commissioned traffic surveys at key locations as indicated on Figure 19.2. The Central Growth Rate for County Clare has been applied to the surveyed 2023 traffic flows and the TII 2024 traffic data to derive 2025 baseline traffic counts.

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7.4.3.3 INFRASTRUCTURE

Chapter 17: Material Assets of this EIAR found that the baseline data for electrical infrastructure within 600 m of the Proposed Development shows that one electrical mast currently sits within the Study Area. Chapter 17 of this EIAR also finds that although no telecommunications masts occur within the Study Area, five telecoms point to point microwave radio links currently pass through the Proposed Development Site.

Chapter 17 of this EIAR found that no gas infrastructure occur within the Proposed Development Site or grid connection route.

Based on data acquired from the EPA website (EPA, 2020), there are no existing watermains or wastewater infrastructure within 1 km of the Proposed Development.

7.4.4 SENSITIVE RECEPTORS

The EPA Advice Notes (2015) identify receptors as neighbouring landowners, local communities and other parties which are likely to be directly affected by the project.

The sensitive receptors which are considered in this Chater include:

- Existing residential and commercial dwellings
- Social, community and leisure users
- Users of the public road network surrounding the site

7.4.4.1 NOISE AND VIBRATION

Chapter 13: Noise and Vibration identified 98 receptors which have been assessed using predicted noise levels for the Proposed Development.

7.4.4.2 TRAFFIC AND ROAD TRANSPORT

As outlined in Chapter 19: Traffic & Transport, sensitive receptors include pedestrians, cyclists, and road users that use the local road network, this Study Area can be seen in Figure 7-3: Road Users Study Area .

7.4.4.3 AIR QUALITY

Figure 7-1: Population Study Area identifies the sensitive receptors to changes in air quality associated with the Proposed Development.

7.5 ASSESSMENT OF EFFECTS

7.5.1 “DO-NOTHING” SCENARIO

The ‘do-nothing scenario’ with regards to population in the Study Area assumes that past trends for population growth in the county and the Illaunbaun Study Area are expected to continue.

As the ‘do-nothing’ scenario assumes that the Proposed Development will not occur, it can be concluded that no effects will occur with regards to demographics, employment, settlement and

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land use patterns, education, public and active transport in the Study Area will occur, and thus they are expected to follow their natural trends if the Proposed Development is not developed.

7.5.2 CONSTRUCTION PHASE IMPACTS

The activities which will be undertaken during the Construction Phase of the Proposed Development are described in detail in Chapter 5: Project Description of this EIAR. The relevant activities and the potentially impacted receptors relevant to Population and Human Health are set out in

Table 7-7: Construction Phase Activities and Potentially Impacted Receptors

Activity	Receptor	Impacts
Temporary Site Establishment	NSLs, Road users, Population in Electoral Divisions	airborne noise, and dust, traffic nature and flow rate, Employment, , visual amenity,
Construction activities	NSLs and Population in Electoral Divisions	airborne noise and dust, Employment, visual amenity,

The potential impact identified could lead to the following effects on receptors, which are assessed below:

- Changes in Employment due to the Proposed Development
- Road User effects from changes in Transport Nature and Flow
- Amenity effects from changes in Visual Amenity
- Health effects from changes to local air quality
- Health effects from changes in noise and vibration exposure

As the Proposed Development does not include the construction or demolition of any residential dwellings, the Proposed Development will not have any impacts on population numbers and demographics in the Study Area.

As identified in Section 7.4.2.2, there are no recreational amenities within the Study Area, and thus there will be no impacts of the Proposed Development on recreation or tourism.

7.5.2.1 CHANGES IN EMPLOYMENT

The construction of the Proposed Development will require temporary employment of construction workers for approximately 18 to 24 months, from the start of onsite activities to the commissioning of the electrical system. This increase in employment will be temporary, beneficial, and not significant in EIA terms.

7.5.2.2 CHANGES IN TRANSPORT NATURE AND FLOW RATE

The effects of the Proposed Development on traffic receptors are assessed in detail in Chapter 19 (Traffic) of this EIAR. This chapter only includes information from Chapter 19 of this EIAR which is relevant to population and human health. In summary, the potential severance of communities due to changes in transport nature and flow rate was assessed during the construction phase of the

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Proposed Development and was found to have an adverse, local, short-term, direct, temporary, reversible, major/significant effect before the implementation of mitigation measures.

The potential for road vehicle driver and passenger delay due to changes in transport nature and flow rate was assessed during the construction phase of the Proposed Development and was found to have a slight, adverse, local, short-term, direct, temporary, reversible, major/significant effect before the implementation of mitigation measures.

Effects on non-motorised user delay and amenity due to changes in transport nature and flow rate was also assessed in Chapter 19: Traffic and Transport during the construction phase of the Proposed Development and was found to have an adverse, local, short-term, temporary, reversible and major/significant effect before the implementation of mitigation measures with regards to Population and Human Health receptors.

7.5.2.3 CHANGES IN VISUAL AMENITY

Changes in visual amenity have been assessed in detail in Chapter 15 of this EIAR. Overall, it is not considered that the proposed wind farm development will result in significant visual impacts at any surrounding receptors. Nonetheless, there will be some near-significant visual impacts (Moderate) at the nearest local receptors. Whilst the turbines will be often viewed in the context of some of the sensitive and susceptible sections of the Atlantic coastline, there is a strong sense that the turbines are located within a robust landscape as opposed to the more scenic and naturalistic lowland coastal areas. The results of this landscape and visual assessment tend to highlight why the development site is also located within a 'Strategic Area' for wind energy development, in the Clare CDP.

The visual effects due to the construction of the Proposed Development will be adverse, short-term, temporary, reversible and moderate to imperceptible, ultimately not significant in EIA terms with regards to Population and Human Health.

7.5.2.4 CHANGES TO LOCAL AIR QUALITY

Changes to local air quality and their potential effects on the identified receptors have been assessed in detail in Chapter 11 of this EIAR. The results of the assessments showed that construction dust emissions impact people and property will have an adverse, local, short-term, direct- temporary, reversible and not significant effect on Population and Human Health.

Construction Traffic Emissions have also been assessed with regards to Population and Human Health receptors and the results showed that the effects will be neutral, local, short-term, direct, temporary, reversible and imperceptible in EIA terms.

7.5.2.5 CHANGES IN NOISE AND VIBRATION EXPOSURE

Chapter 13 of this EIAR concludes that the effects of construction noise on the identified Population and Human Health receptors will be adverse, local, short-term, direct, temporary, reversible and not significant in EIA terms.

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7.5.3 OPERATIONAL PHASE IMPACTS

7.5.3.1 EFFECTS IN EMPLOYMENT

During the operation of the Proposed Development, it is expected that no more than 1-2 employees will be directly employed due to the operation of the Proposed Development. There will occasionally be employees on-site for maintenance and cleaning purposes. The Proposed Development will indirectly drive economy in the Study Area, improving the appeal of investment in the region by wind energy developers. Overall, these changes in employment will be permanent, beneficial and not significant in EIA terms.

7.5.3.2 EFFECTS IN TRANSPORT NATURE AND FLOW RATE

Once the Proposed Development is operational, the amount of traffic associated with a wind farm is minimal, relating to maintenance of the turbines only. It is estimated that on average there will be just single 4x4s accessing the Proposed Development Site from time to time.

Therefore, the effect of vehicle movements during the operational phase will be negligible. In respect of transport, the operational phase of the Proposed Development is therefore not assessed further.

7.5.3.3 EFFECTS IN VISUAL AMENITY

As assessed in Chapter 15 of this EIAR, the visual effects due to the operation of the Proposed Development will be adverse, long-term, permanent, irreversible and moderate to imperceptible, ultimately not significant in EIA terms with regards to Population and Human Health.

7.5.3.4 EFFECTS IN LOCAL AIR QUALITY

Chapter 11 of this report assessed the effects of construction activities on changes to local air quality. The results this showed that there is at most a medium risk of dust soiling impacts and a low risk of dust-related human health impacts associated with the proposed works. As a result, best practice dust mitigation measures associated with medium risk works will be implemented to ensure there are no significant impacts at nearby sensitive receptors. In the absence of mitigation, dust impacts are predicted to be direct, short-term, negative and slight.

7.5.3.5 EFFECTS IN NOISE AND VIBRATION EXPOSURE

Chapter 13 concludes that the effects of changes in noise and vibration exposure due to the Proposed Development on Population and Human Health receptors will be adverse, long-term, permanent, irreversible and moderate to imperceptible, and overall not significant in EIA terms.

7.5.3.6 EFFECTS OF SHADOW FLICKER

During the Operation of the Proposed Development, there is the potential for shadow flicker to occur. Chapter 14 of this EIAR has assessed the potential effects due to the Proposed Development. Chapter 14 considers the 'worst-case' scenario and the 'real-case' scenario.

Results of the assessment concluded that up to 55 out of the 156 receptors identified within the Study Area, will experience the effects of shadow flicker. Of these, in the real-case or expected

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shadow scenario where realistic meteorological conditions are applied, no properties are expected to exceed the recommended limit of 30 hours of flicker per year.

7.5.4 CUMULATIVE EFFECTS AND OTHER INTERACTIONS

The nearest operational wind farm is Boolinrudda Wind Farm, whose nearest turbine is located 3.9 km from the nearest proposed turbine (T6). There are currently no consented nor constructed wind farms within a 2 km range of the Proposed Development.

7.6 MITIGATION MEASURES

Primary mitigation measures are incorporated into the design of the Proposed Development with the aim of preventing, reducing, and where possible offsetting any significant adverse environmental impacts. Primary mitigation measures are incorporated into the design of the Proposed Development and are described in detail in Chapter 4: Project Description. Additional mitigation measures relevant to Population and Human Health are described below.

Generally, construction works will be conducted primarily between 7am to 7pm Monday to Saturday. Sunday working is not anticipated to occur. However, work outside of these hours may be required in exceptional circumstances.

To mitigate potential temporary community disturbance during construction, the final Construction Management Plan (CMP) and the Construction Environmental Management Plan (CEMP) will be implemented in full once finalised. The following mitigation measures are proposed as part of these documents:

- Access to the construction site will be restricted to authorised personnel only. Hoarding and fencing will be erected along boundaries as appropriate;
- The health and safety considerations and hazards present during the construction phase will be managed by the appointed Main Contractor and the 'Project Supervisor Construction Stage' (PSCS);
- The PSCS role will remain in place at the site from the beginning of work until the project has been completed;
- The Main Contractor will develop a site health and safety management plan to protect personnel working on the site and other members of the public who may be affected by the construction works; and
- The Main Contractor will implement a Construction Traffic Management Plan to manage instances where construction traffic may affect local road users.

7.6.1 CONSTRUCTION PHASE MITIGATION MEASURES

7.6.1.1 TRANSPORT NATURE AND FLOW RATES MITIGATION MEASURES

In accordance with the EIA Regulations mitigation is required to address these potential effects. It is therefore proposed to prepare and implement a comprehensive Construction Traffic Management

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(CTMP) which is intended to mitigate the identified effects by ensuring that they are minimised as far as possible within the Study Area to a level which is considered to be not significant.

The CTMP will identify measures to reduce the number of construction vehicles as well as identifying measures to mitigate the impact of vehicles. The CTMP will identify the programme of works, the agreed routes to Site and details of a Site Liaison Officer who would have responsibilities for managing traffic and transport impacts and effects. The CTMP will also identify measures to reduce and manage construction staff travel by private car, particularly single occupancy trips.

Prior to construction and once the Contractors have confirmed their suppliers, the CTMP will be updated in consultation with Clare County Council and An Garda Síochána as necessary. Potential measures could include (but are not limited to):

- Immediately upon commencement, all deliveries, operatives and visitors to the Proposed Development Site would report to the security gate and be required to sign in and out. All Site visitors will undergo a Site induction covering Health and Safety issues at the Contractor's temporary compound and will be required to wear appropriate Personal Protective Equipment (PPE) while onsite. This would be communicated to all early works contractors at their pre-start meeting;
- The main contractor would develop a logistics plan highlighting the access point for the project, loading bay, pedestrian / vehicular segregation, welfare, storage, security and material handling that would be enforced following full site establishment;
- Approved haul routes would be identified to the Proposed Development Site and protocols put in place to ensure that HGVs adhere to these routes;
- Prior to delivery of abnormal loads i.e. turbine components, the Applicant or their representatives, will consult with An Garda Síochána and Clare County Council Roads Departments to discuss the requirement for a Garda escort;
- Abnormal loads are likely to travel at night and outside the normal construction times as may be required by An Garda Síochána. Local residents along the affected route will be notified of the timescale for abnormal load deliveries;
- Works on public roads on the turbine delivery road and grid connection will be strictly in accordance with "Guidance for the Control and Management of Traffic at Road Works – 2nd Edition 2010" as well as "Traffic Signs Manual 2010-Chapter 8- Temporary Traffic Measures and Signs at Roadworks".
- All contractors would be provided with a site induction pack containing information on delivery routes and any restrictions on routes;
- Temporary construction site signage would be erected along the identified construction traffic routes to warn people of construction activities and associated construction vehicles;
- A construction traffic speed limit (for example, 25 kph) would be imposed through sensitive areas and on the wind farm site;

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- The construction material 'lay down' areas would allow for a staggered delivery schedule throughout the day, avoiding peak and unsociable hours (i.e. before 6 am and after 10 pm);
- An integral part of the progress meetings held with all trade contractors is the delivery schedule pro-forma. All contractors would be required to give details of proposed timing of material deliveries to the Site. At this stage, they would be given a specific area for delivery;
- The CTMP and the control measures therein would be included within all trade contractor tender enquiries to ensure early understanding and acceptance / compliance with the rules that would be enforced on this project;
- Under no circumstances would HGVs be allowed to lay-up in surrounding roads. All personnel in the team would be in contact with each other and with Site management, who in turn would have mobile and telephone contact with the subcontractors;
- All vehicles accessing the wind farm site shall either have roof mounted flashing beacons or will use their hazard lights;
- Roads would be maintained in a clean and safe condition;
- A wheel cleaning facility would be installed on-site during the construction period in order to reduce mud and debris being deposited onto the local road network;
- In addition, any dust generating activities will be minimised where practical during windy conditions, and drivers will adopt driving practices to minimise the creation of dust. Where conditions exist for dust to become friable, techniques such as damping down of the potentially affected areas will be employed; and
- To reduce dust emissions, vehicle containers/loads of crushed stone will be covered during both entrance and egress to the Site.

7.6.1.2 VISUAL AMENITY MITIGATION MEASURES

Outside of those landscape and visual mitigation measures that formed part of the iterative design process of this Development over a number of years, and which are embedded in the assessed Project, other specific landscape and visual mitigation measures are not considered necessary / likely to be effective. Thus, the impacts assessed in Chapter 15 of this EIAR are the equivalent of residual impacts in this instance.

7.6.1.3 LOCAL AIR QUALITY MITIGATION MEASURES

In terms of mitigation, only potential impacts associated with dust emissions on site require mitigation measures to be implemented. The proposed development has been assessed as having a medium risk of dust soiling impacts and a low risk of dust related human health impacts during the construction phase as a result of earthworks, construction and trackout activities. Therefore, the following dust mitigation measures shall be implemented during the construction phase of the proposed development. These measures are appropriate for sites with a medium risk of dust impacts and aim to ensure that no significant nuisance occurs at nearby sensitive receptors. The mitigation measures draw on best practice guidance from Ireland (DCC, 2018), the UK (IAQM (2024),

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BRE (2003), The Scottish Office (1996), UK ODPM (2002)) and the USA (USEPA, 1997). These measures will be incorporated into the overall Construction Environmental Management Plan (CEMP) prepared for the site. The mitigation measures proposed regarding air quality during the construction phase of the Proposed Development are described in Chapter 11: Air Quality of this EIAR.

7.6.1.4 NOISE AND VIBRATION MITIGATION MEASURES

No significant construction noise effects have been identified. Therefore, no specific mitigation measures are required. However, general guidance for controlling construction noise through the use of good practice given in BS 5228 will be followed. Construction and Decommissioning of the Proposed Development shall be limited to working times given and any controls incorporated in any planning permission.

7.6.2 OPERATIONAL PHASE MITIGATION MEASURES

7.6.2.1 AIR QUALITY MITIGATION MEASURES

During the operational phase of the proposed development, the works onsite will be limited to maintenance associated with the wind farm components. Although the intensity of activity will be only a small fraction of the construction phase, all employees and contractors that are on site will ensure that machinery used is properly maintained and is switched off when not in use to avoid unnecessary exhaust emissions from maintenance traffic.

7.6.2.2 NOISE AND VIBRATION MITIGATION MEASURES

As no significant noise and vibration effects have been identified during the operational phase of the Proposed Development, no mitigation measures are necessary to be implemented.

7.6.2.3 SHADOW FLICKER MITIGATION MEASURES

It is proposed that a shadow control system be installed to eliminate the potential for shadow flicker from the Proposed Development. Such systems are common in many wind farm developments and the technology has been well established. A case study in Scotland found that the use of turbine shut-down control modules for turbines which were causing shadow flicker at nearby offices was successful (Parsons Brinckerhoff, 2011).

7.7 ASSESSMENT OF RESIDUAL EFFECTS

7.7.1 CONSTRUCTION PHASE

When the dust mitigation measures detailed in the mitigation section of this report are implemented, the residual effect of fugitive emissions of dust and particulate matter from the site will be short-term, direct, localised, negative and not significant in nature and are not expected to cause nuisance at nearby receptors.

Best practice mitigation measures are proposed for the construction phase of the proposed development which will focus on the pro-active control of dust and other air pollutants to minimise generation of emissions at source. The proposed development has been assessed as having a low

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risk of dust-related human health effects. The mitigation measures that will be put in place during construction of the proposed development will further ensure that the impact of the development complies with all EU ambient air quality legislative limit values which are based on the protection of human health. Therefore, the residual effect of construction of the proposed development will be short-term, direct, negative and not significant with respect to human health.

7.7.2 OPERATIONAL PHASE

There are no predicted direct impacts to air quality during the operational phase of the proposed development. Emissions from infrequent maintenance vehicles have been assessed as having a long-term, direct, localised, neutral and imperceptible effect on air quality.

There will be indirect beneficial impacts to air quality from the generation of renewable electricity from the proposed development. There will be NO_X emission savings which may otherwise have been generated from fossil fuels. The generation of a minimum of 80 GWh of renewable electricity will result in a decrease in annual NO_X emission levels by 0.1% of the 2030 National Air Emissions Target of 40.6 kt. This is an indirect, long-term, imperceptible, positive effect on air quality.

7.8 MONITORING

7.8.1 CONSTRUCTION PHASE

7.8.1.1 CHANGES IN AIR QUALITY

The following monitoring measures are proposed to ensure the dust mitigation measures are working satisfactorily:

- Undertake regular on-site and off-site inspections, where receptors (including roads) are nearby, to monitor dust, record inspection results in the site inspection log. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary, with cleaning to be provided if necessary.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.

7.8.2 OPERATIONAL PHASE

7.8.2.1 CHANGES IN AIR QUALITY

There is no monitoring recommended for the operational phase of the proposed development as impacts to air quality are predicted to be imperceptible.

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7.9 SUMMARY

Table 7-8: Summary of Effects

Receptor Group	Receptor	Receptor Impact	Construction/ Operation	Activity	Impact	Magnitude	Sensitivity	Significance of Effect
Population	Population within the study area	Employment	Construction	Construction Activities	Increased employment	Low	Low	Temporary, slight, beneficial and not significant
Population	Population within the study area	Employment	Operation	Wind farm operation	Increased employment	Low	Low	Temporary, slight beneficial and not significant
Population	Road users in the study area	Traffic	Construction	Construction traffic	I) Increased Pedestrian Severance, ii) Delay, iii) Amenity, iv) Fear and Intimidation and v)	i) Slight adverse ii) slight adverse iii) slight adverse iv) slight adverse v) moderate	Medium	Temporary, moderately significant, negative and not significant

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Receptor Group	Receptor	Receptor Impact	Construction/ Operation	Activity	Impact	Magnitude	Sensitivity	Significance of Effect
Population	Road users in the study area	Traffic	Operation	Wind farm operation	Accidents and Safety	i) Slight adverse ii) slight adverse iii) slight adverse iv) slight adverse v) moderate	Medum	permanent, slight, negative and not significant
Amenity	Visual amenity receptors within 5 km of the site boundary	Visual Amenity	Construction	Construction Activities	Reduced visual amenity	Adverse, short-term, temporary, reversible and moderate to imperceptible in nature.	Medium to Low	Temporary, moderate to imperceptible
Amenity	Visual amenity receptors within 5 km of the site boundary	Visual Amenity	Operation	Wind farm Operation	Reduced visual amenity	Adverse, long-term, permanent, irreversible and moderate to imperceptible in nature.	Medium	Adverse, long-term, permanent, irreversible and moderate to imperceptible in nature and not significant

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Receptor Group	Receptor	Receptor Impact	Construction/ Operation	Activity	Impact	Magnitude	Sensitivity	Significance of Effect
Health	Dust Sensitive receptors within 20 m, 50 m, 100 m, and 250 m of the site boundary. Figure 7-2: Air Quality Study Area	Air quality	Construction	Construction phase traffic emissions,	Dust	Slight, adverse, local, short-term, direct, temporary, reversible	Low	Slight, adverse, local, short-term, direct, temporary, reversible and not significant
Health	Identified noise sensitive locations (Figure 7-4: Noise Study Area)	Noise and vibration	Construction	Construction noise and vibration effects	Noise and vibration	High	Low	adverse, long-term, permanent, irreversible and moderate to imperceptible and not significant

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Receptor Group	Receptor	Receptor Impact	Construction/ Operation	Activity	Impact	Magnitude	Sensitivity	Significance of Effect
Health	Dust Sensitive receptors within 20 m, 50 m, 100 m, and 250 m of the site boundary Figure 7-2: Air Quality Study Area	Air quality	Operation	Wind farm Operation	Dust	Medium	Low	long-term, localised, direct, neutral, imperceptible and non-significant
Health	Identified noise sensitive locations Figure 7-4: Noise Study Area	Noise and vibration	Operation	Wind Farm Operation	Noise and vibration	Medium	Low	

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Potential Effect	Construction / Operation	Beneficial / Adverse / Neutral	Extent (Site/Local/ National/ Transboundary)	Short term/ Long Term	Direct/ Indirect	Permanent / Temporary	Reversible / Irreversible	Significance of Effect (according to defined criteria)	Proposed mitigation	Residual Effects (according to defined criteria)
Severance of Communities	Construction	Adverse	Local	Short Term	Direct	Temporary	Reversible	Major/ Significant	CTMP	Not Significant
Road vehicle driver and passenger delay	Construction	Adverse	Local	Short Term	Direct	Temporary	Reversible	Major/ Significant	CTMP	Not Significant
Non-motorised user delay and amenity	Construction	Adverse	Local	Short Term	Direct	Temporary	Reversible	Major/ Significant	CTMP	Not Significant

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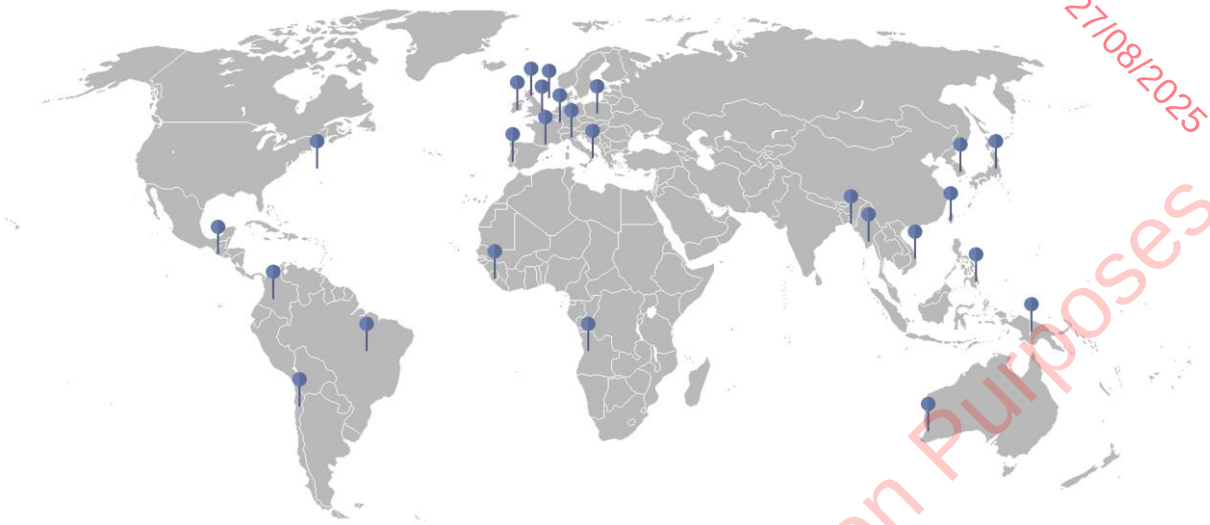
Global Project Reach



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