Borrisbeg Grid Connection

Chapter 4: Population and Human Health

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4.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) identifies, describes, and presents an assessment on the likely significant effects for the Proposed Grid Connection on Population and Human Health during both the construction and operational phases of the development.

The potential for the Proposed Grid Connection to affect population and human health outcomes may arise from various pathways.

The topics studied in this chapter including employment, settlement and land use patterns, population and demographic trends, tourism and amenities, as well as human health. In regard to the latter, this chapter considers and summarizes the residual effect conclusions listed in the chapters below that may have the potential to impact on population and human health. The project's susceptibility to major accidents and/or natural disasters is discussed separately, in Chapter 6: Vulnerability to Major Accidents and Natural Disasters.

- Chapter 7: Land, Soil and Geology
- Chapter 8: Hydrology and Hydrogeology
- Chapter 9: Air Quality
- Chapter 11: Noise and Vibration
- Chapter 13: Landscape and Visual
- Chapter 14: Material Assets – Traffic & Transport, Utilities and Aviation

The above chapters should be read in conjunction with this chapter to gain a full understanding of the potential for likely significant effects on the population and human health.

4.1.1 Statement of Authority

This section of the EIAR, has been prepared by Karen Mulryan and reviewed by Paul Chadwick, of RPS. Karen is a Senior Environmental Scientist with RPS with over 9 years' experience in the consultancy sector. Karen holds a BA in International in Archaeology from NUI Galway and a MSc in Archaeology from the University of Edinburgh. Karen's expertise is in project management, environmental impact assessment, wind energy site selection and feasibility assessment. Karen has experience managing wind farm Environmental Impact Assessment Report applications of various scales including SID applications across Ireland. Karen holds memberships with the Chartered Institute for Archaeologists (ACIfA) and the Institute of Archaeologists of Ireland (IAI).

Paul is a Technical Director with the Energy, Environment and Resources Sector and leads the team responsible for environmental, waste and resource management and assessment of infrastructural and industrial projects for RPS in Ireland. Paul specialises in the fields of air quality and climate. He has considerable experience, both academic and professional, in ambient air quality and a wide range of atmospheric pollutants from waste / wastewater, road traffic, air traffic, industrial and stationary sources. As a result of two years research in atmospheric chemistry, he has an in-depth knowledge of the chemical and physical transformations associated with local and regional air pollution and climate change. Paul is a trained and experienced expert witness and is supported by a team of multidisciplinary environmental experts across RPS in Ireland.

4.2 Relevant Guidance

4.2.1 Legislation, Policy and Guidance

The chapter has followed the overall methodology and guidance relating to the Environmental Impact Assessment (EIA) process and preparation as set out in Chapter 1: Introduction.

This chapter has been prepared having regard to the EIA Directive 2014/52/EU and the associated Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022), as well as the Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Government of Ireland , 2018).

It is noted that Article 3 of the 2014 Directive effectively defines the EIA process as identifying, describing, and assessing in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on a series of specified environmental factors. The first of these is “population and human health” which replaces “human beings” in the 2011 Directive. The term “human health” is not defined in the 2014 Directive.

4.2.2 Legislation

The following legislation in Table 4-1 is relevant to the assessment of the effects on population and human health.

Table 4-1: Health Legislation

Legislation	Description
The EIA Regulations 2018 (Government of Ireland 2018)	Sets the requirement to consider the likely significant effects on human health
• The Safety, Health and Welfare at Work etc Act 2005 (as amended) (Government of Ireland, 2005) • Safety, Health and Welfare at Work (General Application) (Amendment) Regulations 2016 (S.I. No. 36 of 2016); • Safety, Health and Welfare at Work (Construction) (Amendment) Regulations 2021 (S.I. No. 528/2021). • The Safety, Health and Welfare at Work (Diving) Regulations 2018	Sets out general duties on employers, including ensuring, so far as is reasonably practicable, that employees and individuals at the place of work who are not employees are not exposed to risks to their safety, health or welfare.
• The Environmental Protection Agency Act 1992 (as amended) (Government of Ireland, 1992)	Governs environmental exposures, including provisions in relation to nuisance.
• The Air Quality Standards Regulations 2011 (Government of Ireland, 2011)	Sets the regulatory thresholds for air quality. These are the standards considered acceptable in terms of public health protection in the Republic of Ireland.
• Environmental Noise Regulations 2018 (as amended) (Government of Ireland, 2018b)	Sets a common approach to avoid, prevent or reduce on a prioritised basis the harmful effects, including annoyance, due to exposure to environmental noise.

4.2.3 Guidance

The following Guidance in Table 4-2 is relevant to the assessment of the effects on population and human health.

Table 4-2: Health Guidance

Guidance	Description
Institute of Environmental Management and Assessment (IEMA) Determining Significance. IEMA guidance on health in EIA series (Pyper et al., 2022b). IEMA: Health in Environmental Impact Assessment: A Primer for Proportionate Approach (2017).	EIA practitioner guidance on assessing human health, applicable to Republic of Ireland and Northern Ireland. Guidance sets out principles and methods of assessment.
Environmental Protection Agency (EPA) Guidelines on the information to be contained in Environmental Impact Assessment Reports (Environmental Protection Agency, 2022). Department of Housing, Planning and Local Government (2018) Guidelines for Planning Authorities and An Bord Pleanála European Commission's Guidance on the Preparation of the Environmental Impact Assessment Report (2017)	The EPA and ECs health protection position statement on the coverage of health in EIA.
EMF & You: Information about Electric & Magnetic Fields and the electricity network in Ireland (ESB, 2017)	The document "EMF & You" (ESB, 2017) provides information about electromagnetic fields (EMF) and their potential effects on health. It explains the sources of EMF, including electrical equipment and power lines, and discusses the levels of exposure that individuals may encounter in everyday life. The document emphasizes that the EMF levels from these sources are generally low and comply with international safety guidelines set by organizations like the International Commission on Non-Ionizing Radiation Protection (ICNIRP). It aims to educate the public about EMF, dispel common myths, and reassure readers about the safety of living and working in environments where EMF is present.

In addition, due regard was given, as appropriate, to World Health Organization advisory guidelines, e.g. World Health Organization, (2021) and World Health Organization, (2018). The application of such guidelines for health in EIA is described by IEMA (Pyper et al., 2022b), IPH (Pyper et al., 2021) and Cave et al. (2021).

4.2.3.1 EMF & You (ESB, 2017)

The provision of underground electric cables of the capacity proposed is common practice throughout the country and installation to the required specification does not give rise to any specific health concerns. The Extremely Low Frequency (ELF) Electric and Magnetic Fields (EMF) associated with the operation of the proposed cables fully comply with the international guidelines for ELF-EMF set by the International Commission on Non-Ionizing Radiation Protection (ICNIRP), a formal advisory agency to the World Health Organisation, as well as the EU guidelines for human exposure to EMF.

Accordingly, there will be no operational impact on residential or commercial properties as the ICNIRP guidelines will not be exceeded at any distances even directly above the cables. The ESB document 'EMF & You' [1](ESB, 2017) provides further practical information on EMF. Further details on the potential impacts of electromagnetic interference to telecommunications and aviation are presented in Chapter 12: Material Assets.

The following policies are associated with the Human Health Assessment:

- National Planning Framework First Revision (NPF) (Government of Ireland, 2025)
- Tipperary County Development Plan 2022-2028 (Tipperary County Council, 2022)

4.2.3.2 National Planning Framework First Revision April 2025

The National Planning Framework First Revision approved by the Irish government in April 2025, outlines the strategic vision for Ireland's development up to 2040. While the NPF primarily focuses on spatial planning, housing, and infrastructure, it indirectly influences health services by shaping environments in which Healthcare is delivered and accessed.

Key aspects of the revised NPF relation to health services:

- **Population growth and regional development**: The NPF anticipates population increase of approximately 1,000,000 people by 2040. To accommodate this growth, the framework emphasises balanced regional development, aiming to distribute population and services more evenly across the country. This approach supports the decentralisation of healthcare services, reducing pressure in urban centres and improving access in rural areas.
- **Infrastructure inaccessibility**: The framework supports the development of infrastructure that enhances access to healthcare services including transportation networks and digital connectivity. Improved infrastructure ensures that health facilities are reachable, particularly underserved regions, and supports telehealth initiatives.
- **Integration with health policies**: The NPS aligns with National Health strategies such as Sláintecare, by promoting the development of community based health care facilities. This integration facilitates a shift from hospital-centric care to primary and community care models, enhancing accessibility and efficiency in health service delivery.
- **Healthy placemaking**: The NPF promotes the creation of environments that support healthy lifestyles such as walkable communities, green spaces, and recreational facilities. These elements contribute to the overall well-being of the population and reduce the burden on healthcare systems by encouraging preventative health measures.

[1] ESB 2017 EMF & You. Available at: ESB Networks – EMF & You – Information about Electric & Magnetic Fields and the electricity network in Ireland

While the revised national planning framework does not directly outline healthcare service provisions, it's emphasis on balanced regional development, infrastructure enhancement, and integration with health policies like Sláintecare creates a supportive environment for the evolution of health services in Ireland By fostering accessible, community-oriented and health promoting environments, at the NPF plays a crucial role in shaping the future landscape of healthcare delivery across the country.

An overarching aim of the revised NPF is "*Creating a clean environment for a healthy society*" through three main objectives:

- *"Water Quality Recognising the links and addressing on-going challenges between development activity, water quality and our health.*
- *Promoting Cleaner Air - Addressing air quality problems in urban and rural areas through better planning and design.*
- *Noise Management - Incorporating consistent measures to avoid, mitigate and minimise or promote the pro-active management of noise" (p.124)*

Chapter 6: People, Homes and Communities of the revised NPF states that "decisions made regarding land use and the built environment, including transportation, affect these health risks in a variety of ways, for example through influencing air and water quality, traffic safety…," (p.80).

4.2.3.3 Tipperary County Development Plan 2022-2028

The Tipperary County Development Plan (2022-2028) (CDP) sets out the roadmap for the overall proper planning and sustainable development of County Tipperary over the plan period. The CDP guides the '*sustainable physical, economic, and social development across Tipperary, whilst protecting the environment and guiding and supporting our move to a low-carbon society*.' The plan advances strategic aims under the cross-cutting themes of sustainable communities, placemaking, social inclusion, regeneration, green infrastructure and climate action; to ensure the needs of citizens, communities, built and natural environments, infrastructure and economic/employment development are met, while also combatting and adapting to climate changed.

4.3 Scoping and Consultation

Fáilte Ireland

A Scoping letter was issued to Failte Ireland on the 14th July 2025. A scoping response was received from the on 30th July 2025 which included the 'Fáilte Ireland's Guidelines for the Treatment of Tourism in an EIA', to inform the preparation of the Environmental Impact Assessment for the Proposed Project. The report provides guidance for those conducting Environmental Impact Assessment and compiling an Environmental Impact Assessment Report (EIAR), or those assessing EIARs, where the project involves tourism or may have an impact upon tourism (see Section 4.7.2.5 and .6.3.1.9 and Section 4.7.4.5 for further details). These guidelines are non-statutory and act as supplementary advice to the EPA EIAR Guidelines outlined in section 2 of the guidance document, including some of the key requirements for an EIAR under the current guidance:

- Project description;
- assessment of alternatives considered;
- baseline assessment;

- assessment of effects;
- cumulative impact interaction of impacts;
- mitigation & monitoring; and
- residual impacts.

Uisce Éireann

A Scoping letter was issued to Uisce Éireann (UÉ) on the 14th July 2025. A follow-up data request was sent to Irish Water on the 17th July 2025 requesting mapping detail of all UÉ infrastructure within proximity to the Proposed Grid Connection. No response has been received to date.

Health Service Executive

A Scoping letter was issued to the Health Service Executive (HSE) on the 14th July 2025. No response has been received to date.

4.4 Methodology

4.4.1 Population

A desk-based assessment was conducted using the sources and guidelines mentioned in section 4.2 to analyse relevant information for the population impact assessment. The following aspects were considered in the assessment of the potential effects of the Proposed Grid Connection on population:

- **Population Level:** An evaluation of the impact on population level.
- **Economic Effects:** An evaluation of the impact that the Proposed Grid Connection will have on economic development and employment.
- **Residential Amenity:** An assessment of the residential and recreational amenity considering the benefit enjoyed from physical external space, which is part of the private home including, size, noise, accessibility, enclosure and the wider natural and built environment.
- **Community Facilities:** An assessment of potential effects with regard to any severance from community facilities, particularly those used by older people, children or other sensitive or vulnerable groups (this category includes relief from existing severance and new severance).
- **Recreational and Tourism Facilities:** An evaluation of the potential impact on recreational and tourism facilities within the population study area.
- **Transport, Connectivity and Accessibility:** An evaluation of the impact on connectivity and accessibility.

Data on population statistics, employment, and social information for the relevant Electoral Divisions (EDs) were sourced from the Central Statistics Office (CSO) for the 2022 census years. Additionally, consideration was given to Fáilte Ireland's EIAR Guidelines for the Consideration of Tourism and Tourism-Related Projects. Refer to section 4.5.1 for the baseline population study.

4.4.2 Human Health

The human health assessment is undertaken using the guidance and policies set out in section 4.2 above.

The EPA 2022 EIAR Guidelines state that " *in an EIAR, the assessment of impacts on population and human health should refer to the assessments of those factors under which human health effects might occur, as addressed elsewhere in this EIAR e.g., under the environmental factors of air, water, soil etc*." This chapter considers the findings from other chapters in this EIAR, listed in section 4.1 that are pertinent to health, including those on water and air quality, noise emissions and residential amenity. Refer to section 4.6 for the human health baseline study.

According to the European Commission's Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report (2017):

"*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."*

In 2022, the EPA released EIAR Guidelines stating,

''*while no specific guidance on the meaning of the term Human Health has been issued in the context of Directive 2014/52/EU, the same term was used in 3.3.6 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 the other issues mentioned in paragraph (f)'"* of the Directive, which includes environmental factors such as soils, water, landscape, and air.

The 2022 Guidelines assert that this approach is consistent with the methodology established in the 2002 EPA Guidelines[2], which considered health through the assessment of environmental pathways that could impact it, 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."*

In summary, an EIAR, 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, without duplication.

4.4.2.1 Institute of Environmental Management and Assessment

The Institute of Environmental Management and Assessment (IEMA) published the report Health in Environmental Impact Assessment: A Primer for a Proportionate Approach in 2017 to address the integration of human health considerations into Environmental Impact Assessments (EIA). This initiative responded to the 2014 amendment of the EU EIA Directive, which explicitly included 'population and human health' as topics to be considered in EIAs. A central tenet of the primer is the principle of proportionality. It advocates for tailoring the depth and breadth of health assessments to the scale and significance of the proposed development in question. The World Health Organisation (WHO) 2014 publication titled Health in Impact Assessments: Opportunities Not to be Missed, provides important guidance on the integration of Health Impact Assessment (HIA) into the EIA

[2] 2002 EPA EIS Guidelines

process. The WHO advocates that health should be systematically integrated into the EIA processes rather than treated as a separate or optional element. Many determinants of health such as air and wate quality, noise, housing, are influenced by environmental changes. The WHO does not favour HIA above EIA but rather highlights three ways which developments can integrate HIA into EIA: separate HIA alongside and EIA, integrated HIA within EIA (health issues are embedded in EIA steps), Health checklist within the EIA framework.

The IEMA November 2022 publication titled Determining Significance for Human Health and Environmental Impact Assessment, provides practical guidance for practitioners on how to assess and determine the significance of health effects in environmental impact assessment under the UK EIA regulations. The purpose of the guidance is to clarify how to define and determine the significance of health effects within EIA. The guidance takes a broad WHO based view of health, encompassing '*a state of a complete physical, mental and social well-being and not merely the absence of disease or infirmity*.' Health is affected by environmental social and economic determinants such as air and noise pollution, housing quality, access to green spaces, income, unemployment, and community cohesion. The significance of impacts is determined by considering the sensitivity of the population and the magnitude of change predicted to occur. A matrix based approach or professional judgment can be used to determine the direction (positive or negative), duration (short or long term), frequency, reversibility, and confidence in data.

4.4.3 Data Limitations

No limitation or difficulties were encountered in the preparation of this chapter of the EIAR.

4.5 Description of the Existing Environment

4.5.1 Population Baseline Environment

4.5.1.1 Population Study Area

The Site is located approximately 14.5km south of Roscrea Town and approximately 3.8km northeast of Templemore town centre, in County Tipperary and falls within the townlands of Clonmore, Ballycahill and Strogue. The Site measures approximately 47.5 hectares and predominantly comprises pastoral agriculture and local roads. The surrounding landuse predominantly comprises pastoral agriculture, one-off housing, small scale private forestry, local and regional roads, Irish Rail infrastructure and commercial and residential landuse within Templemore town. The Consented Wind Farm is located immediately west of the Proposed Grid Connection Site. Access for the Proposed Grid Connection Site is via the L-70391, L7039 and the L-7038.

The population Study Area for this assessment primarily concentrates on District Electoral Divisions (DEDs) where the Proposed Grid Connection infrastructure is situated, specifically Killavinoge, Drom and Templetouhy, while also incorporating county and national statistics. The Study Area measures 89.07km^2 (Killavinoge 22.7km^2, Drom 47km and Templetouhy 42.0km^2). Refer to Figure 4-1 for details. The 2022 CSO records 480 persons residing in the DED of Killavinoge, 1,218 residing in Drom DED and 823 persons residing in Templetouhy DED, giving a total of 2,499 persons residing within the Study Area.

There are 6 no. sensitive properties within 100m of the Proposed Grid Connection infrastructure.

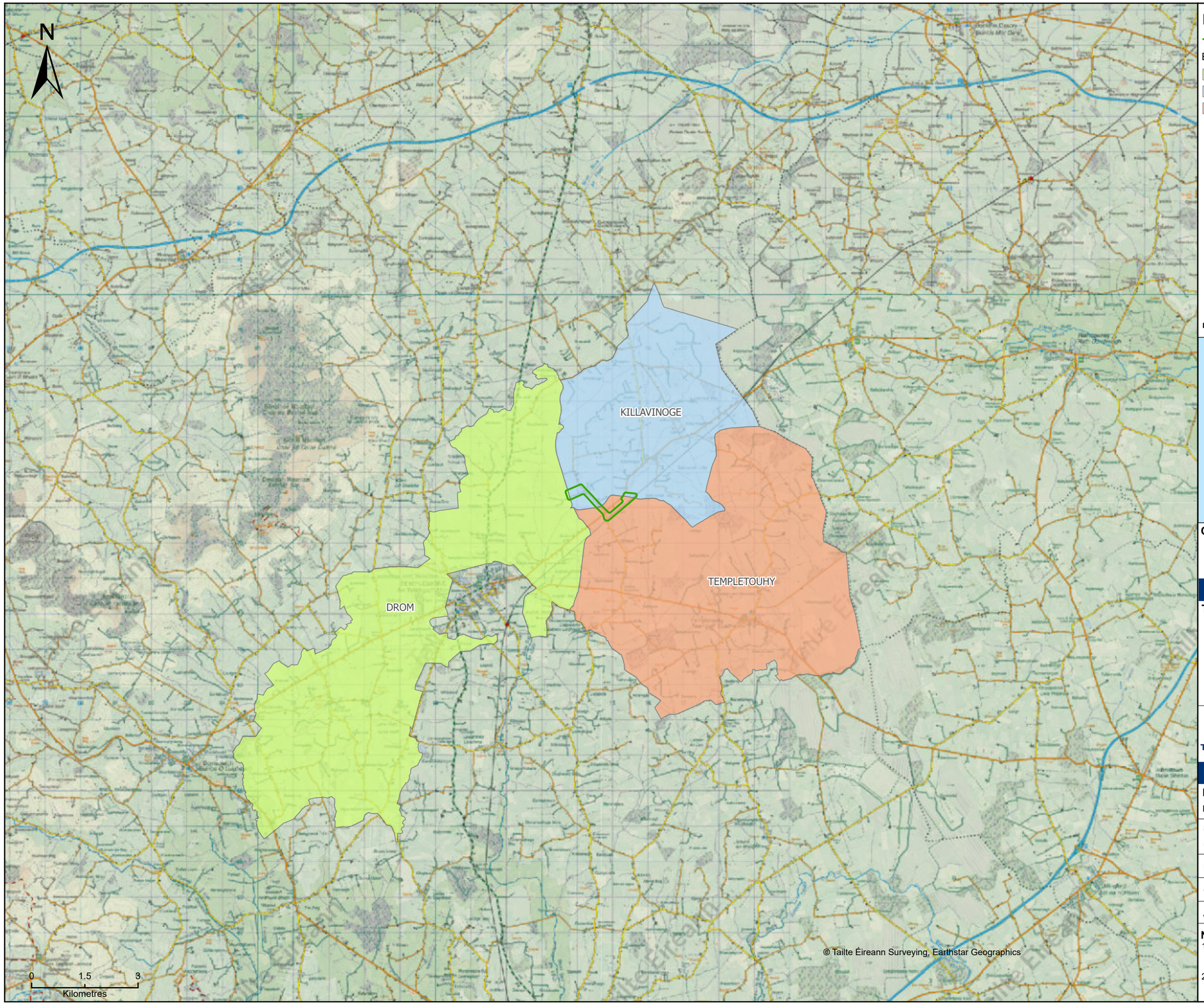
4.5.1.2 Demographic Baseline

The population for Tipperary in 2022 was recorded as 167,895 persons, an increase by 8,342 or 5%, since the 2016 census. Over the same census period, the population of the State grew by 387,274 persons, or 8%. The population levels for the Study Area grew by 52 from 2,447 to 2,499

persons in the same period, which correlates to a 2% increase. When the population data is examined in closer detail, it shows that the rate of population increase within the Study Area has been unevenly spread through the DEDs. The highest increase in the population between 2016 and 2022 occurred within the Killavinoge and Drom DEDs, which experienced, and 4.5% and 4% population increase, respectively. In comparison, the population of Templetouhy DED, decreased by 2.4% during the same time period. In the 2022 Census, the highest population was recorded in Drom DED, with 1,218 persons. The lowest population was recorded in Killavinoge DED, with 462 persons.

Table 4-3: Population change from 2016 to 2022

Area	Population Change		% Population Change
	2016	2022	2016– 2022
State	4,761,865	5,149,139	8%
County Tipperary	159,533	167,895	5%
Study Area	2,447	2,499	2%



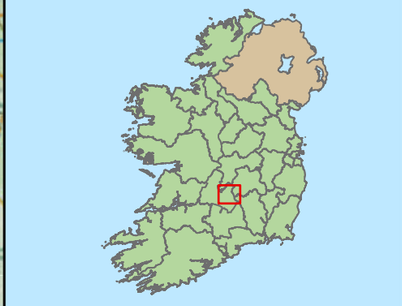
Legend

- EIAR Boundary

ELECTORAL DIVISIONS

- DROM
- KILLAVINOGE
- TEMPLETOUHY

Data Sources:



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Population Study Area

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NOTE:

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The population density of the Study Area recorded during the 2022 Census is 22.3 persons per km^2 which is considerably lower than the national population densities of 71.47 persons per km^2 and lower than the population density of County Tipperary, recorded at 39.52 persons per km^2, respectively. Similar to the observed population trends, the population density recorded across the Study Area varies between DEDs. Drom DED has the highest population density, at 25.78 persons per km^2 . Killavinoge DED has a lower population density of 21.14 persons per km^2 . Templetouhy DED recorded the lowest population density with a total of 19.59 persons recorded in the townland.

Table 4-4: Population Density in 2016 and 2022

Area	Population Density (Persons per km^2)	
	2016	2022
State 70,273 km^2	68.06	71.47
County Tipperary 4,305 km^2	39.47	39.52
Study Area 111.7m^2	21.9	22.3

4.5.1.3 Household Statistics

The number of households and average household size recorded within the State, County Tipperary and the Study Area during the 2016 and 2022 Censuses are shown in Table 4-5.

The figures show that while the number of households within the State, County and the DEDs increased, the average number of people per household remained the same due to the proportionate increase in population during this period. Average household size recorded within the Study Area during the 2016 and 2022 Censuses are the similar as those observed at State and County level during the same time period. Similar to the trends detailed above, the average household size recorded in the Study Area varies between DEDs. Drom DED recorded 3.04 persons per household recorded in 2022. Killavinoge recorded the highest with 3.14 persons per household in 2022. Templetouhy DED recorded the lowest with 2.57 persons per household recorded in 2022 respectively.

Table 4-5: Number of Households and Average Household Size in 2016 and 2022

Area	2016		2022	
	No. of Households	Avg. Size (persons)	No. of Households	Avg. Size (persons)
State	1,697,665	2.8	1,841,152	2.74
County Tipperary	59,276	2.7	62,232	2.67

Area	2016		2022	
	No. of Households	Avg. Size (persons)	No. of Households	Avg. Size (persons)
Study Area	843	2.68	877	2.92

4.5.1.4 Population Age Structure

Table 4-6 presents the population percentages of the State, County Tipperary and Study Area within different age groups as defined by the Central Statistics Office during the 2022 Census. This data is also displayed in Figure 4-2.

Table 4-6: Percentage Population per Age Category in 2022

Area	Age Category				
	0 – 14	15 – 24	25 – 44	45 – 64	65 +
State	19.66% 1,012,320 persons	12.52% 644,672 persons	27.62% 1,422,192 persons	25.12% 1,293,463 persons	15.08% 776,490 persons
County Tipperary	19.83% 33,286 persons	11.84% 19,872 persons	18.28% 40,787 persons	26.56% 44,594 persons	17.48% 29,356 persons
Study Area	19.52% 488 persons	14.04 351 persons	20.20% 505 persons	29.22 730 persons	17.02% 425 persons

County Tipperary's population in April 2022 was comprised of 167,895. The average age of Tipperary's population in April 2022 was 40.3 years, compared with 38.6 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 continues to grow. This age group increased by 20% to 29,356 in Tipperary, and by 22% to 776,315 at a national level since 2016. The majority of the population falls within the working age group (typically defined as ages 15 to 64). This segment represents a crucial part of the labour force and economic activity. The census also indicated an increase in the number of older adults, particularly those aged 65 and over. This reflects a trend of an aging population, which is consistent with patterns observed in many developed countries. The proportion of the Study Area population within each age category is similar to those recorded at national and county level for most categories. For the Study Area, the highest population percentage occurs within the 45-64 age category.

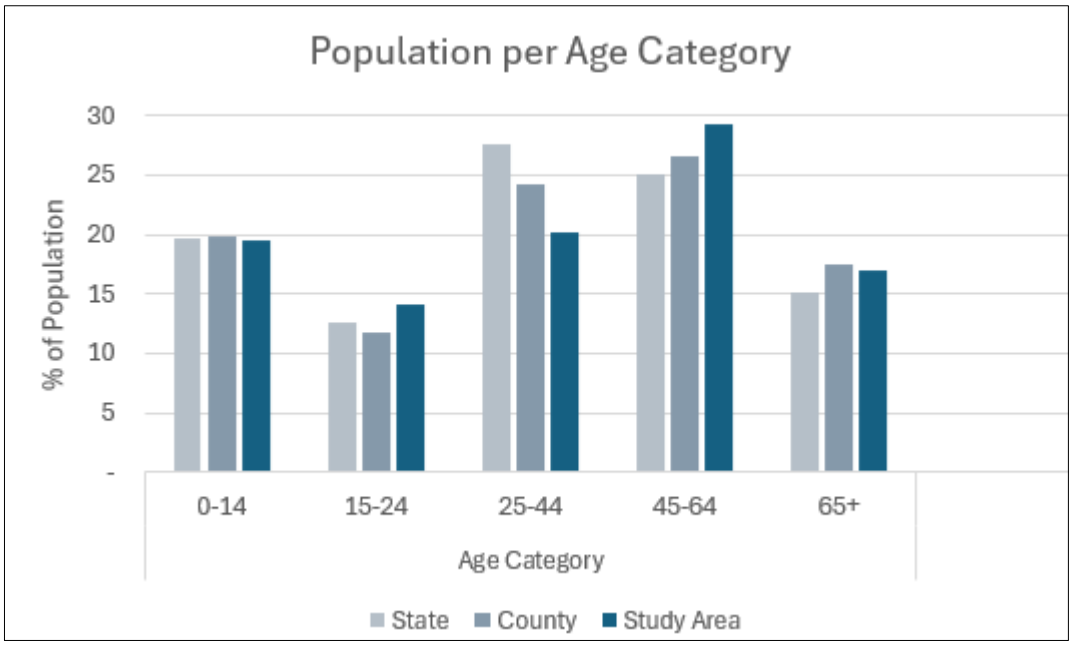

Figure 4-2: Population per Age Category in 2022

4.5.1.5 Employment and Economic Activity

4.5.1.5.1 Economic Status

The labour force is defined as those who can work, i.e., those who are aged 15+, out of full-time education and not performing duties that prevent them from working. There were 73,207 people (aged 15 and over) at work in Tipperary, an increase of 9,735 people (+15%) between 2016 and 2022. Data returns for the State indicate there was an additional 313,656 people (+16%) at work. For the Study Area, a total of 1,309 people were recorded as being employed in the 2022 census, which equates to an increase of 26 people or 2.5% from 2016.

The labour force figures for the State, County and Study Area are further broken down into the percentages that were at work, seeking first time employment or unemployed. It also shows the percentage of the total population aged 15+ who were not in the labour force, i.e., those who were students, retired, unable to work or performing home duties.

Table 4-7: Economic Status of the State, County and Study Area Census 2022

Status		State	County Tipperary	Study Area
% of population aged 15+ who are in the labour force		61.18%	58.93%	55.88%
% of which are:	**At work**	91.67%	92.29%	93.78%
	First time job seeker	1.36%	1.17%	6.96%
	Unemployed	6.96%	6.54%	5.39%
% of population aged 15+ who are not in the labour force		38.82%	41.07%	44.12%
	Student	28.60%	24.66%	29.95%

Status		State	County Tipperary	Study Area
% of which are:	Home duties	16.96%	16.95%	16.38%
	Retired	40.96%	43.44%	43.03%
	Unable to work	11.79%	13.7%	9.90%
	Other	1.69%	1.26%	0.73%

Overall, the principal economic status of those within the labour force living in Study Area is lower than that recorded at State and County level, with between 0 to 6% average difference apparent. Of those who were not in the labour force during the 2022 Census, the highest percentage of the population in the Study Area was in the 'Retired' category, which is the same as figures recorded at national and County level that show 'retired' as the highest category.

The CSO employment figures grouped by socio-economic status includes the entire population for the Study Area, County and State in their respective categories. As such, the socio-economic category of 'Other' is skewed to include those who are not in the labour.

4.5.1.5.2 Employment in the Renewables Industry

In March 2021, Wind Energy Ireland (WEI) published a report titled 'Our Climate Neutral Future: Zero by 50'3 following the Government's announcement of new ambitious energy targets. The report highlights the potential to create 50,000 jobs in the renewable energy sector to fulfil the necessary infrastructure developments aimed at achieving net-zero carbon emissions by 2050. It estimates that at least 25,000 of these jobs will be in the onshore and offshore wind energy sectors.

The joint report by KPMG and WEI, titled 'Economic Impact of Onshore Wind in Ireland' (April 2021), indicates that the wind sector currently supports 5,130 jobs (excluding those related to grid development) and has a significant presence in rural Ireland. Through its direct and indirect activities, the sector contributes to labour income payments amounting to €225 million.

Should the Proposed Grid Connection receive a grant, it will be constructed at the same time as the Consented Wind Farm. It is estimated that at peak construction approximately 100 jobs will be created. This in turn will have a knock-on effect on the local economy through the supply of services to the workforce. Additionally, at the regional level, more jobs will be generated through the provision of services and materials, such as stone and concrete, for both developments.

As discussed in Chapter 1, the Proposed Grid Connection is necessary to facilitate the transmission of renewable energy from the Consented Wind Farm to the national grid. Should the Proposed Grid Connection not receive a grant, the Consented Wind Farm will not be constructed and the potential to offset 58,808 tonnes of carbon dioxide each year (approximately 1,764,240 tonnes over its operational lifespan), power 47,304 households and aid the State in reaching its 2030 renewable and emissions targets as mandated by the EU. Furthermore, the creation of employment through the construction and operation/maintenance of both the wind farm and the grid, the contribution of strategic grid infrastructure to the national portfolio and the local boost to the economy via the supply of services during the construction phase will also be lost. Moreover, the Community Benefit Fund associated with the Consented Wind Farm and local authority rate payments associated with both developments will be lost.

At a national level, Ireland currently has one of the highest external dependencies on imported sources of energy, such as coal, oil and natural gas when compared with other EU Member States. As detailed in the SEAI Report 'Energy in Ireland 2024', Ireland has a high import dependence on

[3] https://www.marei.ie/our-climate-neutral-future-zeroby50/

oil and gas and is essentially a price-taker on these commodities. The report states that in 2023, while electricity generated from renewables was on the increase, fossil fuel remaining the dominant source of Ireland's energy and Irelands high import dependency on oil and gas remains. This is at odds with the sectoral emission ceilings for electricity in the 2021-2025 and 2026-2030 carbon budgets. The Proposed Grid Connection will facilitate the Consented Wind Farm in reducing the States dependency on foreign fossil fuel imports.

4.5.1.6 Property Values and Grid Infrastructure

In February 2016, EirGrid carried out a study titled 'Investigation into the Potential Relationship between Property Values and High Voltage Overhead Transmission Lines in Ireland.[4]' The aim of this research was to develop a framework to more effectively evaluate the possible effects, if any, of High Voltage Overhead Transmission Lines (HVOTLs) on the value of properties located near overhead electricity transmission infrastructure. A review of existing literature on this subject indicates that the preferred method for measuring impacts on property sales values is the hedonic price regression model. This requires access to a dataset containing a significantly large number of property transactions. To be suitable for analysis by the model the following information was required:

- Sale prices
- Property characteristics (e.g. property type, size, number of bedrooms, year property was built) and
- The property address/location, which is used to determine the distance from the property to the nearby lines and support structures.

This study's approach involved collecting transaction data directly from estate agents. Data collection and subsequent statistical regression analysis was limited to residential properties and agricultural land. The regression analysis findings were supplemented by a survey of estate agents, which sought their professional opinions on the impact of HVOTLs on property values. The estate agent survey also covered various types of commercial properties, including retail, office, and industrial spaces.

The results indicated that:

- Where negative impacts were found, the impact of pylons was larger than the impact from the transmission lines, thus emphasising the visual component.
- Where an impact was found the effect diminished rapidly with distance from the HVOTLs. The impact from HVTOLs disappears in the region of 150-200 metres.
- Where negative impacts were found there is evidence to suggest that the impacts generally decrease with the passage of time. In some cases no impacts were evidenced after ten years with vegetation grown likely contributing to this decrease.
- There is evidence that properties close to HVOTLs Rights of Way appreciate at the same rate as properties located away from HVOTLs.
- Estate agents reported that there was no impact from 110 kV lines on 55% of agricultural land with an average (median) of zero change recorded for the 110 kV line.
- Estate agents reported that there was no impact from 110 kV lines on 41% of residential properties.

[4] https://cms.eirgrid.ie/sites/default/files/publications/FINAL-Part-1-Property-Valuation-Report-Doc.-Version-1.0-23.02.16.pdf

Statistical analysis of the sales data for both residential and rural properties showed that prices paid were associated with features of the properties such as location, size and year of sale of the property. Additional information related to HVOTLs was then added into each of these models in order to determine (a) whether the added HVOTL information assisted further in explaining the difference in price between properties and (b) if so, what the size of that impact was. This study, at a 95% confidence level, did not find a statistically significant negative impact from HVOTLs in close proximity to either residential or farm properties.

In May 2016, Eirgrid carried out a literature review and an evidence-based field study examining the impact of high voltage transmission development on settlement patterns and land use. The results were incorporated into their report: ''*EirGrid Evidence Based Environmental Study 9 - Settlement and Land Use*'[5] were to:

- To gather information on patterns of settlement and land use near to existing transmission infrastructure.
- To establish the effects of existing transmission infrastructure on patterns of settlement and land use.
- To review land use planning policy in various Development Plans to determine whether any policy change has arisen as a result of the construction and operation of existing transmission projects.

The study included a literature review of transmission projects from around the world, incorporating Environmental Impact Assessments (EIAs). To assess the effects on land use and settlement patterns, 31 case studies were selected: 17 with existing overhead line (OHL) circuits, 10 with substations, and 4 under construction. These Sites spanned rural, rural/urban, and urban settings, encompassing agricultural, commercial, and amenity land uses. Four control Sites without infrastructure were also included. The research investigated coexistence, development density, planning policies, and planning application histories. Additionally, planning and landuse policies over the past twenty years were reviewed to determine whether recent transmission infrastructure developments had influenced, or been influenced by, these policies.

The study found no evidence of any significant impact from the construction or operation of transmission infrastructure on settlement patterns or land use. However, it noted that transmission infrastructure can pose a local physical constraint on development.

4.5.1.7 Land Use Patterns and Land Use Activities

Landuse within the Site comprises agricultural and road use (transportation). The predominant surrounding land uses within the population Study Area are agricultural, along with residential, commercial uses, existing transmission lines, and roads. According to the CSO Census of Agriculture 2020, the total farmland area across the three DEDs surrounding the Site is approximately 9,150.7 hectares, representing 82% of the Study Area. There are 220 farms within the three DEDs, with an average farm size of 41.7 hectares, which is slightly below the County Tipperary average of 42.2 hectares. Table 4-8 provides a detailed breakdown of farmland types within the three DEDs, with pasture comprising the largest share, followed by rough grazing.

[5] EirGrid Evidence Based Environmental Study 9 - Settlement and Land Use 2016 Available at: https://cms.eirgrid.ie/eirgrid-evidence-based-environmental-study-9-settlement-and-land-use

Table 4-8: Farm Size and Classification within the Study Area in 2020 (Source: CSO)

DED	No of holdings	Average size (Hectares)	Median age of holder	Livestock units (Hectares)	Total Cereals (Hectares)	Average farmed (Hectares)
Killavinoge	50	42.1	59	4,284	0	2,105.7
Templetouhy	69	41.9	55	5,743	66.5	2,891
Total	**119**	**42 (average)**	**57 (average)**	**10,027**	**66.5**	**2,498.35 (average)**
Size of 3 DEDs			**11,168.59 hectares**			
Total Area Farmed within 2 DEDs			**9,150.7 hectares**			
Farmland as % of DEDs			**82%**			

4.5.1.8 Community Services

The Site is located approximately 3.8km east of Templemore. Other settlement areas in the wider region include Roscrea Town, approximately 14.5km to the north of the Site. Both centres provide retail, recreational, educational, and religious services.

4.5.1.8.1 Access and Public Transport

The Site is currently accessible via private farm access points off the L-7038 and L-70391, both of which run through the Site. The proposed underground grid connection runs through the local road network for approx. 900m (predominantly through the L-7039, with a requirement to cross the R433 for approx. 5m and the L-7038 for approx. 10m). Access to the end masts and new proposed road through can be gained via the L-7038.

There are three local bus services are provided by Local Link – Tipperary through private bus operators. Bernard Kavanagh & Sons provides transport between Nenagh to Templemore on a daily basis on bus route no.395. They also provide transport between Roscrea and Urlingford, stopping at Templemore, on bus route no.812. Aidan Johnston Coach hire provides transport between Tipperary town and Maynooth, stopping at Templemore, on bus route no.UM16. The nearest train station to the Site is the Templemore train station 2.6km southeast of the Site providing connections with Dublin Heuston, Limerick, Ennis, Cork and Tralee.

4.5.1.8.2 Education

The nearest primary school is Clonmore National School and is approx. 1km northeast of the Site. Beyond that is St. Mary's National School Templemore approx. 3.4km southwest of the Site and St. Colmcille's National School also in Templemore 4km to the southwest. The nearest secondary school is located in Templemore – Our Lady's College is 3.6km to the southwest. The Technological

University of the Shannon (Thurles campus) (third-level education) is located approximately 14.5km south of the Site and the Mary Immaculate College (Thurles campus), approximately 15.km south of the Site. The Garda College is located in Templemore, approximately 4.6km to the southwest.

4.5.1.9 Amenities and Community Facilities

There are no amenity or community facilities located within or adjacent to the Site, however there are several in the surrounding area. Located approx. 3.8km to the west of the Site is the Michael Fennel Park, an athletics track, and Town Park are situated where BT Harps FC, Templemore Athletics Club and J K Brackens GAA Club play respectively. Amenities and community facilities, including other sports clubs, youth clubs, recreational areas and water sport activities are located in Thurles and Roscrea.

4.5.1.10 Tourism and Amenity

4.5.1.10.1 Tourism Numbers and Revenue

Tourism is one of the major contributors to the national economy and is a significant source of full time and seasonal employment. The most recent publication by Failte Ireland pertaining to domestic and international tourism volumes for Ireland was published for the year 2024. Key Tourism Facts 2024 states out-of-state (Overseas and Northern Ireland) tourist expenditure amounted to €6.6 billion. With a further €1.5 billion spent by overseas visitors on fares to Irish carriers, foreign exchange earnings were €8 billion. Domestic tourism expenditure amounted to €3.6 billion, making tourism a €12 billion industry. The Republic of Ireland is divided into seven tourism regions. Figure 4-3 shows the total revenue and breakdown of overseas and domestic tourist numbers to each region in Ireland during 2024 ('Key Tourism Facts 2024, Fáilte Ireland).

Table 4-9: Regional Tourism Figures Ireland, 2024

Region	Total Number of Tourists (000s)	Total Revenue (€)
Border	1,267	3,381
Dublin	5,438	11,287
West	2,343	5,013
Mid-East/Midlands	1,606	4,120
Mid-West	1,450	3,480
South west	3,140	6,173
South East	1,080	3,219
Total	**16,324**	**36,673**

The Proposed Grid Connection is located in the Mid-West Region which comprises Counties Clare, Limerick and Tipperary. This Region benefited from approximately 16% of the total number of overseas tourists to the country and approximately 9% of the total tourism income generated in Ireland in 2024.

REGIONAL PERFORMANCE 2024

Border

Market	Numbers (000s)	Revenue (€m)
Britain	230	155
Mainland Europe	140	82
North America	130	123
Other Areas	25	16
All overseas	525	376
Northern Ireland	504	130
Domestic	1,827	385

Dublin

Market	Numbers (000s)	Revenue (€m)
Britain	1,220	385
Mainland Europe	1,522	849
North America	1,091	904
Other Areas	261	246
All overseas	4,094	2,383
Northern Ireland	276	88
Domestic	2,823	583

NUTS 3 Region*	County
Dublin	Dublin
Mid East/ Midlands	Kildare Louth Laois Longford Meath Offaly Westmeath Wicklow
South East	Carlow Kilkenny Waterford Wexford
South West	Cork Kerry
Mid West	Clare Limerick Tipperary
West	Galway Mayo Roscommon
Border	Cavan Donegal Leitrim Monaghan Sligo

** As defined by Eurostat*

West

Market	Numbers (000s)	Revenue (€m)
Britain	270	143
Mainland Europe	419	263
North America	454	378
Other Areas	83	64
All overseas	1,226	847
Northern Ireland	100	30
Domestic	2,461	618

Mid East / Midlands

Market	Numbers (000s)	Revenue (€m)
Britain	364	187
Mainland Europe	260	186
North America	142	119
Other Areas	38	44
All overseas	804	536
Northern Ireland	129	46
Domestic	2,383	488

Mid West

Market	Numbers (000s)	Revenue (€m)
Britain	335	143
Mainland Europe	214	180
North America	234	164
Other Areas	44	49
All overseas	827	536
Northern Ireland	51	29
Domestic	1,775	349

South West

Market	Numbers (000s)	Revenue (€m)
Britain	420	229
Mainland Europe	489	406
North America	442	433
Other Areas	91	100
All overseas	1,442	1,168
Northern Ireland	99	47
Domestic	3,190	757

South East

Market	Numbers (000s)	Revenue (€m)
Britain	184	89
Mainland Europe	191	120
North America	122	94
Other Areas	33	19
All overseas	530	323
Northern Ireland	46	13
Domestic	2,113	422

Figure 4-3: Regional Tourism Figures Ireland, 2024

4.5.1.11 Tourism Barometer: Strategic Research and Insight September 2023

Failte Ireland conducted a research survey in the Summer of 2024 aimed at the hotel and food service industry which compared visitor volumes in 2024 to date with 2023 figures in order to gauge the health of the industry, to predict expected volumes for the rest of the year and to shed light on the positives and areas of concern the industry is currently facing. The results are as follows:

- 24% of businesses have had more customers this summer compared to last summer, and 23% have had the same level; however, 53% have had fewer.
- This follows on from the May barometer, which showed a slow start to 2024.
- Visitor volumes are down in all markets and in all regions of Ireland.
- A number of factors have combined to give a disappointing summer – bad weather (cited by 51% as a concern), people lacking disposable income (51%), cost of tourist accommodation (46%) and lack of tourist accommodation (43%).
- These challenges are in addition to the continued high levels of concern about rising operating cost.
- Self-catering operators have bucked the trend this summer, with 36% seeing increased visitor levels, compared to 25% reporting to be down.
- 43% of inbound tour operators & DMCs have seen more visitors, compared to 40% reporting to be down.
- The food & drink sector has struggled the most, with 68% receiving fewer customers this summer
- 19% of operators expect business during the remainder of the year to be up on the same period last year, and 31% expect the same level.
- However, half (50%) expect to be down.
- All regions of Ireland and all markets are expected to be down.

The research indicated a sluggish beginning to 2024 that has persisted throughout the summer season. Decreasing visitor numbers coupled with increasing expenses have created substantial challenges for businesses to maintain profitability. This trend is evident across all sectors, especially within hotels, guesthouses, and food and beverage operators.

4.5.1.12 Tourism Attractions

There are no tourist attractions within or adjacent to the Site.

4.5.1.13 Tourism Attractions within the surrounding landscape

The nearest identified tourist attraction is the Devil's Bit, a popular hiking and walking trail, is located c. 4km to the west of the Site. County Tipperary has a wide range of nationally significant tourism assets which include the following:

- Glen of Aherlow – a picturesque valley located in southern County Tipperary and is located c. 50km south of the Site.
- Lár na Páirce Museum –the first GAA museum in the country located in Thurles and is located c. 15km south of the Site.

- Mountain ranges including: the Galty mountains (located c. 53km south of the Site), Silvermine Mountains (located c. 26km west of the Site) and Knockmealdown mountains (located c. 61km south of the Site) – important centres for walking, cycling and adventure related activities.
- Brú Ború Cultural Centre – the centre contains impressive theatre and craft shop, 'Sounds of History' cultural exhibition, restaurant, café, bar facility, South Tipperary genealogy suite, conference facilities and is located c. 31km south of the Site).
- Rock of Cashel - an ancient royal Site of the Kings of Munster and first attained importance as a fortress and is located c. 31km south of the Site).
- Archaeological sites and monuments are part of Irish national heritage and are recognised tourist attractions across the country. National Monuments within 5km of the Proposed Grid Infrastructure are listed below. Please see Chapter 12 Archaeology and Cultural Heritage for further details.
- Timoney Stones – comprises of a large group of standing stones in the townlands of Cullaun and Timoney Hills and is located c. 9.7km northeast of the proposed substation.
- Errill Church – a late medieval church located in County Laois and is located c. 8.2km northeast Proposed Grid Infrastructure.
- Motte and Bailey Enclosure – two monuments subject to a Preservation Order (4/2008) are located in Moatquarter, Co. Tipperary over 11km to the north-west of the proposed substation.
- Tower House (Rathnaveoge Castle) – the tower house at Rathnaveoge, Co. Tipperary is located c. 10km north-west of the proposed substation.
- Ringfort and Motte (The Motte, Cloncannon (PO 4/1984)) - Ringfort (PO no. 1/1996) is located c. 11km north-west of the proposed substation.
- Tower House (Loughmoe Castle) – the tower house at Tinvoher is located c. 7.6km south of the proposed substation.

4.5.1.14 Residential Amenity

Residential amenity relates to the human experience of one's home, derived from the general environment and atmosphere associated with the residence. The quality of residential amenity is influenced by a combination of factors, including Site setting and local character, land-use activities in the area and the relative degree of peace and tranquillity experienced in the residence.

The Proposed Grid Connection is located within a rural setting in north Tipperary, approximately 14km south of Roscrea Town and approximately 3.2km northeast of Templemore town centre. Land use currently comprises a mix of pastoral agriculture and private forestry. The surrounding land use predominantly comprises pastoral agriculture, and commercial and residential use along local roads and within Templemore town. Existing access is via farm entrances off the L-70391 and the L-7038.

When considering the amenity of residents in the context of a Proposed Grid Connection, the potential impacts to consider are noise and dust emissions and traffic disruptions during the construction phase and potential visual impacts from the proposed substation and end masts during the operational phase. Detailed noise, dust and traffic and transport impacts have been completed as part of this EIAR (Chapter 9 Air Quality addresses dust and Chapter 11 addresses Noise and Vibration and Chapter 14 addresses Traffic and Transport). A landscape and visual impact assessment have also been carried out, as presented in Chapter 13 of this EIAR. Impacts on the local population during the construction and operational phases of the Proposed Grid

Connection are summarised in relation to each of these key topics and other environmental factors such as water quality, major accidents and natural disasters. The impact on residential amenity is derived from an overall judgement of the combination of impacts due to visual amenity, noise, traffic, dust and general disturbance. Refer to Section 4.6 for details.

4.6 Health Baseline Environment

The consideration of the effects on populations and on human health should focus on health issues and environmental hazards arising from the other environmental factors, for example water contamination, air pollution, noise, accidents, disasters.

Table 4-10 and Table 4-11 below details the general health of persons by percentage for the State, County Tipperary and the Study Area for the 2022 Census of Ireland. The percentage health breakdown for the State, County and study area populations are very similar. The Study Area, State and County all reported in the range of 80-90% for a combined 'very good' and 'good' health. The electoral divisions in the Study Area reported a lower percentage than the State and County for those who have a 'bad' and 'very bad' health. Therefore, it can be concluded that those living in the Study Area consider their health to be in a better condition that the State and County average. In 2022, 83% of people in Tipperary 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%.

Table 4-10: Percentage General Health Breakdown for the State and County Tipperary as reported in the 2016 and 2022 Census. Source www. CSO.ie

Study Area-Electoral Divisions	Very Good		Good		Fair		Bad		Very Bad		Not Stated	
	2016	2022	2016	2022	2016	2022	2016	2022	2016	2022	2016	2022
State	**59.4%**	**53.2%**	**27.6%**	**29.7%**	**8%**	**8.6%**	**1.3%**	**1.4%**	**0.3%**	**0.3%**	**3.3%**	**6.7%**
Tipperary	57.6%	52.2%	29.1%	31%	9.1%	9.6%	1.4%	1.6%	0.2%	0.4%	2.3%	5.2%

Table 4-11: Percentage General Health Breakdown for the study area as reported in the 2016 and 2022 Census. Source www. CSO.ie

Study Area-Electoral Divisions	Very Good		Good		Fair		Bad		Very Bad		Not Stated	
	2016	2022	2016	2022	2016	2022	2016	2022	2016	2022	2016	2022
Killavinoge	64.5 %	62.7 %	25.3 %	28.8 %	5.6%	6.5%	1.2%	1.3%	0.2%	0%	3%	0.8%
Templetouhy	56.9 %	52.7 %	28.5 %	31.7 %	10.9 %	11.8 %	1.8%	1.6%	0.2%	0.4%	1.4%	1.8%
Drom	64.7	61.5	26.6	27	6.3	6.7	0.5	1.3	0.08%	0.2%	1.6%	3.3%

4.6.1.1 Air Quality

4.6.1.1.1 Dust, NO2, PM10 and PM25 and CO2 Emissions

Chapter 9 Air Quality and Chapter 10 Climate assess the potential for impact to human health from dust, CO2 and other noxious emissions generated by additional traffic, construction machinery and CO_2 release through ground works during the construction phase, and additional traffic and maintenance work during the operational phase of the Proposed Grid Connection. The assessments conclude that the residual effects from the construction and operation phases of the Proposed Grid Connection are not significant. Refer to Chapter 9 and Chapter 10 for further details.

4.6.1.2 Water Quality

A water main runs along the R433 which will be crossed by the Proposed Grid Connection underground cable route. Mains valves are located approx. 5m from the Proposed Grid Connection underground cable route also. The GSI also map several additional private boreholes and wells in the vicinity of the Site.

The Templemore Public Water Scheme and Source Protection Area are located approximately 2.8km west of any proposed infrastructure on the opposite side of N62. The Site does not fall within the Templemore urban wastewater catchment.

Chapter 8 Hydrology and Hydrogeology assess the potential for impact on public water supply and private wells during the construction, and operation phases. The assessments conclude that the residual effects from the construction and operation phases of the Proposed Grid Connection are not significant. Refer to Chapter 8 for further details.

4.6.1.3 Noise and Vibration

Chapter 11 Noise and Vibration assesses the potential for noise and vibration impacts during the construction and operation phases of the Proposed Grid Connection. The assessments conclude that the residual effects from the construction and operation phases of the Proposed Grid Connection are not significant. Refer to Chapter 11 for further details.

4.6.1.4 Traffic and Transport

Chapter 14 Material Assets assesses the potential for traffic and transport impacts during the construction and operation of the Proposed Grid Connection. The assessment included a study of the additional traffic generated on the local roads during the construction phase due to the delivery of substation components, supporting construction materials and staff vehicles. It also includes an assessment of potential disruption to local traffic due to the temporary road closure requirements necessary for the laying of grid cabling through the L-7039, R433 and L-7038. The assessment concludes that the residual effects from the construction and operation phases of the Proposed Grid Connection are not significant. Refer to Chapter 14 for further details.

4.6.1.5 Vulnerability of the Project to/from Major Accidents and Natural Disasters

A risk assessment of the Proposed Grid Connection vulnerability to and from natural disasters can be found in Chapter 6 Major Accidents and Natural Disasters of this EIAR. A summary is detailed below.

4.6.1.5.1 Pollution/Contamination/Fire

Should a major accident or natural disaster occur the potential sources of pollution on- Site during the construction and operation phases are limited. Sources of pollution with the potential to cause environmental pollution and associated negative effects on health such as bulk storage of hydrocarbons or chemicals, storage of wastes etc, are limited. Consequently, it is considered that the risk of a significant fire occurring at the Proposed Grid Connection Site and causing significant environmental effects is limited, and therefore a significant effect on human health is similarly limited. There are no significant sources of pollution generated from the Proposed Grid Connection infrastructure with the potential to cause environmental or health effects.

Major industrial accidents involving dangerous substances pose a significant threat to humans and the environment. Such accidents can give rise to serious injury to people or serious damage to the environment, both on and off the Site of the accident. The Proposed Grid Connection is not regulated by or connected to or close to, any Site regulated under the Control of Major Accident Hazards Involving Dangerous Substances Regulations i.e., SEVESO Sites and so there are no potential effects from this source.

There is low potential for significant natural disasters to occur at the Site. Ireland is a geologically stable country with a mild temperate climate. The Proposed Grid Connection has low potential to cause natural disasters or major accidents. As detailed in Chapter 7 Land Soil and Geology, no peat was peat identified within the Site on the published soils map (www.epa.ie) and published subsoils maps (www.gsi.ie),or through an extensive probing exercise across the Site. The Site is relatively flat and is not a peatland area and so there is low/no potential for peat slides or landslides.

4.6.1.5.2 Flooding

The River Suir flows along the western boundary, the Clonmore Stream flows east to west under the L-7039 and converges with the Suir to the southwest of the Site while the Strogue flows south to north under the grid cabling route adjacent to the Irish Rail line. The Clonmore Stream is prone to flooding. The Site falls under local Authority Drainage District.

Outside the Drainage District Schemes, landowners who have watercourses on their lands have a responsibility for their maintenance. The National Indicative Fluvial (NIF) mapping indicates that the Site falls within the 1% and 0.1% Annual Exceedance Probability (AEP) flood zones. Further details regarding this aspect are provided in Chapter 8 Hydrology and Hydrogeology.

4.6.1.5.3 Stability/Landslide

The GSI Landslide database (www.gsi.ie) shows no historical records of landslides near the Site or in the surrounding area. The GSI Landslide Susceptibility Map (www.gsi.ie) assesses the likelihood of a landslide happening at a specific location. According to the map, the probability of a landslide occurring at the Site is categorized as Low. This is attributed to the lack of peat on Site, as well as the flat topography. Thus, there is limited potential for significant natural disasters occurring at the Site. Ireland, being geologically stable with a mild temperate climate, has limited potential for such events. Further details on the risk of instability and potential failures are discussed in Chapter 7 Land, Soils, and Geology.

4.6.1.6 Health Baseline Summary

Chapter 7: Land, Soils and Geology, Chapter 8: Hydrology and Hydrogeology, Chapter 9: Air Quality, Chapter 10: Climate, Chapter 11: Noise and Vibration and Chapter 14: Material Assets provide an assessment of the effects of the Proposed Grid Connection on these areas of consideration. Chapter 6 assesses the vulnerability of the project to and from major accidents and natural disasters. There is the potential for negative effects on human health during the construction and operation phases related to potential emissions to air of dust, potential emissions to land and water of hydrocarbons, release of potentially silt-laden runoff into watercourses and noise emissions. The assessments in the chapters listed above show that the residual effects will not lead to significant effects on any environmental media with the potential to lead to health effects for humans. Likewise, the vulnerability the project to/from potential for natural disasters has been assessed as low risk for all phases.

On this basis, the potential for negative health effects associated with the Proposed Grid Connection during all phases is considered to be not significant. Furthermore, the Proposed Grid Connection, through its supporting role of the Consented Wind Farm, indirectly facilitates the offsetting of carbon emissions associated with the burning of fossil fuels, contributing to a long term, moderate positive effect on air quality and consequently has a long term positive effect on human health.

4.7 Likely Significant Effects and Associated Mitigation Measures

The below assessment evaluates the potential for an impact to occur on population, employment levels, land-use, tourism, residential amenity and human health during the construction and operation of the Proposed Grid Connection.

4.7.1 Do-Nothing Scenario

If the Proposed Grid Connection did not receive a grant of permission, the Site will continue to function as it does at present, with no changes made to the current landuse and potential for impacts on population and human health through the construction and operation of the Proposed Grid Connection would not occur.

If the Proposed Grid Connection were not to proceed, the Consented Wind Farm would not be constructed, therefore the indirect short term construction phase impacts and long term operational phase impacts, (which have been determined to not have significant environmental effects, refer to ACP Planning Reference 318704) , will not occur.

Likewise, the indirect positive contribution the Proposal Grid Connection to meeting National and EU targets for the production and consumption of electricity from renewable resources by 2030 and the reduction of greenhouse gas emissions. The opportunity to generate local employment and investment and to diversify the local economy during the construction and operational phase (albeit limited) would also be lost.

4.7.2 Construction Phase- Population

4.7.2.1 Population Levels

4.7.2.1.1 Pre-Mitigation Impacts

Those working on the construction phase of the Proposed Grid Connection will travel daily to the Site from the wider area. The construction phase will have no impact on the population of the area in terms of changes to population trends or density, household size or age structure.

4.7.2.2 Employment and Investment

4.7.2.2.1 Pre-Mitigation Impacts

The design, construction and operation of the Proposed Grid Connection will provide employment for technical consultants, contractors and maintenance staff. As discussed, it is proposed to construct the wind farm and grid connection concurrently which would require approximately 100 employees in total, with an estimated 20 jobs focusing on the construction phase of the Proposed Grid Connection. Construction of the Grid Connection infrastructure is estimated to last approximately 9 months to 12 month of the overall 18- 24 month combined construction timeframe.

4.7.2.2.2 Mitigation and Monitoring Measures

None required.

4.7.2.2.3 Residual Impact

The injection of money in the form of salaries and wages to those employed during the construction phase of the Proposed Grid Connection and Consented Wind Farm has the potential to result in an increase in household spending and demand for goods and services in the local area. This would result in local retailers and businesses experiencing a short-term positive effect on their cash flow. This will have a short-term slight positive indirect effect.

4.7.2.2.4 Significance of Effects

The significance of effects on employment levels and local investment during the construction phase will be slight.

4.7.2.3 Land Use Patterns & Activities

4.7.2.3.1 Pre-Mitigation Impacts

The current land use and activities at the Proposed Grid Connection footprint comprises pastoral agriculture and transport/access along the local road network. Grazing stock at the substation, compound and end mast footprint will temporarily be relocated during the construction phase and local temporary traffic disruptions are likely along the L-7039; however, once the construction of each element is complete, agricultural practises can return in the areas surrounding the onsite infrastructure and traffic flow will resume as normal.

The proposed works will be rolling in nature, with construction taking place over approximately 100m at a time along the L-7039. Based on an average rate of 100m grid construction per day, it is estimated that the construction of the Proposed Grid Connection underground cabling route will last 21 days, as set out in Table 14-7 of Chapter 14 Material Assets. With an additional 10 days required for bridge crossing on (LS7039) the total estimated construction time is 31 days.

It is estimated that traffic impacts on the local network will be experienced by local traffic on a total of 19 days on which diversions will occur, during which the effects will be experienced on one section of road per day. These impacts will be temporary, short-term, and of slight significance.

4.7.2.3.2 Mitigation and Monitoring

The following measures will be adhered for the Proposed Grid Connection. Please refer to Chapter 16 Schedule of Environmental Commitments for a full list of measures.

- The construction of the proposed grid route through the L-7039 local road will be undertaken in a rolling construction method and will be back filled each day providing access in the evenings and night hours along the grid route.
- A Traffic Management Plan, agreed with the Local Authority, will be in place for the construction phase.
- Local access for residents living along the grid route will not be closed for the construction phase as there are alternative access roads into the area.
- Farm access into the Site will be permitted as and when required.

4.7.2.3.3 Residual Impact

Due to the small footprint of the above ground elements of the Proposed Grid Connection, on a Site scale and even more so on a local scale, the residual effect is considered Negative, direct, slight, permanent impact on land use and a Negative, direct, slight short term impact on activities.

4.7.2.3.4 Significance of Effects

The effect on land use/activities due to the construction phase the Proposed Grid Connection Infrastructure is not significant.

4.7.2.4 Property Values

4.7.2.4.1 Pre-Mitigation Impacts

As noted in Section 4.5.16 above, the conclusions from available literature indicate that 95% of property values (residential and agricultural) show no correlation with the presence of grid infrastructure in the area, with opinions on nearby grid infrastructure diminishing over time. In some cases, property values were demonstrated to increase however, causation with grid infrastructure cannot be determined.

4.7.2.4.2 Residual Impact

Based on the above, it is concluded that there would be a short term negative imperceptible impact on property values from the construction phase of the Proposed Grid Connection.

4.7.2.4.3 Significance of Effects

The effect on property values due to the construction of the Proposed Grid Connection is imperceptible.

4.7.2.5 Tourism

4.7.2.5.1 Pre-Mitigation Impacts

Given that there are currently no tourism attractions specifically pertaining to the Site there are no impacts on tourism associated with the construction phase of the substation, compound and end masts. Furthermore, these proposed structures are located on private property therefore no entrance to tourists is currently or will be permitted. There are no tourist attractions located along the proposed underground grid connection cabling route. As the proposed underground grid connection cabling route is not located at a cul de sac, tourists seeking to travel to various attractions in the wider landscape during the construction phase, can utilise other routes and therefore will not be impacted by the rolling construction phase of the grid route on the local road network. However, should tourists want to utilise this portion of the L-7039, the laying of cables will be carried out in a rolling nature at an average rate of 100m of cable being constructed in one day, it is estimated that this section of the underground electrical cabling route, including the HDD works will take 31 days to complete (21 days for the underground grid connection cabling route and 10 days for the bridge crossing). The location of the construction will be transient in nature with the extent of the section of road closed kept to a minimum.

4.7.2.5.2 Residual Impact

Based on the above it is concluded that there would be a short term, negative imperceptible impact on tourism in the wider landscape due to the construction phase the Proposed Grid Connection.

4.7.2.5.3 Significance of Effects

The effect on tourism in the wider landscape due to construction phase the Proposed Grid Connection is not significant.

4.7.2.6 Residential Amenity

4.7.2.6.1 Pre-Mitigation Impacts

There is potential for impacts on residential amenity during the construction of the Proposed Grid Connection. The proposed underground grid connection cabling route will be located within 900m of local road (L-7039, L-7038 and R433) which has the potential to give rise to local traffic disruptions.

4.7.2.6.2 Mitigation and Monitoring Measures

All mitigation as outlined above and the corresponding chapters: Chapter 9 Air Quality, Chapter 11 Noise and Vibration, and Chapter 14 Material assets will be implemented in order to reduce insofar as possible, impacts on residential amenity at properties located in the vicinity of Proposed Grid Connection construction works. Please refer to Chapter 16 Schedule of Environmental Commitments for a full list of measures.

4.7.3 Construction Phase- Health

4.7.3.1 Health and Safety

4.7.3.1.1 Pre-Mitigation Impacts

The construction of the Proposed Grid Connection will include working under existing 110kV lines which may impact on electrical infrastructure and supply in the area and along a local road which may give rise to traffic impacts. Furthermore, working in the cavity of power lines and traffic flow is potential health and safety hazard for construction workers.

4.7.3.1.2 Mitigation and Monitoring Measures

The Proposed Grid Connection will be constructed and operated in accordance with all relevant Health and Safety Legislation, including:

- Safety, Health and Welfare at Work Act 2005 (No. 10 of 2005);
- Safety, Health and Welfare at Work (General Application) (Amendment) Regulations 2016 (S.I. No. 36 of 2016);
- S.I. No. 528/2021 - Safety, Health and Welfare at Work (Construction) (Amendment) Regulations 2021 and

- Safety, Health and Welfare at Work (Work at Height) Regulations 2006 (S.I. No. 318 of 2006).

The following measures below are also detailed in Appendix 3-2 Construction and Environment Management Plan. Please refer to Chapter 16 Schedule of Environmental Commitments for a full list of measures.

- A Health and Safety Plan covering all aspects of the construction process will address the Health and Safety requirements in detail. This will be prepared on a preliminary basis at the procurement stage and developed
- All hazards will be identified, and risks assessed. Where elimination of the risk is not feasible, appropriate mitigation and/or control measures will be established. The contractor will be obliged under the construction contract and current health and safety legislation to adequately provide for all hazards and risks associated with the construction phase of the project. Safepass registration cards are required for all construction, delivery and security staff. Construction operatives will hold a valid Construction Skills Certificate Scheme card where required. The developer is required to ensure a competent contractor is appointed to carry out the construction works. The contractor will be responsible for the implementation of procedures outlined in the Safety and Health Plan. Public safety will be addressed by restricting Site access during construction. Fencing will be erected in areas of the Site where uncontrolled access is not permitted.
- The suitability of machinery and equipment for use near power lines will be risk assessed.
- All staff will be trained on operating voltages of overhead electricity lines running the Site. All staff will be trained to be aware of the risks associated with overhead lines. All contractors that may visit the Sites are made aware of the location of lines before they come on to Site.
- Barriers will run parallel to the overhead line at a minimum horizontal distance of 6 metres on plan from the nearest overhead line conductor wire.
- Information on safe clearances will be provided to all staff and visitors.
- Signage indicating locations and health and safety measures regarding overhead lines will be erected in canteens and on Site.
- All staff will be made aware of and adhere to the Health & Safety Authority's 'Guidelines on the Procurement, Design and Management Requirements of the Safety, Health and Welfare at Work (Construction) (Amendment) Regulations 2021'. This will encompass the use of all necessary Personal Protective Equipment and adherence to the Site Health and Safety Plan.
- The construction of the Proposed Grid Connection will be in phases along the proposed grid route.
- When activities must be carried out beneath overhead lines, e.g., component delivery or end mast construction, a Site-specific risk assessment will be undertaken prior to any works. The risk assessment must take into account the maximum potential height that can be reached by the plant or equipment that will be used prior to any works.
- Prior to commencing grid connection works in the agricultural fields in the townland of Strogue, goal posts will be established under the 110k overhead line for the duration of the construction phase. The goal posts will not exceed a height of 4.2 metres, unless specifically agreed with ESB Networks.
- The suitability of machinery and equipment for use near power lines will be risk assessed.

- All staff will be trained on operating voltages of overhead electricity lines running through the Site. All staff will be trained to be aware of the risks associated with overhead lines. All contractors that may visit the Sites are made aware of the location of lines before they come on to Site.
- Overhead line proximity detection equipment will be fitted to machinery when such works are required.
- The scale and scope of the project requires that a Project Supervisor Design Process (PSDP) and Project Supervisor Construction Stage (PSCS) are required to be appointed in accordance with the provisions of the Health & Safety Authority's 'Guidelines on the Procurement, Design and Management Requirements of the Safety, Health and Welfare at Work (Construction) Regulations 2013'.
- The PSDP appointed for the construction stage shall be required to perform his/her duties as prescribed in the Safety, Health and Welfare at Work (Construction) Regulations. These duties include (but are not limited to):
  - Identify hazards arising from the design or from the technical, organisational, planning or time related aspects of the project;
  - Where possible, eliminate the hazards or reduce the risks;
  - Communicate necessary control measures, design assumptions or remaining risks to the PSCS so they can be dealt with in the Safety and Health Plan;
  - Ensure that the work of designers is coordinated to ensure safety;
  - Organise co-operation between designers;
  - Prepare a written Safety and Health Plan;
  - Prepare a safety file for the completed structure and give it to the client; and
  - Notify the Authority and the client of non-compliance with any written directions issued.
- The PSCS appointed for the construction stage shall be required to perform his/her duties as prescribed in the Safety, Health and Welfare at Work (Construction) Regulations. These duties include (but are not limited to):
  - Development of the Safety and Health Plan for the construction stage with updating where required as work progresses;
  - Compile and develop safety file information.
  - Reporting of accidents / incidents;
  - Coordinate arrangements for checking the implementation of safe working procedures. Ensure that the following are being carried out:
  - Induction of all Site staff including any new staff enlisted for the project from time to time;
  - Toolbox talks as necessary;
  - Maintenance of a file which lists personnel on Site, their name, nationality, current Safe Pass number, current Construction Skills Certification Scheme (CSCS) card (where relevant) and induction date;
  - Report on Site activities to include but not limited to information on accidents and incidents, disciplinary action taken and PPE compliance;
  - Monitor the compliance of contractors and others and take corrective action where necessary; and

– Notify the Authority and the client of non-compliance with any written directions issued.

4.7.3.1.3 Residual Impact

With consideration of the implementation of the detailed mitigation measures there will be a short-term slight negative residual effect on health and safety during the construction phase of the Proposed Grid Connection.

4.7.3.1.4 Significance of Effects

Based on the assessment above the effects on health and safety during the construction phase of the Proposed Grid Connection are considered to be short term slight significant.

4.7.3.2 Air Quality: Dust, NO2, PM10 and PM25 and CO2 Emissions

4.7.3.2.1 Pre-Mitigation Impacts

Potential dust and exhaust emission sources during the construction phase of the Proposed Grid Connection include upgrading of existing access tracks and construction of the substation, new access road, temporary construction compound and end mast foundations. The entry and exit of construction vehicles from along the L-7039, L-7039 and L-7038 may result in the transfer of mud to the public road, particularly if the weather is wet. This may cause nuisance to residents and other road users. These impacts will have a short-term, slight, negative impact on air quality. The potential dust impacts that may occur during the construction phase of the Proposed Grid Connection are further described in Chapter 9: Air Quality.

4.7.3.2.2 Mitigation and Monitoring Measures

The following mitigation measures will be implemented during the construction of the Proposed Grid Connection. Please refer to Chapter 16 Schedule of Environmental Commitments for a full list of measures.

- Sporadic wetting of loose stone surface will be carried out during the construction phase to minimise movement of dust particles to the air. In periods of extended dry weather, dust suppression may be necessary along haul roads to ensure dust does not cause a nuisance. Water bowser movements will be carefully monitored to avoid, insofar as reasonably possible, increased runoff.
- All plant and materials vehicles shall be stored in dedicated areas within the Site.
- Construction materials for the Proposed Grid Connection will be sourced locally from licenced quarries and transported on specified haul routes only.
- The agreed haul route roads adjacent to the Site will be regularly inspected for cleanliness and cleaned as necessary.
- The roads adjacent to the Site entrances will be checked weekly for damage/potholes and repaired as necessary.
- Waste material will be transferred to a licensed /permitted Materials Recovery Facility (MRF) by a fully licensed waste contractor where the waste will be sorted into

individual waste streams for recycling, recovery or disposal. The MRF facility will be local to the Site to reduce the amount of emissions associated with vehicle movements

- A Construction and Environmental Management Plan (CEMP) will be in place throughout the construction phase (see Appendix 3-2).

4.7.3.2.3 Residual Impacts

With the implementation of the above measures for the construction phase, residual impacts on air quality from exhaust emissions associated with construction activities and machinery are considered to be a short-term imperceptible negative impact.

4.7.3.2.4 Significance of Effects

The effects on air quality from exhaust emissions during the construction phase of the Schedule of Environmental Commitments are considered to be imperceptible.

4.7.3.3 Water Quality

4.7.3.3.1 Pre-Mitigation Impacts

The Templemore Public Water Scheme and Source Protection Area are located approximately over 2.8km west of any proposed grid connection infrastructure, on the opposite side of the N62. A water main runs along the R433 which will be crossed by the Proposed Grid Connection underground cable route. Mains valves are located approx. 5m from the Proposed Grid Connection underground cable route also. The GSI also mapped several additional private boreholes and wells in the vicinity of the Proposed Grid Connection. Chapter 8 Hydrology and Hydrogeology assess the potential for impact on public water supply and private wells during the construction phase. The pre-mitigation impact on water quality is assessed as Indirect, negative, moderate, temporary, likely effect.

4.7.3.3.2 Mitigation and Monitoring Measures

A bespoke drainage design which includes but is not limited to interceptor drains, check dams, swales and ponds, will be implemented at the Site.

Chapter 8 Hydrology and Hydrogeology details all best practise and mitigation measures to minimise the potential for entrainment of suspended sediment ss or potential hydrocarbon leak. Please see chapter 8 for details and Chapter 16 for the Schedule of Environmental Commitments for the Proposed Grid Connection.

4.7.3.3.3 Residual Impact

With the implementation of the drainage design and all mitigation measures listed in Chapter 8 Hydrology and Hydrogeology (separation distances, and prevailing geology, topography and groundwater flow directions), it is considered that the residual effects are to be short-term imperceptible negative impact on water quality.

4.7.3.3.4 Significance of Effects

The effects on water quality during the construction phase of the Proposed Grid Connection are considered to be imperceptible.

4.7.3.4 Noise and Vibration

4.7.3.4.1 Pre-Mitigation Impacts

There will be an increase in noise levels in the vicinity of the Site during the construction phase, as a result of heavy machinery and construction work which has the potential to cause a nuisance to Sensitive Properties located closest the Proposed Grid Connection works. This will be a short-term, very low sensitivity and low magnitude of change on human health due to increased noise levels from construction. The noisiest construction activities associated with the construction activities are excavation and concrete pouring of the substation and end mast foundations.

4.7.3.4.2 Mitigation and Monitoring Measures

Best practice measures for noise control will be adhered to on Site during the construction phase of the Proposed Grid Connection to impacts associated with this phase of the development. Please refer to Chapter 16 Schedule of Environmental Commitments for a full list of measures.

No plant used on Site will be permitted to cause an on-going public nuisance due to noise.

The best means practicable, including proper maintenance of plant, will be employed to minimise the noise produced by on Site operations.

All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract.

Compressors will be attenuated models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers.

Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use.

Any plant, such as generators or pumps, which is required to operate outside of general construction hours will be surrounded by an acoustic enclosure or portable screen.

During the course of the construction programme, supervision of the works will include ensuring compliance with the limits detailed in Chapter 11 using methods outlined in British Standard ‘BS 5228-1:2014+A1:2019 Code of practice for Noise and Vibration Control on Construction and Open Sites – Noise.’

The hours of construction activity will be limited to avoid unsociable hours where possible. Construction operations shall generally be restricted to between 7:00hrs and 19:00hrs Monday to Saturday. However, to ensure that optimal use is made of good weather periods or at critical periods within the programme (i.e., concrete pours) it could occasionally be necessary to work out of these hours.

4.7.3.4.3 Residual Impact

With the implementation of the above mitigation measures, there will be a short-term, slight negative impact on health due to an increase in noise levels during the construction phase of the Proposed Grid Connection.

4.7.3.4.4 Significance of Effects

For the reasons outlined above, the effects on human health due to due to noise emissions from the Proposed Grid Connection during construction will be slight.

4.7.3.5 Traffic and Transport

4.7.3.5.1 Pre-Mitigation Impacts

Materials to construct the substation will be delivered to the Site via the L-7039 which runs along the eastern boundary of the Site. This may have a negative and temporary impact on existing road users, which will be minimised with the implementation of the mitigation measures included in the proposed traffic management plan.

The underground grid connection works will be brief (c. 31 days), completed with a traffic management plan in place and will follow TII and Eirgrid requirements. The grid route trenches will be excavated in a rolling manner, approx. 100m per day and backfilled each evening. By its nature the effects of these additional trips and diversions on the network will be transient, temporary and will be slight.

4.7.3.5.2 Mitigation and Monitoring Measures

A complete Traffic and Transportation Assessment (TTA) of the Proposed Grid Connection has been carried out by Alan Lipscombe Traffic and Transport Consultants. The full results of the TTA are presented in Section 14.1 of Chapter 14: Material Assets. The plan will be developed and implemented to ensure any impact is short term in duration and slight in significance during the construction of the Proposed Grid Connection. Prior to commencement of any works, the occupants of dwellings in the vicinity of the proposed works will be contacted and the scheduling of works will be made known. Local access to properties will also be maintained throughout any construction works and local residents will be supplied with the number of the works supervisor in order to ensure that disruption will be kept to a minimum. Please refer to Chapter 16 Schedule of Environmental Commitments for a full list of measures.

4.7.3.5.3 Residual Impact

Once a traffic management plan is implemented for the construction phase of the Proposed Grid Connection, there will be a short-term slight negative impact on local road users.

4.7.3.5.4 Significance of Effects

Based on the assessment above the effects on traffic from the Proposed Grid Connection during construction will be slight.

4.7.3.6 Major Accidents and Natural Disasters

4.7.3.6.1 Pre-Mitigation Impacts

A risk register has been developed which contains all potentially relevant risks identified during the construction phase of the Proposed Grid Connection. Seven risks (Critical Infrastructure Emergencies, Severe Weather, Flooding, Utility Emergencies, Traffic Incident, Contamination, and Fire/Gas Explosion) specific to the construction phase have been identified and are presented in Chapter 6 Major Accidents and Natural Disasters. The risk register concludes that there is low potential for significant natural disasters to occur at the Proposed Grid Connection. As outlined in Section 6.4 of this EIAR, the scenario with the highest risk score in terms of the occurrence of major accident and/or disaster during construction is identified as 'Contamination' of the Site and risk of 'Fire/Explosion' during construction.

The impact assessment concludes that the risk of a major accident and/or disaster during the construction phase of the Proposed Grid Connection is considered 'low' in accordance with the 'Guide to Risk Assessment in Major Emergency Management' (DoEHLG, 2010). It is considered that when the mitigation and monitoring measures outlined in the CEMP (Appendix 3-2) are implemented there will not be significant residual effect(s) associated with the construction of the Proposed Grid Connection.

4.7.3.6.2 Mitigation and Monitoring Measures

The Proposed Grid Connection is designed and will be constructed in line with current best practice and, as such, mitigation against the risk of major accidents and/or disasters will be embedded through the design. In accordance with the provision of the European Commission 'Guidance on the preparation of Environmental Impact Assessment Reports' 2017, a Risk Management Plan will be prepared and implemented on Site to ensure an effective response to disasters or the risk of accidents. The plan will include sufficient preparedness and emergency planning measures.

Please refer to chapter 16 Schedule of Environmental Commitments which details all proposed mitigation and monitoring measures for the construction and operation of the Proposed Grid Connection.

Potential effects associated with contamination during construction and operation are addressed fully in Chapter 7 Land Soil and Geology and Chapter 8 Hydrology and Hydrogeology of this EIAR. The mitigation measures outlined therein to protect environmental receptors as well as the procedures and measures described in the Construction and Environmental Management Plan (CEMP) will ensure that the risk from these sources is low.

A CEMP has been prepared for the Proposed Grid Connection and is included in Appendix 3-2 of this EIAR. Upon a grant of planning permission for the Proposed Grid Connection, the CEMP will be updated prior to the commencement of the development. The CEMP will be a live document maintained by the contractor that will work to ensure that potential risks of major accident and/or disaster are identified, avoided and mitigated, as necessary. Refer to Appendix 3-2 for the CEMP that sets out the minimum standards to be employed by the contractor.

4.7.3.6.3 Residual Impact

The impact assessment concludes that the risk of a major accident and/or disaster during the construction phase of the Proposed Grid Connection is considered 'low' in accordance with the 'Guide to Risk Assessment in Major Emergency Management' (DoEHLG, 2010).

4.7.3.6.4 Significance of Effects

Based on the above and the risk assessment in Chapter 6, the effects to/from Major Accidents and Natural Disasters during the construction phase of the Proposed Grid Connection are not significant.

4.7.4 Operational Phase- Population

4.7.4.1 Population Levels

4.7.4.1.1 Pre-Mitigation Impacts

The operational phase of the Proposed Grid Connection will have no impact on the population of the area with regards to changes to trends, population density, household size or age structure.

4.7.4.1.2 Residual Impact

No Residual impacts.

4.7.4.1.3 Significance of Effects

No significance of effects.

4.7.4.2 Employment and Investment

4.7.4.2.1 Pre-Mitigation Impacts

During the operational phase, the 110kV substation will be under the operation of Eirgrid where representatives will be required to undertake maintenance visits. This will have a long-term imperceptible positive effect on employment. Payment of commercial rates by the Developer to the local authorities will have a long-term benefit for the local area during the operational phase due to the reinvestment of these funds into local projects e.g., road maintenance, green spaces etc.

As mentioned above in section 4.1.5.2 in relation to the Consented Wind Farm, the Proposed Grid Connection indirectly facilitates the Community Benefit Fund intended for the local community.

4.7.4.2.2 Residual Impact

With the implementation of the above schemes, there will be a permanent positive effect on local communities.

4.7.4.2.3 Significance of Effects

Based on the assessment above there will be significant direct and indirect effect on local communities from investment during the operational phase. The effects on employment levels during the operational phase will be not significant.

4.7.4.3 Land use Patterns and Activities

4.7.4.3.1 Pre-Mitigation Impacts

The Proposed Grid Connection's footprint (1.7ha) is limited to a small percentage of the Site (2.5%) and overall population Study Area. During the operational phase, farming practises will resume around the substation and end mast footprint and traffic movements on the L-7039, R433 and L-7038 will resume as normal. The small scale of the substation and end mats relative to the Site and population Study Area, its ability to coexist with ongoing Site activities and activities within the landscape indicate that the Proposed Grid Connection infrastructure will have no significant impact on other land-uses within the Site and the wider area.

4.7.4.3.2 Residual Impact

Due to the small footprint of the Proposed Grid Connection on a Site scale and even more so on a local scale, the residual effect is considered Negative, direct, slight, permanent impact on land use and activities during the operational phase.

4.7.4.3.3 Significance of Effects

The effect on land use/activities due to the operational phase the Proposed Grid Connection will be slight.

4.7.4.4 Property Values

4.7.4.4.1 Pre-Mitigation Impacts

As noted in Section 4.5.1.6, the conclusions from available international literature indicate that property values are not significantly impacted by the positioning of grid infrastructure.

4.7.4.4.2 Residual Impact

It is on this basis that it can be reasonably concluded that there would be a permanent imperceptible impact from the Proposed Grid Connection.

4.7.4.4.3 Significance of Effects

No significance of effects.

4.7.4.5 Tourism

4.7.4.5.1 Pre-Mitigation Impacts

There are no tourist attractions within the vicinity of the Proposed Grid Connection. It is considered that the substation, will be read in the landscape as an ancillary part of the Consented Wind Farm and therefore will not deter visitors to tourist attractions or scenic landscapes where turbines are

visually evident. The end masts will blend in with adjacent existing 110kV masts, thus no new landuse is introduced. The grid connection cable route will be contained underground As such; the Proposed Grid Connection it will have no operational impact on tourism.

4.7.4.5.2 Residual Impact

Based on the above it is considered that the Proposed Grid Connection will have a permanent imperceptible negative impact of visitor experience to attractions in the wider landscape.

4.7.4.5.3 Significance of Effects

The effect on tourism in the wider landscape due to operation phase the Proposed Grid Connection will be imperceptible.

4.7.4.6 Residential Amenity

4.7.4.6.1 Pre-Mitigation Impacts

Potential impacts on residential amenity during the operational phase of the substation farm could arise primarily due to noise and changes to visual amenity. Detailed noise modelling has been carried for the proposed substation, please see below and Chapter 11 Noise and Vibration for details. The visual impact of the Proposed Grid Connection, specifically the substation and end masts is addressed in Chapter 13: Landscape and Visual. The substation is sited over 100m from nearby Sensitive Properties and will be further screened by hedgerows bordering the field and roadside vegetation, as well as vegetation surrounding nearby properties. The proposed end masts are located within a landscape of low sensitivity and appear only as additional towers within an existing electricity line. The Proposed Grid Connection electrical cabling route is located underground; therefore, no visual effects are deemed to arise from this element.

4.7.4.6.2 Mitigation and Monitoring Measures

- All mitigation as outlined under Noise and Vibration (Chapter 11), Landscape and Visual (Chapter 13) in this EIAR will be implemented in order to reduce insofar as possible impacts on residential amenity at properties located in the vicinity of the Proposed Grid Connection.
- A 2.6m high palisade fence will be erected around the substation which will be painted RAL 6005 (green) to help blend the substation infrastructure in with the surrounding rural landscape. Please see Chapter 13 for residential amenity pertaining to visual effects.
- Please refer to Chapter 16 Schedule of Environmental Commitments for a full list of measures.

4.7.4.6.3 Residual Impact

The residual effect is considered to be a negative, slight permanent impact residential amenity with a significant residual effect for a small number of Sensitive Properties located within 1km who have open views of the proposed substation and end masts.

4.7.4.6.4 Significance of Effects

The effect on residential amenity in the wider landscape due to operation phase the Proposed Grid Connection will be slight.

4.7.5 Operational Phase -Health

4.7.5.1 Health and Safety

4.7.5.1.1 Pre-Mitigation Impact

Rigorous safety checks and continued maintenance are conducted on the substation and ancillary infrastructure during design, construction, commissioning and operation to ensure the risks posed to staff and landowners are negligible. This will have a potential permanent, slight impact on health and safety during the operation phase.

4.7.5.1.2 Mitigation and Monitoring Measures

The following mitigation measures will be implemented during the operation of the Proposed Grid Connection to ensure that the risks posed to staff and landowners remain imperceptible throughout the operational life. Please refer to Chapter 16 Schedule of Environmental Commitments for a full list of mitigation and monitoring measures.

- Staff associated with the project will conduct frequent visits, which will include inspections to establish whether any signs have been defaced, removed, faded, or are becoming hidden by vegetation or foliage, with prompt action taken as necessary.
- Signs will also be erected at suitable locations across the Site as required for the ease and safety of operation of the substation. These signs include:
  - Buried cable route markers at 50m (maximum) intervals and change of cable route direction;
  - “No access to Unauthorised Personnel” at appropriate locations;
  - Speed limits signs at Site entrance and junctions;
  - “Warning these Premises are alarmed” at appropriate locations;
  - “Danger HV” at appropriate locations;
  - “Warning – Keep clear of structures during electrical storms, high winds or ice conditions” at Site entrance;
  - “No unauthorised vehicles beyond this point” at specific Site entrances; and
  - Other operational signage required as per Site-specific hazards.
- The substation, which will be operated by EirGrid will be locked and fenced off from public access. The substation will be operational remotely and manually 24 hours per day, 7 days a week Supervisory operational and monitoring activities will be carried out remotely using a SCADA system, with the aid of computers connected via a telephone modem link.
- Periodic service and maintenance work which include some vehicle movement.
- For operational and inspection purposes, substation access is required.
- Servicing of the substation equipment will be carried out in accordance with the manufacturer’s specifications, which would be expected to entail the following:

– Six-month service – three-week visit

– Annual service – six-week visit Weekly visits as required.

An operational phase Health and Safety Plan will be developed to fully address identified Health and Safety issues associated with the operation of the Site. Access for emergency services will be available at all times.

4.7.5.1.3 Residual Impact

With the implementation of the above mitigation measures, there will be a permanent, imperceptible effect on health and safety during the operational life of the Proposed Grid Connection.

4.7.5.1.4 Significance of Effects

Based on the assessment above the effects on health and safety during the operational life of the Proposed Grid Connection will be imperceptible.

4.7.5.2 Air Quality: Dust, NO2, PM10 and PM25 and CO2 Emissions

4.7.5.2.1 Pre-Mitigation Impact

The sources of dust and other emissions generated during the operational phase will be from infrequent visits by EirGrid maintenance staff to the 110kV on Site substation in light good vehicles (LGVs), approximately one or two visits per day, and private LGVs. Maintenance of the substation infrastructure may, on occasion, generate of small volumes of hydrocarbon waste. Any waste generated at the Site will be managed in accordance the Waste Management Act 1996 and under the relevant EU legislation. This will have a potential long-term, imperceptible impact on health during the operation phase.

4.7.5.2.2 Residual Impacts

Impacts from dust and other emissions to air from private and maintenance vehicles on Sensitive Properties during the operational phase of the Proposed Grid Connection are considered to be momentary and imperceptible. As stated throughout this EIAR, the Proposed Grid Connection is required to facilitate the transmission of renewable energy from the Consented Wind Farm to the national grid. Over the operational lifetime of the Wind Farm, an estimated 1,764,240 tonnes CO_2 will be displaced from the atmosphere. Thus, there will be an indirect long-term overall Moderate Positive effect on Air Quality.

4.7.5.2.3 Significance of Effects

The indirect effect on air quality through the offsetting of Dust, NO2, PM10 and PM25 and CO2 Emissions from fossil fuels is considered have a moderate significant effect.

4.7.5.3 Water Quality

4.7.5.3.1 Pre-Mitigation Impact

During the operational phase, all permanent drainage controls will be in place and the disturbance of ground and excavation works will be complete. Some minor maintenance works may be completed, such as maintenance of Site entrances, internal roads. These works would be of a very minor scale and would be very infrequent. During such maintenance works there is a small risk associated with the release of hydrocarbons from Site vehicles, although it is not envisaged that any significant refuelling works will be undertaken on Site during the operational phase. There will be a long-term imperceptible impact on human health due to water quality.

4.7.5.3.2 Mitigation and Monitoring Measures

The mitigation measures detailed in Chapter 8 Hydrology and Hydrogeology will ensure all surface water runoff from upgraded roads and new road surfaces will be captured and treated prior to discharge/release. Please see Chapter 8 Hydrology and Hydrogeology for details. The full list of mitigation and monitoring measures for the Proposed Grid Connection are detailed in Chapter 16 Schedule of Environmental Commitments.

The mitigation measures will ensure all surface water runoff from upgraded roads and new road surfaces and substation hardstand will be captured and treated prior to discharge/release. Settlement ponds, checks dams and buffered outfalls will prevent roads acting as preferential flow paths by providing attenuation and water quality treatment. Further information relating to the mitigation measures for control of hydrocarbons during maintenance works as described in Chapter 8: Hydrology and Hydrogeology.

4.7.5.3.3 Residual Impacts

With the implementation of the Proposed Grid Connection drainage design and mitigation measures the residual effects are considered to be permanent imperceptible impact on human health due to water quality.

4.7.5.3.4 Significance of Effects

Based on the assessment above the effects on water quality will be imperceptible.

4.7.5.4 Noise and Vibration

4.7.5.4.1 Pre-Mitigation Impact

The predicted noise level from the operation of the substation at the nearest Sensitive Property is 31 dB LAeq,T. This level of noise is considered low, and it is concluded that there will be no significant noise emissions from the operation of the substation.

4.7.5.4.2 Mitigation and Monitoring

None proposed.

4.7.5.4.3 Residual Impacts

The predicted residual operational noise effects at the closest noise sensitive locations range from not significant to imperceptible. Please see Chapter 11 Noise and Vibration for details.

4.7.5.4.4 Significance of Effects

As stated in the noise assessment in Chapter 11, it has been demonstrated that the noise associated with operation of the Proposed Grid Connection complies with the relevant national guidance in relation to noise. The effects are considered not significant.

4.7.5.5 Traffic and Transport

4.7.5.5.1 Pre-Mitigation Impact

Substation or end mast failure/damage is considered unlikely and therefore the presence of abnormal load vehicles and HGVs at the Site is considered extremely rare. Should a grid connection element need replacing, the measures detailed in section 4.7.1.10 and Chapter 14 will be implemented.

Visits to the Site by EirGrid for maintenance and inspection will involve 1-2 movements per day by LGVs.

4.7.5.5.2 Residual Impacts

Impacts on local road users during the operational phase are considered to be a permanent negative imperceptible impact.

4.7.5.5.3 Significance of Effects

Based on the assessment above the effects on traffic will be imperceptible.

4.7.5.6 Major Accidents and Natural Disasters

4.7.5.6.1 Pre-Mitigation Impacts

A risk register has been developed which contains all potentially relevant risks identified during the operational phase of the Proposed Grid Connection. Seven risks (Critical Infrastructure Emergencies, Severe Weather, Flooding, Utility Emergencies, Traffic Incident, Contamination, and Fire/Gas Explosion) specific to the operational phase have been identified and are presented in Chapter 6 Major Accidents and Natural Disasters. The risk register concludes that there is low potential for significant natural disasters to occur at the Site. As outlined in Section 6.4, the scenario with the highest risk score in terms of the occurrence of major accident and/or disaster during operation is identified as ‘Fire/Explosion’ or Contamination during operation.

4.7.5.6.2 Residual Impact

The impact assessment concludes that the risk of a major accident and/or disaster during the operational phase of the Proposed Grid Connection is considered 'low' in accordance with the 'Guide to Risk Assessment in Major Emergency Management' (DoEHLG, 2010).

4.7.5.6.3 Mitigation and Monitoring Measures

The Proposed Grid Connection will be designed and built in line with current best practice and, as such, mitigation against the risk of major accidents and/or disasters will be embedded through the design. In accordance with the provision of the European Commission 'Guidance on the preparation of Environmental Impact Assessment Reports' 2017, a Risk Management Plan will be prepared and implemented on Site to ensure an effective response to disasters or the risk of accidents. The plan will include sufficient preparedness and emergency planning measures.

Please refer to chapter 16 Schedule of Environmental Commitments which details all proposed mitigation and monitoring measures for the construction and operation of the Proposed Grid Connection.

The Proposed Grid Connection will also be subject to a fire safety risk assessment in accordance with Chapter 19 of the Safety, Health and Welfare at Work Acts 2005 to 2014, which will assist in the identification of any major risks of fire on Site, and mitigation of the same during operation.

4.7.5.6.4 Residual Impact

The impact assessment concludes that the risk of a major accident and/or disaster during the operational phase of the Proposed Grid Connection is considered 'low' in accordance with the 'Guide to Risk Assessment in Major Emergency Management' (DoEHLG, 2010).

4.7.5.6.5 Significance of Effects

Based on the above and the risk assessment in Chapter 6, the effects to/from Major Accidents and Natural Disasters during the operational phase of the Proposed Grid Connection are not significant.

4.7.6 Decommissioning Phase

The Consented Wind Farm has permission for a 30 year operation. Following the end of this period, the wind turbines may be replaced with a new set of turbines, subject to planning permission being obtained, or the Consented Wind Farm may be decommissioned fully. Should the Consented Wind Farm be decommissioned, the substation will remain in place as it will be under the ownership and control of ESBN/EirGrid.

Any impact and consequential effect that occurs during the decommissioning phase will be similar to that which occurs during the construction phase, however to a lesser extent and lesser duration.

4.7.7 Cumulative and in combination Effects

The potential for impact between the Proposed Grid Connection with the Consented Wind Farm, other proposed or consented wind projects within the surrounding landscape, and other relevant non-wind projects (existing, permitted or proposed) has been carried out with the purpose of identifying what influence the Proposed Grid Connection will have on population and human health as well as the interactions between these factors, when considered cumulatively and in combination with relevant existing, permitted or proposed projects and plans in the vicinity of the Site. Please

see Chapter 15 for Interactions and Cumulative Effects for the detailed cumulative assessment methodology. Please refer to Appendix 15-1 for a comprehensive listing of the considered cumulative and in combination with relevant existing, permitted or proposed projects and plans in the vicinity of the Site.

As demonstrated above, there are no significant effects on Population and Human Heath arising from the construction, operation or decommissioning of the Proposed Grid Connection. The potential cumulative impact of the Proposed Grid Connection and combined with the potential impact of other projects and/or plans has been carried out with the purpose of identifying what influence the Proposed Grid Connection will have on the environment when considered collectively with approved and existing projects and projects pending a decision from the planning authority and land-uses in the defined cumulative assessment study areas as set out in Chapter 15. There are no significant effects on Population from the construction and operation of the Proposed Grid Connection.

Therefore, there will be no significant effects arising from the construction, operation or decommissioning of the Consented Wind Farm and Proposed Grid Connection combined, nor with any other existing, permitted or proposed project/plans listed in Chapter 15. Furthermore, the closest substation is the existing Templemore 38kV substation located on Mary Street, within Templemore town, approx. 4km west of the Proposed Grid Connection. No construction cumulative effects are possible. Due to the separation distance, intervening screening from residential and commercial development, cumulative operational effects – traffic, noise, dust (from maintenance visits) and visual are not possible.

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